EASTERN MORELOS AND TEOTIHUACAN: A SETTLEMENT SURVEY

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FOREWORD

The Rio Amatzinac Survey is a preliminary examination of the prehispanic settlement patterns found throughout the Rio Amatzinac Valley in eastern Morelos, Mexico. The survey was conducted as an integral part of the Proyecto Chalcatzingo under the direction of Dr. David Grove of the University of Illinois, Urbana, Illinois. Its purpose was to provide a regional focus for the intensive excavations at Cerro Chalcatzingo. In combination with regional botanical studies being conducted by David Buge, the project ecologist, the survey focused on the changing nature of man-land relationships between Chalcatzingo vis-a-vis the rest of the Amatzinac Valley. The specific intent of the survey embraced two distinct research perspectives: 1) clarifying the nature of inter-regional organization for all time periods by focusing on the synchronic, structural aspects of the regional settlement system, and, 2) examining the diachronic changes which occurred within the Amatzinac Region through time, discerning if possible, the nature of its inter-regional articulation with other areas of the Central Mexican Highlands.

There are some problems with the data which are not reconcilable with the work that has been done in Morelos. If I catch a little flack I hope it is because I have cast my hook further out in the pond than where there are fish and not because I have missed a few small fish closer to shore. I feel that the reason we do not know more about Central Mexico except for what we find in the Valley of Mexico is because nobody every strikes out into new areas. Regarding Teotihuacan in the Amatzinac area, I am more convinced now than I was three years ago, simply because we have the data from western Morelos where Teotihuacan material is down right scarce. I could make many of my points stronger if I could include that material in the monograph but it would be out of place.

The National Science Foundation, grant number GS-31017, supplied funds to conduct the survey during the first nine months of 1973. The Latin American Center and the Graduate School of the University of Wisconsin-Milwaukee supplied travel money to and from Mexico during 1973 and 1974 during the preliminary analysis. The

Centro Regional de Morelos, I.N.A.H. paid my salary during 1975 and 1976 while we arduously finished the rephasing of the settlement patterns. I am indebted to the many skilled archaeologists of the Instituto Nacional de Antropologia for their indispensable help in the field. This study would not have been possible without the guidance of Arqlo. Jorge Angulo, Regional Center Director for Morelos and Guerrero. I am also indebted to Arqlo. Raul Arana's knowledgeable assistance with numerous ceramic problems and Arqlo. Noberto Gonzales Crespo's permission to study stratigraphic material from his excavations at Las Pilas, Morelos.

I am likewise grateful to Dr. David Grove for the opportunity to undertake this study and to my advisor, Dr. Melvin Fowler for supervising the first writeup of this material as part of my Ph.D. thesis. I am likewise indebted to Dr. Evelyn Rattray and Ann Cyphers for their combined help with ceramic problems.

A settlement reconnaissance is only propelled by the sore but faithful feet of its field crew. I am especially grateful to David Buge for his field assistance and understanding of modern vegetation patterns throughout the Amatzinac Region. I am likewise grateful to Roberta Little and James Wilde for their assistance in directing the survey; to Cynthia Flood and James Wilde for drafting services; to Giovani Orlando for the preparation of photographs and figures contained herein; to Susan Grant for preparation of the tables; and to Evenlyn Rosenbaum and Helen Crawford for typing the manuscript. (Of course a tremendous thanks must go to the numerous individuals involved in the actual surveying: Roberta Little, Jim Wilde, Clesario Barranco, Jaquin Barranco, Robert Burton, Heather Crampton, David Crampton, Salvador Patino, Antonio Pavon, Fermin Pavon, Juan Pavon, David Posegate, Phil Sabol, and Debra Thompson). Thanks Mom for all the love and many patient years of muddy boots.

Chapter 1

INTRODUCTION

Teotihuacan emerged as a large and powerful nucleated community between 0 and 150 A.D. Located 40 kilometers NE of Mexico City, Teotihuacan grew to become the single most important center in the Central Mexican highlands. By 150 A.D. it had gained control of interregional market networks on a large scale and developed an urban society which was destined to spread its sociopolitical domain over much of Mesoamerica during the years to come (Millon 1973).

Teotihuacan style ceramics and architecture are distributed over a wide area of Mesoamerica, stretching from as far east as coastal Veracruz and as far south as the Guatemalan highlands. Its influence is strongest along trade routes and throughout areas of important scarce resources (Sanders 1978). It is suspected that its political growth was linked to the expansion of its economic domain. Teotihuacan stood at the center of a complex mercantile empire composed of a wide array of distinct culture areas. High interregional connectivity during the Classic led to the development of its distinct cosmopolitan flavor. The accumulation of wealth through a number of mechanisms including commerce and tribute enabled it to support a truly "urban" population density and finance the operation of large-scale civic and ceremonial work projects (Sanders and Price 1968).

Teotihuacan's extensive economic network distributed "Teotihuacanoid" cultural materials over much of Mesoamerica. This has presented the archaeologist with a very perplexing problem. How do we reconstruct the organization of the Teotihuacan empire from the array of incomparable data presently at our disposal? To what extent are the items which we identify as Teotihuacan "influences" distributed as a result of 1) the direct incorporation of a previously autonomous area into Teotihuacan's sociopolitical entity; 2) an increase in mercantile exchange between politically autonomous culture groups with Teotihuacan or one of its tribute subsidiaries; or, 3) expanding pan-Mesoamerican commercial networks

without any direct contact with Teotihuacan itself? The problem is to identify the sociopolitical implications of its influences. We cannot assess the pan-Mesoamerican importance of Teotihuacan until we understand the basic organizational structure for the entire system; that is we must begin to define the often alluded to, but rarely examined Teotihuacan "empire".

This study examines the structural nature of the Teotihuacan polity through an analysis of prehistoric events which accompanied Teotihuacan contact in the Eastern Valley of Morelos, Mexico. For this type of analysis we must move beyond a simple consideration of its "sphere of influence", that territorial area which includes types of cultural influences both political and nonpolitical. The Teotihuacan system must be examined with the intent of identifying the cause-and-effect relationships which existed between its component subsystems. Discussions of Teotihuacan and its "sphere of influence" are based upon a miscellany of incomparable data, often of only secondary importance for reconstructing cultural systems. This array of data includes similarities in art style, ceramics, iconography, trade artifacts, mural painting, the presence or absence of urbanism, and architecture. Although similarities in material culture may indicate contact or interaction between two distinct societies, they tell us little about the organizational characteristics of those societies. Likewise they cannot be used as quantitative measures for the influence or social impact of one society upon another. To assess the domination of one group by another we must focus on socio-political changes which accompany the adoption of foreign cultural elements.

Throughout this study a number of terms will be used repeatedly which must be defined at the outset so that their intended meanings will be clear. The "Teotihuacan polity" is the sociopolitical domain over which Teotihuacan held direct political or economic control. Areas within this system can be divided into two distinct culture-historical categories: 1) the Valley of Mexico and other adjoining areas which participated in the initial formation of Teotihuacan society; and 2) all other areas added as potential

tributaries after Teotihuacan had emerged as a consolidated state level society. We do not assume from the outset that the Teotihuacan polity was completely homogeneous. Different areas within the system were linked to Teotihuacan in different ways. The way different areas were linked depended on an array of factors which included distance from the Valley of Mexico, the nature of exploitable resources, and their relative economic importance.

The period of Teotihuacan growth and expansion is referred to as the "Classic" period in Central Mexican prehistory. A number of scholars have recently discussed the need for specifying regional and cultural referents when terminology with loaded developmental implications is used to describe temporal periods (Parsons 1974a). In the Central Mexican highlands, the period characterized by the growth and eventual demise of the large macro-state of Teotihuacan is referred to in this report as the "Teotihuacan Classic". This period spanned the years between 150 and 750 A.D. and a good many cultural developments which took place throughout the Mexican Altiplano during this period can be credited to some form of direct or indirect contact with the urban center.

The organizational structure of Teotihuacan has traditionally been regarded as a "theocratic state". Vaillant (1953:55-56) originally envisioned the site as a vacant religious ceremonial center lacking any substantial resident population. Mayer-Oaks described it as a center of religious pilgrimage serviced by a few resident members of the religious elite and supported by a number of ecologically specialized "secular centers" scattered throughout the Valley of Mexico (1959:365-71, 1960). Under this latter interpretation, administrative control would have rested in the hands of a few ecclesiastical lords with only limited capacity for unified political action.

Within the last 20 years our knowledge of Teotihuacan society has grown considerably, relegating these earlier theories to positions of only historical importance. Research by Millon (1973), Bernal (1963), and others has clarified the true urban nature of the center which maintained a tightly nucleated and highly special-

ized resident population. A quantum leap in population centralization seems to have occurred at the end of the Patlachique phase at about 0 A.D. when its resident population grew from 10,000 to 25,000 inhabitants. Accompanying the growth of the city during the subsequent Tzacualli phase was the appearance of large scale monumental architecture, urban planning, the stratification of society along class lines, the creation of large scale production industries, and the expansion of controlled commerce to a pan-Mesoamerican level, all of which together point to the emergence of state level society at this time in the Valley of Mexico. It is evident that population increases within the Valley of Teotihuacan at this time were accompanied by subsequent regional depopulation throughout several neighboring portions of the Valley of Mexico. Regional depopulation in the southern Valley of Mexico was a partial result of the destruction of the large center of Cuicuilco by the eruption of the volcano Xitli (Parsons 1974). Regional population decreases in the Texcoco Region during the Tzacualli phase (Parsons 1971) were part of the major valley-wide movement of population into Teotihuacan (Sanders, Parsons and Santley n.d.). The implementation of irrigation networks on the plain southeast of the city would have been one of the most important changes to have occurred at this time (Sanders 1965a, Sanders and Price 1967).

Although we have a good understanding of Teotihuacan's sequence of growth within the Valley of Mexico, few models have been projected which account for and adequately explain the organizational structure of the wider political network. Most scholars prefer to avoid this question entirely. From the implicit discussions of researchers who refer to the Teotihuacan polity as an "empire" the best candidate for such a model would appear to be the tribute system of the later Culhua-Mexica. Stratigraphic excavations by Sanders within the Teotihuacan Valley at the small Classic site of TC-8 showed evidence for the existence of corporate kin groups similar to the rural calpulli of later Aztec times (Sanders 1965a). Whether Teotihuacan and Tenochtitlan were organized in similar ways will require further examination. Unfortunately we

lack considerable amounts of data to make such a comparison. The historical records which present a vivid picture of the Aztec system are unavailable for the earlier Teotihuacan system. Similarly their archaeological manifestations are different; Aztec tradewares are not as widely distributed as those of Teotihuacan perhaps as a result of a shorter lived period of expansion and influence. What we can see in the archaeological record is that Teotihuacan influence may vary considerably between regions. Teotihuacan influence is not spread homogeneously throughout Mesoamerica, but rather follows the natural routes of communication and reaches peak concentration in major resource areas. Sanders feels that this sort of variability may indicate the existence of a commercial rather than a political empire. Without the Aztec's large demographic base Teotihuacan may have sought to control the direction and movement of trade throughout Mesoamerica by focussing on the key resource zones (Sanders 1978: 43-44).

If this picture of Teotihuacan expansion is correct we would expect to find considerable variation in the strength and impact of its social system on the culture groups with which it came in contact. Obviously, the strength of its influence would be a function of its interest in local politics and the way in which the area was integrated into its polity. From the archaeological standpoint we need to implement more research outside of the Valley of Mexico. At the same time we need to develop research methods to detect variation in Teotihuacan presence from one region to another. One of the most striking features of Teotihuacan was its ability to restructure the population and existing sociopolitical relationships of regions incorporated into its domain. Measuring the <u>impact</u> of Teotihuacan, as an outside cultural influence on the social organization of indigenous culture groups will go a long way in clarifying the organization of the Teotihuacan polity.

It is obvious, however, that we must begin to think of "degrees" of Teotihuacan involvement in local politics and how this can be measured. Differences in the distribution of Teotihuacan style artifacts exist even within the area of its strongest sociopolitical importance, the Central Mexican highlands. This variation probably reflects differences in integration of areas into its socio-

economic empire. On the basis of ceramic similarities, areas like southern Hidalgo, the Valley of Puebla, and eastern Morelos appear to have been closely linked with Teotihuacan. There are other areas, however, like portions of Tlaxcala, western Morelos, and eastern Guerrero, where Teotihuacan influence appears to have been relatively weak! The causes behind the differential distributions of Teotihuacan style artifacts requires hard archaeological testing. The juxtaposition of different amounts of Teotihuacan material culture in the modern state of Morelos provides an ideal field laboratory for testing this particular problem. In the eastern portions of the state, Teotihuacan materials are relatively plentiful while they are scarcer in the west with poorly made local imitations predominating.

The purpose of this study is to measure the impact of Teotihuacan society on the organization of local population aggregates residing within the Rio Amatzinac Valley. The major research intent is to illustrate and measure the "sociological" impact of Teotihuacan culture on the areas it contacted. The quantity of economic exchange between the two was an important variable in this process, but it is not assumed that increased commercial interaction is a direct reflection of increased sociopolitical control of an area by Teotihuacan. The occurrence of diagnostic Teotihuacan style elements in the ceramic or architectural complexes is used as evidence to verify the existence of and frequency of <u>contact</u> between the large urban center and portions of its mercantile hinterland. Changes in the social organization as reflected by settlement patterns which accompanied Teotihuacan contact are used to measure the degree of cultural impact upon, and the position of the Amatzinac Valley within its political superstructure.

An analysis of regional settlement patterns is used for the delineation of changes in the organizational structure of society. In any given area, the way in which people are spatially distributed says a great deal about regional demographic structure, subsistence orientation, and economic integration. An analysis of regional settlement variability reflects the hierarchical organization and the range of functional activities performed by individual communities for the region as a whole (Berry and Garrison 1958). In the

analysis which follows, Amatzinac population data is examined before, during, and at the end of periods when Teotihuacan style artifacts are found. Changes in regional population size and adaptation are used to calculate Teotihuacan impact on Amatzinac social organization. The results of the research indicate that the Amatzinac region was an important area in Teotihuacan's outer hinterland. A summary of contemporaneous settlement data known for the Valley of Mexico is presented for comparative purposes and discussed where it aids in the interpretation of culture process in eastern Morelos. Some important differences appear which shed new light on the interpretation of the demographic structure of the Teotihuacan Classic.

There may be colleagues of mine who will object to some interpretations because they are based on surface and not excavated data. All settlement pattern studies which make extensive use of surface collection techniques suffer from the same deficiency, the lack of control over contextual association of artifactual remains. Unfortunately constraints of time and money did not permit us to conduct excavations in conjunction with the survey. Neither were there any stratigraphic collections available from earlier investigations which could be reexamined with our present research interests in mind. As a result interpretation rests largely on the size and spacing of sites and a relative comparison of the type and density of artifactual debris. This study began work in an area where there had been little prior exploration. The advantages of beginning investigation from a regional perspective offset some of the constraints of working within a narrowly defined excavation universe. Until we have more research in Morelos and specifically the Amatzinac Valley I would suggest that we view the interpretations presented here as hypotheses to be tested by future investigation. But before proceeding any further I will first review our fieldwork methodology and describe the regional environment to provide a critical and contextual framework for subsequent discussions.

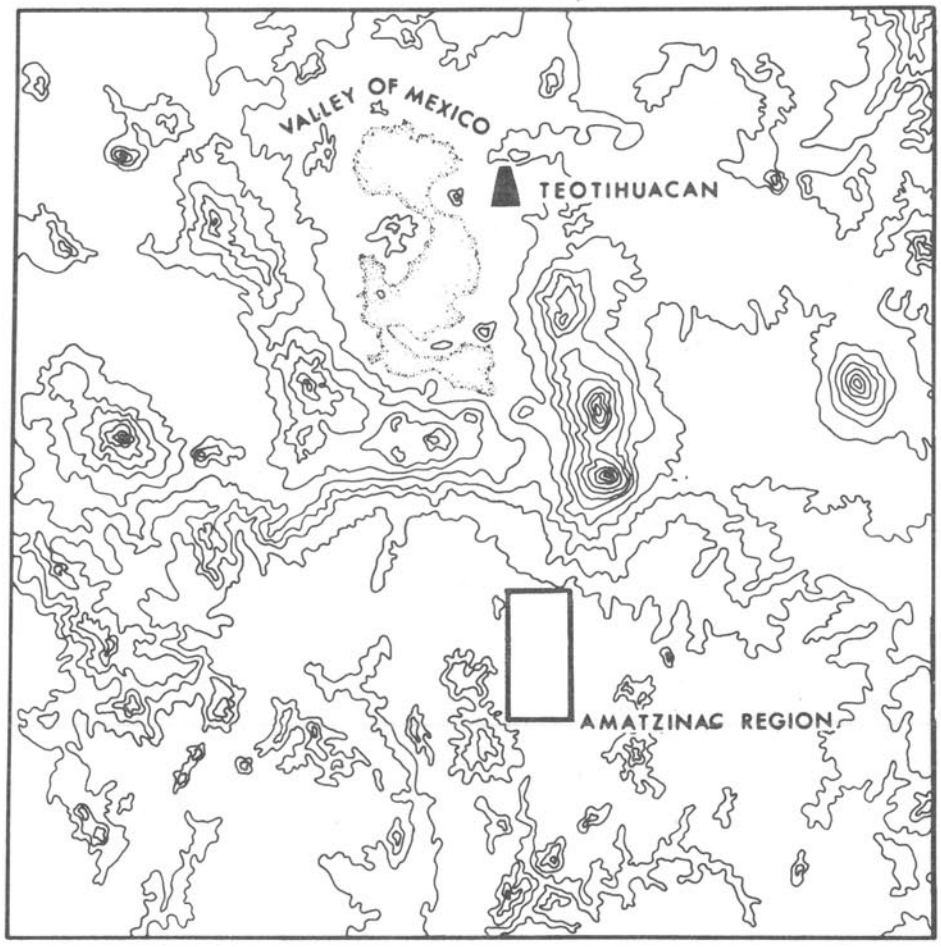

Figure 1: Location of the Rio Amatzinac Valley in Central Mexico

Chapter 2
FIELD METHODS

Introduction

The most complete data base available for generalizing about the character of Teotihuacan influence in Morelos comes from the Rio Amatzinac Valley in the eastern portion of the state (Fig.1). This valley is located below the southern slopes of Popocatepetl 120 kms southeast of present-day Mexico City. During the first nine months of 1973, an intensive settlement reconnaissance was conducted in this region as part of the larger Proyecto Chalcatzingo. This was a joint research project conducted by the University of Illinois and the Instituto Nacional de Antropologia e Historia under the coordinated direction of Dr. David Grove and Arqeologo Jorge Angulo. Studies of the material culture throughout the region were made, at least initially, from systematic surface collections made at all sites throughout the survey zone. These studies were supplemented by stratigraphic excavations conducted at two regional sites, Chalcatzingo and Las Pilas, Jonacatepec. Judging the strength of Teotihuacan influence in the Amatzinac material assemblage at different periods during its contemporaneous stages of development in the Valley of Mexico was made possible through the help of Dr. Evelyn Rattray, director of the Teotihuacan Mapping Project's ceramic laboratory at San Juan Teotihuacan.

To insure maximum coverage of the survey area, the identification of as many sites as possible, and the greatest comparability of data, an intensive field methodology was employed similar to that used in the Valley of Mexico by Parsons (1971a), Blanton (1972), and Sanders (1965a). The objective of the Rio Amatzinac Survey was to locate, map, and analyze every remaining site within the valley which could be identified through surface reconnaissance. To insure that every field was inspected, the area was surveyed using lines of surveyors numbering between six and seven individuals spaced at 20 to 40 m. intervals. Surface collections were taken at every site and population estimates were projected using Parsons' (1971a) correlation of site size and surface debris. A total of 454 sq. km. were covered using this field procedure.

Assumptions, Biases, and Research Conditions

It is important to state at the onset a number of the initial assumptions brought to this research by the principal investigator. In interpreting the significance of the data the following assumptions were accepted as being valid:

1) Mounds and geometric associations or rock rubble reflect the presence of buried structures and in situ ceramic and lithic debris indicate a locus of former cultural activity.

2) An archaeological settlement represents "the physical locale...where the members of a community lived, ensured their subsistence, and pursued their social functions in a delineable time period" (Chang 1968:3). A community, however, must be interpreted from the archaeological material and does not necessarily coincide with isolated residential locales (Rouse 1968).

3) The techniques of population estimation used in the Valley of Mexico based on site size and surface ceramic intensity are applicable to the Amatzinac portion of Morelos.

4) Sites must be analyzed on the basis of formal properties, independent of space and time. Formal attributes, spatial attributes, and temporal attributes were collected as independently as possible. This permitted the study of each dimension in isolation of one another along the lines suggested by Plog (1971:46).

5) Ecological or other sampling formats for selecting portions of the valley to be studied were not used and the entire valley was surveyed as a single unit. One of the major objectives of the Chalcatzingo Project was to study the valley as a single, cohesive unit and it was felt that this objective could not have been attained if only certain segments were available for analysis.

6) The intensive survey techniques used in this study insured that both small sites and large sites would be encountered. I felt that a small site methodology as outlined by Moseley and Mackey (1972) was most appropriate for this research where urban-hinterland relationships would be of primary concern.

7) Individual site size, character, and location reflect the larger cultural factors of politics, religion, history, and economics. Although often difficult to interpret, any individual settle-

ment is a microcosm of all the cultural factors involved in the formation of the entire settlement system (Adams 1968).

8) Settlement organization is considered to be hierarchical in nature, following the initial ideas of Losch (1938, 1954) and Christaller (1933, 1966). The size of a settlement is proportional to the number of functions it performs for the rest of its region. By correctly identifying the range of settlement sizes, one can work backward from the data to reconstruct the organization of the system. In its development, however, the human-economic landscape moves through the colonization, spread and competition stages discussed by Hudson (1969).

9) The organization of the entire settlement system follows what has been called a "minimax" strategy by Judge (1971). Relative location of sites one to another and to needed resources is such that overall costs are at a minimum for each individual site. This strategy is likewise applicable for the broader analysis of cultural systems. In agrarian societies, where the overall level of technology is low, the location of settlements is largely a function of size, complexity, and integration of the economic system. Given a stable level of transportation technology, therefore, the larger and more complex the system, the greater the selective pressure for site location in accessible, as opposed to inaccessible areas.

A number of cultural, environmental, and historical conditions existed while this survey was being carried out which helped to dictate the type of field methodology used in the Amatzinac Valley:

1) Maps of the area were difficult to obtain, and when found, were often incorrect. Inexpensive aerial photo coverage was purchased from CENTENAL, the government office of land development, to locate and record sites at scales of 1:30,000 and 1:5000.

2) The landscape has been partitioned into clearly distinguishable field plots, readily identifiable on the aerial photos. This allowed the exact positioning of sites through reference to field boundaries and their visible natural features.

3) Natural vegetation cover was not a problem in obscuring prehistoric remains, except in a few isolated portions of the

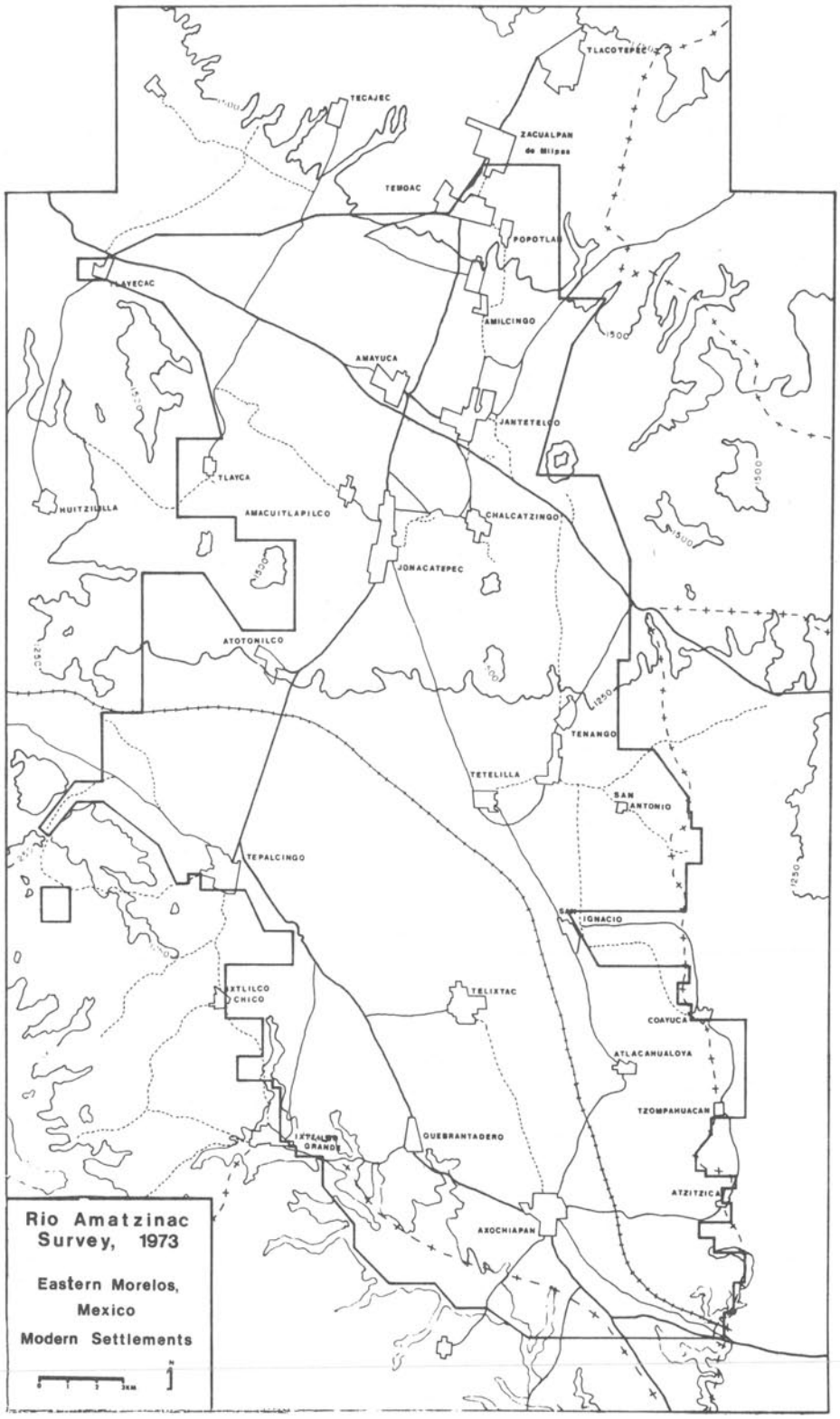

Figure 2: Rio Amatzinac Valley: Modern Population

valley. In addition, human disturbance of this vegetation cover was more or less constant across most of the valley. The soil was prepared over most of the area by oxen plowing and when irrigation or deep tractor plowing was encountered the areas could be delimited on the aerial photos.

4) Erosion and redeposition of soil have not been serious environmental modifiers in this region. It was felt that many of the older and smaller sites should be present in some approximate proportion to their prior existence. As a rule most deposition has occurred around springs and at the bases of hills. Alluvial deposition from rivers is not a factor since the permanent drainages are enclosed in steep-sided barrancas up to 50 m. deep.

5) Much of the area utilized in prehispanic times is largely unpopulated today. Only in the northern quarter of the valley was modern settlement a problem where the towns of Zacualpan, Temoac, Huazulco, Amilcingo, and Popotlan are clustered closely together (Figure 2). These areas were surveyed in greater detail to lessen the chance of missing prehispanic remains.

6) A precise ceramic sequence was not available for this portion of Morelos. For this reason surface collections were taken at each and every site as well as between sites where only occasional sherds were found. Surface collections were "non-random", to the extent that only the more diagnostic sherds were collected such as rims, bases, supports, lids, shoulders, decorated wares, and figurine fragments.

7) The survey had access to a range of personnel working in the excavating portion of the Chalcatzingo Project who had interests and specialties different from my own. By their rotation into the survey crew the survey could benefit from their individual studies and expertise in the way suggested by Struever (1971). A flexible field schedule was followed that allowed the survey to move around in the study area to maximize the benefit of having specialized personnel in the field.

The Field Procedure

The objective of this survey was to locate, map, and analyze every site within the Amatzinac Valley. Sampling was not used for

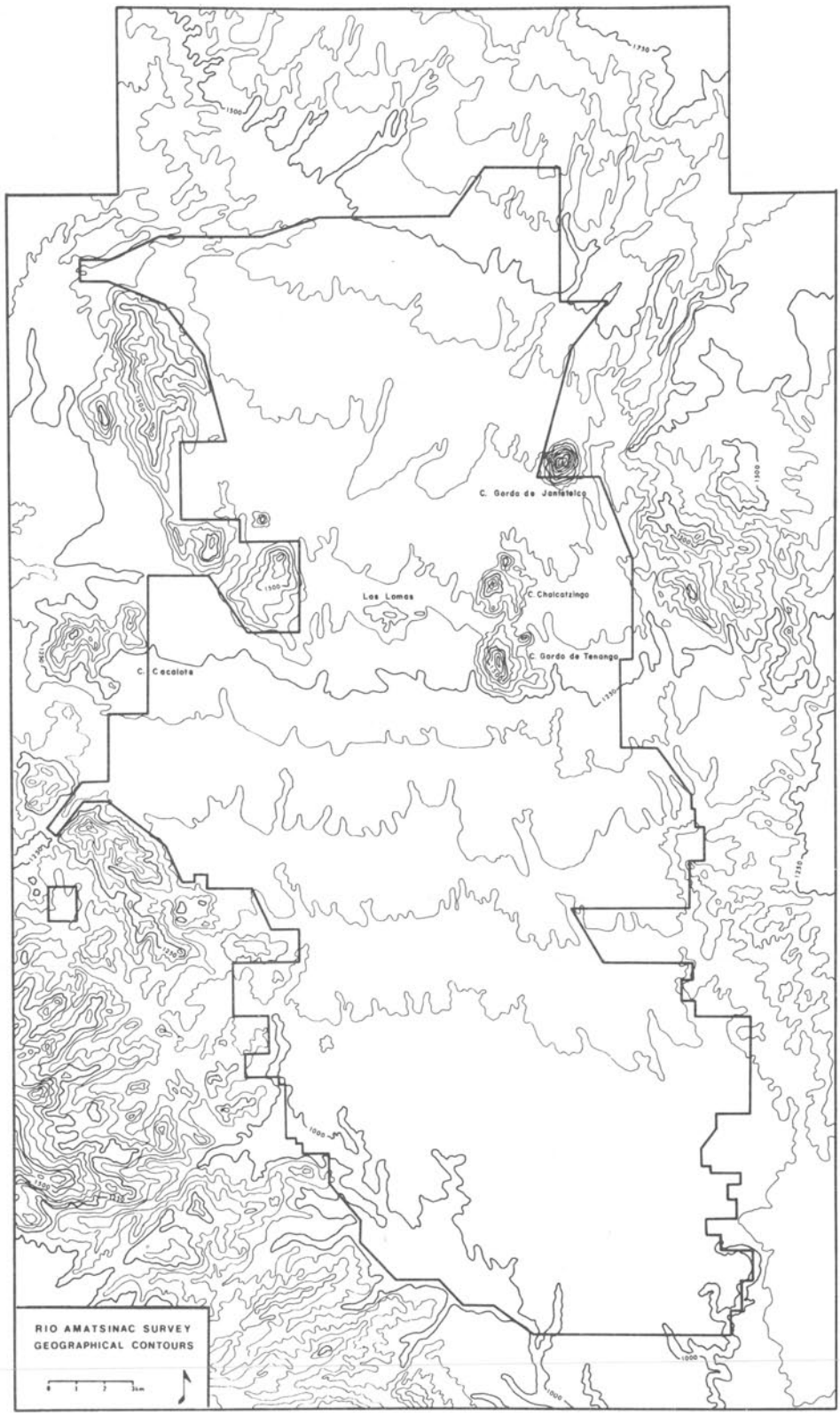

Figure 3: Rio Amatzinac Valley: Topographic Contours

selecting separate units to be surveyed. Rather than bringing to a previously unstudied area a number of assumptions regarding settlement location, the greater portion of the entire valley was covered. As the survey is now complete, it is the opinion of this author that a strip type sampling procedure would have led to inaccurate results in the Amatzinac Region. The most popularly used bases for choosing strip sample areas are ecological and topographic zones. In this study, sites were found disproportionately distributed within these zones.

The heavy black lines in Figure 3 outline the intensive survey area. Site search was conducted on a field by field basis using a line of surveyors to "sweep" the area. Site location and boundaries were recorded directly onto 1:5000 aerial photos. Only one survey team was used during the length of the survey. Team size varied with fatigue and stomach problems but an average of seven members was maintained. Ample numbers allowed efficient field "sweeps", since much of the area is flat and there are few roads.

The usual daily procedure was to select a zone which could be accurately located on the aerial photos, bounded as a unit, and surveyed in a day's time. Bounding these zones was the most recurring problem since clearly identifiable limits did not always exist. Ideally, parallel streams, fence lines, or roads were sought, but more often than not, only one such point of reference could be used. When this was the case, the person responsible for the 1:5000 aerial photo was placed on the end of the survey line, furthest from the point of reference, with spacing maintained by keeping the same distance from one's neighbors. Knowledge of the exact width of the survey sweep was the responsibility of the aerial photo carrier, who, through periodic inspection of the landscape and the photo, could plot the outer extent of the survey coverage.

On the return sweep, it was the responsibility of the aerial photo carrier to return along his previously plotted path with the other surveyors spaced on him and whatever other points of reference lay in their new survey zones. This assured total coverage of the area even under the most difficult conditions. This allowed

SITE SHEET

Date. . . . . .
Recorder . . . . . .
Group No. . . . . Site No. . . . . .Map No. . . . . .
Site Width . . . . . Site Length . . . . . .Observations. . . . . .
. . . . . .
Site Name. . . . . Town. . . . . .Municipality. . . . . .
District. . . . . Access. . . . . .
Owner. . . . . Attitude. . . . . .Residence. . . . . .

SITE LAYOUT
Dispersed. . . . . .Nucleated. . . . .Water Control & Availability . . . . . .
. . . . . On-Site Resources. . . . . .
. . . . . Present Day Usage. . . . . .
. . . . . Other Observations. . . . . .
. . . . . .

CEREMONIAL ZONE
Total Area . . . . . No. of Structures. . . . . .No. of Groupings. . . . . .
Dimensions-Each Group . . . . . .
Type-Each Group . . . . . .
No. of Structures/ Group . . . . . .
Dimensions of Structures/ Group . . . . . .
. . . . . .
No. of Collections. . . . . Catalog Numbers. . . . . .
Rubble Approximation . . . . . .
Other Notes . . . . . .

HABITATIONAL ZONE
Total Area. . . . . No. of Structures. . . . . .No. of Groupings. . . . . .
Dimensions-Each Group . . . . . .
Types of Groups . . . . . .
Combinations of Groupings . . . . . .
Concentrations/Grouping . . . . . .
. . . . . .
Placement of Concentrations/Group
Group Concentration Variability . . . . . .
Concentration Var. Between Groups. . . . . Rubble. . . . . .
No. of Collections. . . . . .Catalog No's. . . . . .
Collections/Group. . . . . .Other Observations. . . . . .
. . . . . .
. . . . . .

Figure 4: Data Record: The Site Sheet Form

each individual to know exactly where he was when a site was located. Surveyors locating sites within eyesight of the aerial photo carrier, had their site locations plotted for them. Other surveyors had auxiliary 1:30,000 aerial photos or naturally occurring points of reference to locate their sites in all but a few cases.

The distance between individuals during the sweep depended on assuring good coverage of the survey area and keeping the surveyors from getting lost. Normal spacing varied between ten and forty meters although twenty-five to thirty meters proved to be the average interval. Vegetation cover, topography, agricultural practices, hostility or receptivity on the part of local inhabitants, and modern cultural features such as towns and water reservoirs determined the exact spacing used. The intent was for the survey unit to work as a team because many sites needed the combined efforts of two or even three investigators to collect the necessary data in the shortest amount of time. With this procedure, the area was covered in detail without sacrificing day to day flexibility. It is the opinion of this author, and the survey crew as well, that few sites of hamlet size or larger were missed during the course of the survey.

Each surveyor was held responsible for a wide variety of recordable data. Mound sizes, number of site components, feature orientation, natural conditions, and a wealth of other data were recorded on the site forms depicted in Figures 4 and 5. Site boundaries were established by walking out the limits of the surface debris. Along with the boundaries of individual sites, mound locations, collection areas, and site components were all drawn on the aerial photos. In all cases, site area was calculated directly from the photos with a compensating polar planimeter (Keuffel and Esser, Model 620015), which eliminated the errors of field "eyeballing". Maps were made when necessary and particular attention was given to identifying structures and separating temporal components in multicomponent sites.

Surface Collections

The analysis of ceramic material initially presented some problems because of the paucity of published stratigraphic explora-

SURVEY SHEET

Survey. . . . .Aerial Section. . . . . Date. . . . . .
Site-Specific. . . . . Recorder. . . . . .
Group No. . . . . .Site No. . . . . Map No. . . . . .

TOPOGRAPHY
Slopes. . . . .100-80 o/o Gentle . . . . .80-50 o/o Gentle . . . . .50-20 o/o Gentle
. . . . .20-0 o/o Gentle
Local Relief: . . . . .0-100' . . . . .100-300' . . . . .300-500'
. . . . .. 500-1000' . . . . .1000-3000' . . . . .3000-5000'
Disposition of Gently Sloped Surfaces:
. . . . . .Greater than 75 o/o in the lowlands
. . . . . .Greater than 50 o/o but less than 75 o/o in the lowlands
. . . . . .Greater than 50 o/o but less than 75 o/o in the highlands
. . . . . .Greater than 75 o/o in the highlands

DRAINAGE
Types of Sources- -Active Vs. Nonactive
. . . . . .Drainage: - Type I. . . . . II. . . . . III. . . . . IV. . . . .
. . . . . .Spring . . . . .Arroyo . . . . .Lake . . . . .Aquefer-Well
. . . . . .Swamp
Weter Source Availability: . . . . . Less than 1 Month . . . . .1-3 Months
. . . . .3-6 Months . . . . .6-9 Months . . . . .9-12 Months
Predictoblity/nonpredictability:
Intermitent- -Range of Months. . . . . .
Semipermanent-Months. . . . . .Permanent. . . . . .

SOIL
Type. . . . . .No. of samples. . . . . .Munsell color. . . . . .
Soil PH. . . . . Phosphate content. . . . . .. Inclusions. . . . . .
Absolute Phosphate Content. . . . . .
Humus Content. . . . . .No. of Samples. . . . . Catalog No's . . . . . .
Surface Observations. . . . . .

Figure 5: Data Record: The Survey Sheet Form

tion in Morelos. In view of the limited time for completing this survey, exhaustive analysis of site function, differential status, or site interaction through intensive surface collection and excavation could not be attempted. Only potential diagnostics were collected to aid in: 1) identifying the range of ceramic types utilized throughout this area; 2) delimiting the phase designations for a variety of types; 3) identifying and calculating time period components across the different sites; and 4) noting broad cultural affiliation, interaction, and outside stylistic influence. A preliminary estimate of the number of sherds collected for these purposes numbers 200,000. Sites did not necessarily receive attention directly in proportion to their size. Sites with unusually heavy concentrations of good diagnostic material were collected intensively whether large or small. Likewise, when single component sites were located, collections were also abnormally intense. Despite the size of each sample, each and every site was collected and the material analyzed a number of times under good laboratory conditions. This procedure did not affect the comparability of population estimates throughout the region. As I have demonstrated elsewhere (Hirth 1978c), the temporal span and range of artifact variability would be more accurately identified in the more thoroughly collected sites.

Population estimates for site sizes were calculated following the procedure used by Parsons and Blanton in the Valley of Mexico. The validity of these estimates is based on Parsons' correlation of sherd intensities and site size with Sanders (1965a, 1965b) figures for population in modern settlement types in the Mexican highlands. The unproven assumption in applying this estimation technique is that these same derived population figures are equally applicable in Morelos. Regardless of the theoretical validity of these population estimates, sherd counts per meter are a useful measure of differential human activity. There is always the problem that what is found on the surface may not necessarily reflect what is really below. It is important to realize however, that the situation in the Rio Amatzinac Valley is very different from the deeply stratified "tells" of the Near East and the deep alluvial valley sites of the

North American Midwest. Accumulations of cultural material do not exceed one and one half meters in depth. Prior activities, which could skew the reliability of surface data were less severe in the Amatzinac Region than they were in the Valley of Mexico.

Parsons' technique (1971a:23) for estimating population with intensities of surface debris was used in the Amatzinac Survey although it was modified to remove some of its inherent subjectivity. Since his technique is based on a consistent impression of ceramic intensity on the part of all investigators, a more rigidly bounded series of ceramic distribution types was created. Subjective impressions such as "wide scattering", "marked build-up", and "continuous layer", were replaced with counts of material per square meter. The following count per meter intensity types were used:

Type I: A low level scattering of ceramics ranging from zero to twenty sherds per meter. Since most of the small sites had this type of distribution, the category was further subdivided in IA and IB type dispersions which represented zero to nine sherds per meter and ten to nineteen sherds per meter respectively.

Type II: A low to moderate scattering of sherds which equals 20 to 39 sherds per meter.

Type III: A moderate distribution of sherds which equals 40 to 59 sherds per meter.

Type IV: A moderate to heavy dispersion of sherds between 60 and 79 sherds per meter.

Type V: A heavy distribution of sherds of 80 and more sherds per meter.

At no time did this author encounter ceramic dispersions which exceeded one hundred sherds per meter. A correlation of Parsons' intensity types with my count per meter types took the following form: 1) "very light" was scored as less than one sherd per meter; 2) the "light" category was equated with a IA distribution; 3) "light to moderate" was correlated with a IB through and including a II type distribution; 4) the "moderate" type consisted of type II and III distributions, with a sporadic occurrence of type IV intensities; 5) "heavy" categories had lower limits of IV distributions and increased from there (Table I).

Table I

Sherd Count per meter Categories

TYPE	SHERD DENSITY	PARSON'S CATEGORIES
IA	1/5 meters - 9/meter	very light and light
IB	10 - 19/meter	light to moderate
II	20 - 39/meter	moderate
III	40 - 59/meter	moderate
IV	60 - 79/meter	heavy
V	- 80/meter	heavy

Population Estimates

The ceramic density categories are correlated with Parson's population density categories in Table II. Population densities of 25-50 persons per hectare were used where the lowest limit of surface debris was a II type distribution but where III, IV, and V type distributions predominated; I refer to this density as an A-type density. Densities of 10-25 persons per hectare (my B-type) were established where sites predominantly had IA through II type intensities. Densities of 5-10 persons per hectare (my C-type) were used when only IA or IB intensities were found. Calculation of population size was a simple extrapolation once site area was known. The difference between the maximum and minimum figures is generally given in a ratio of about two to one. In cases where all of the required data were difficult to observe, and the population impact was partially obscured, the maximum-minimum ratio decreased from one and one half to one. It was felt that underestimating the population was better than implying larger than discernible estimates, since population density and growth data are important variables in the interpretation of culture history.

Table II

Correlation Between Population Size and Sherd Densities

POPULATION DESIGNATOR	SHERD DENSITY	POPULATION/HECTARE
A-Type	Predominantly II, III, IV, V	25-50
B-Type	Occasional IA Predominantly IB & II	10-25
C-Type	IA, IB only	5-10

One of the most difficult problems encountered in measuring the extent and debris intensities of surface material was in multi-component sites. Although preliminary component divisions were "eyeballed" in the field, the extent of the different components could only be mapped by plotting the distributions of chronologically assigned surface material. The outermost limit of site extent could be distinguished by the presence or absence of diagnostics in the surface collections. Identifying the intensity of surface debris within these site limits, however, was a separate problem not easily remedied. To avoid reapplying the measured count per meter intensities to numerous unrelated time periods, the author apportioned intensities to each component represented using the ratios of diagnostics in each of the meter counts. When material from different components were equally represented, the surface intensity would be divided equally between the two components. When one component outrepresented another by a three-to-one margin, the intensities would be divided on a three-quarters to one-quarter basis. When material consistently appeared in the fields and in the surface collections but could not be measured properly, a simple C-type intensity would be projected for the area in question.

Obviously, determining the debris intensities in multi-component sites was a difficult, time consuming, and somewhat arbitrary process. To assure the maximum degree of attainable accuracy, many of the more complex sites were revisited five, six or seven more times during the summer months of 1973 and 1974. When the

intensities still could not be ascertained with confidence, the lowest density measure employed in the population calculations (C-type) was projected and used for the entire site.

When classifying sites, I have had to rely primarily upon the projected population estimates and architectural evidence. This is unfortunate since any settlement classification directly or indirectly implies a degree of activity specialization within different hierarchically sized sites of the settlement system. Although larger settlement size implies the conglomeration of more and different types of activities, the exact organization of these activities and the functional interrelatedness of sites specialized in one or a number of them requires a more intensive style of survey procedure which was not possible given the objectives of the reconnaissance. During the chapters which follow, many sites will be discussed in reference to particular locations which seem to indicate specific exploitative, religious, or political activities. Although these types of inferences are necessary to understand the organizational format of any settlement system, they were not incorporated in the site classification since this type of data could not be extracted for a large percentage of the sites.

The Settlement Hierarchy

Population estimates together with architectural features allowed us to construct an array of site types depicted in Table III. Regional Centers are the largest and most densely nucleated communities in the region; as a result they probably relied on a large proportion of the surrounding hinterland for subsistence support. These sites are always characterized by some degree of economic specialization whether full or part-time that could not always be determined. These sites always have substantial complex civic-ceremonial architecture with high frequencies of associated material remains.

Villages are the most difficult settlement type to characterize in descriptive terms since their composition varies and may change through time. The primary criterion used for this site category was size, 100-1000 persons using our estimation technique. Sites

Table III

RIO AMATZINAC SETTLEMENT TYPES

SETTLEMENT TYPE	POPULATION	ARCHITECTURAL FEATURES
Primary Regional Center	Greater than 2000 persons	Complex civic-ceremonial constructions
Secondary Regional Center	1001-2000	Simple to complex civic-ceremonial constructions
Large Village	501-1000	Simple civic-ceremonial constructions
Small Village	101-500	With or without civic-ceremonial constructions
Hamlet	21-100	Usually no constructions beyond house mounds
Isolated Residence	5-20	No clear evidence of constructions

were typically over five to six hectares in area. Large Villages were distinguished from Small Villages on size criteria and typically were intermediary developments on the way to becoming Regional Centers.

Hamlets and Isolated Residences are the smallest communities on the settlement classification and appear to be the most sensitive to environmental diversity. Hamlets show clear indications of having been permanently occupied settlements; surface indications range from housemounds to scatters of construction debris. Isolated Residences on the other hand are the smallest of sites, many under 1/4 of a hectare which generally lack indications of permanent structures.

Primary Regional Center: A large, densely occupied community with complex architecture, and a population greater than 2000 persons. This type of community is characterized by only A-type population densities.

Secondary Regional Center: Similar to the Primary Regional Center but with a population less than 2000, but greater than 1000 persons.

Large Village: This is a densely occupied site with population figures between 501 to 1000 persons and little architectural complexity. The distinction between Large "Nucleated" Villages and Large "Dispersed" Villages (Sanders 1965b) can be detected using the format suggested by Parsons (1971). In the nucleated situation, only a small fraction of the subsistence crop is grown in the residential area while in the dispersed situation, the opposite condition would hold. Large Dispersed Villages were recorded when population estimates reached 501 to 1000 inhabitants with only a C-type density. Large Nucleated Villages were noted by A-type and B-type densities.

Small Village: A site with a population estimate between 101 and 500 persons, normally without any civic-ceremonial construction.

Hamlet: A residential community with between 21 and 100 persons without civic-ceremonial architecture.

Isolated Residence/Small Hamlet: A residential community with population estimates of less than 20 persons. This category will be referred to in the following discussion only as an Isolated Residence with a lower unit of 5 individuals.

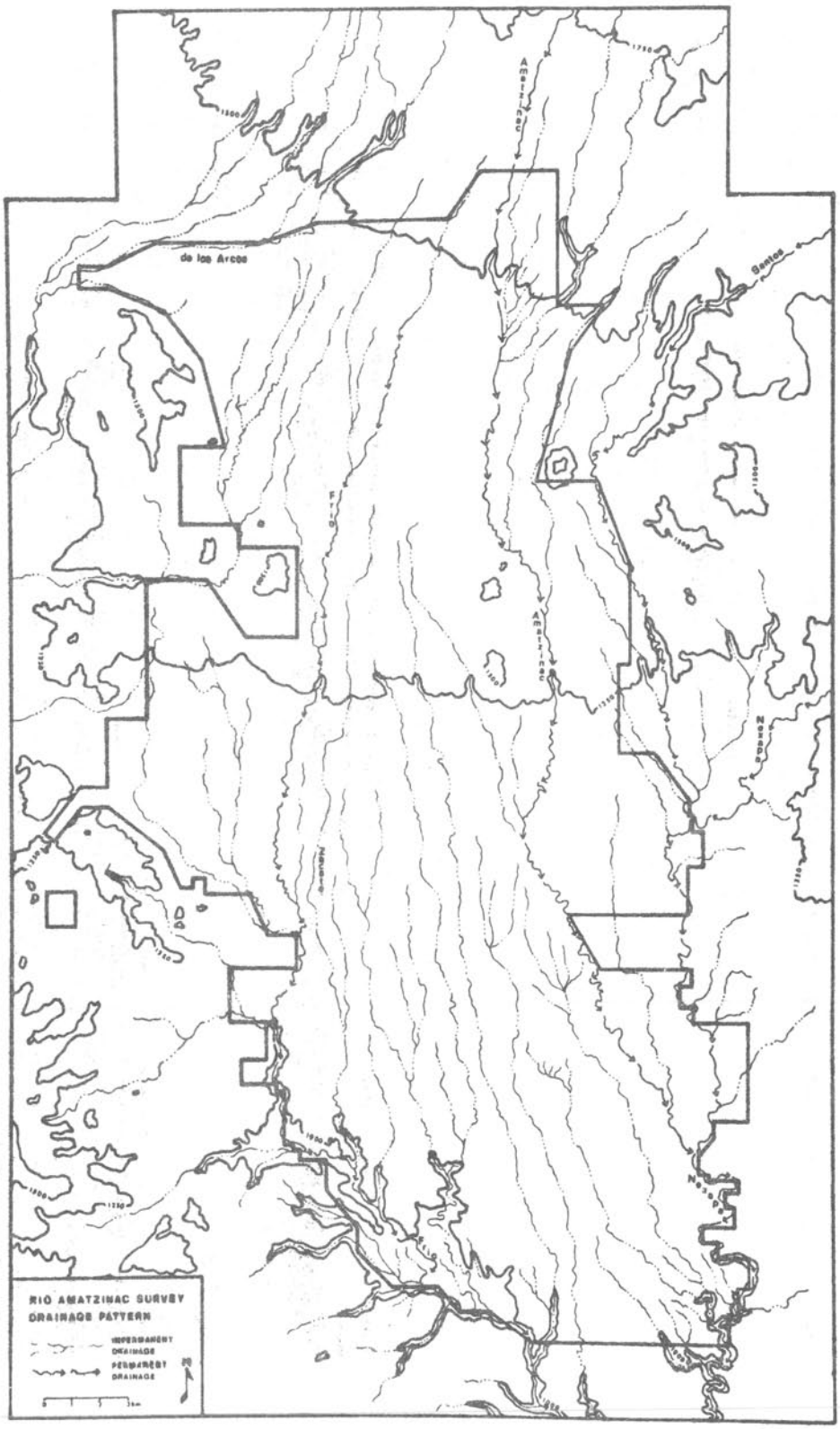

Figure 6: Rio Amatzinac Valley: Drainage Patterns

Chapter 3

REGIONAL ENVIRONMENT

The Rio Amatzinac Valley comprises the eastern 20% of the modern state of Morelos and contains the Morelos tributaries of the Rio Nexapa. This valley begins on the southern foothills of the volcano Popocatepetl and extends south to the low mountains of Guerrero. Two permanent rivers flow through the valley; they are the Rio Amatzinac-Tenango and the Rio Frio-Tepalcingo. The Rio Amatzinac is the major drainage in the region and flows for its greater extent within a deeply incised barranca channel. This barranca channel varies between 10-40 meters in depth (Figure 6). The valley is bounded to the east by a series of north to south running hills which separate the eastern valleys of Morelos from the Izucar de Matamoros Valley of Puebla. The Amatzinac Valley is bounded to the west by a few sporadic hills and mountains; an additional 15 kms of arid volcanic plain separate it from the rich alluvial valley of the Rio Cuautla (Grove 1972).

The geologic composition of the Amatzinac Valley is a combination of both igneous and sedimentary rock formations. The igneous formations are composed of basalts and andesites of horneblende and feldspar; alluvial deposits from the Middle Cretaceous period compose the sedimentary formations. Important raw materials found within the region include chert sources near Tenango; kaolin at Jonacatepec; gypsum at Jantetelco and Axochiapan; and silver at Cerro Colotepec just west of Tepalcingo. Hematite was located during the course of the 1973 survey at Cerro Cacalote near Jalostoc. Magnetite and limonite are also reported from this area and according to Diez (1967), some of the first iron works established by Cortes after the conquest were in this immediate vicinity.

Altitudes descend within the valley from 1750 meters in the north to 1000 meters in the south (Figure 3). This descent brings with it a transition from the tierra templada (semi-calidos) to the tierra caliente (calidos) climatic zone (Secretaria de la Presidencia 1970). The southernmost border of the semi-calidos climatic zone ($[A]C_{w2}$) falls roughly at the 1400 meter contour interval just

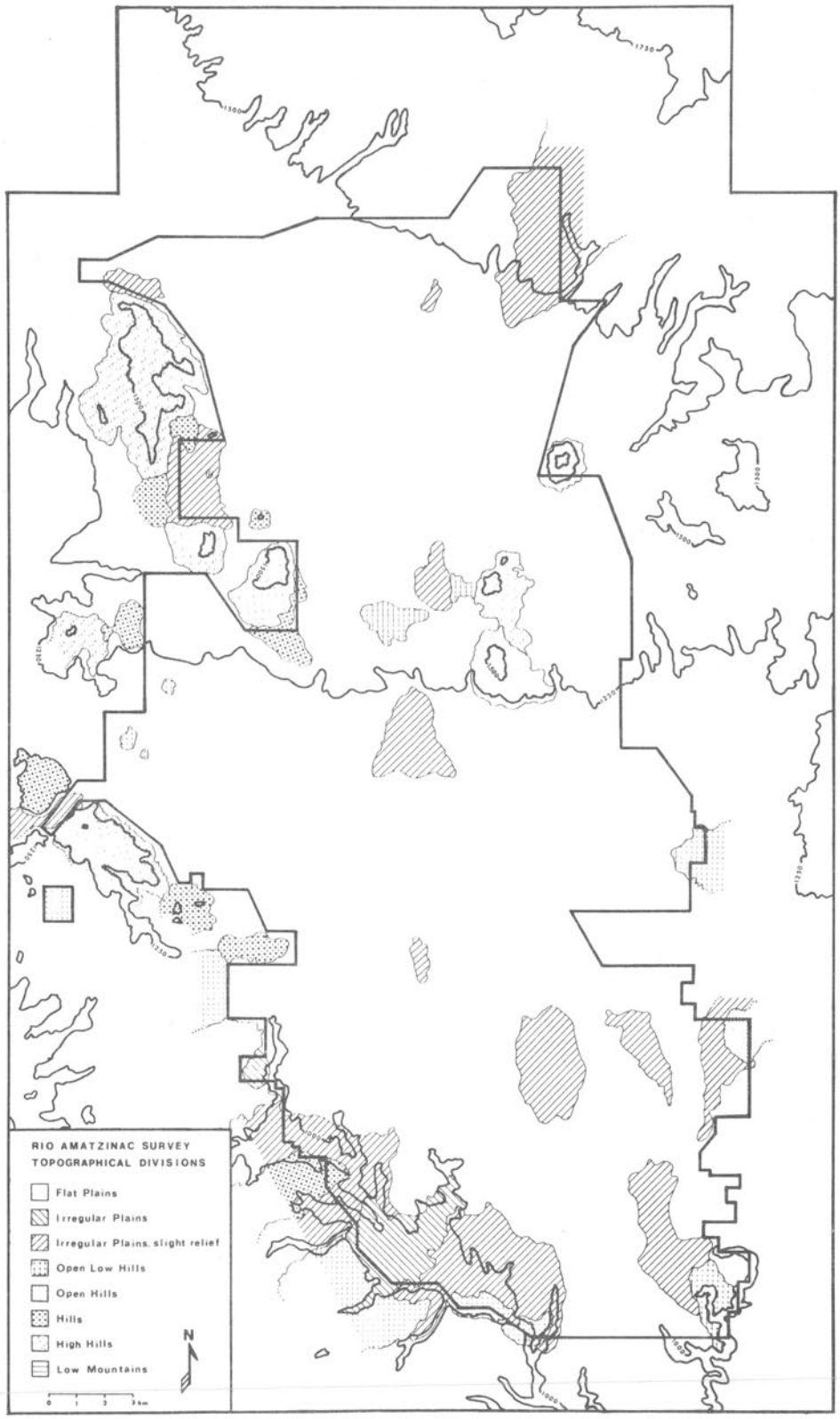

Figure 7: Rio Amatzinac Valley: Landform Classification

below the modern town of Temoac. This zone is characterized by an annual mean temperature of less than 22 degrees centigrade (72°F) with temperatures in the coldest month never dropping below 18 degrees centigrade (64°F). The area to the south of this falls within the "calido" Aw_o climatic zone. Annual mean temperatures in this zone remain above 22 degrees centigrade (72°F); temperature during the coldest month always remains above 18 degrees centigrade (64°F). Population estimates calculated from 16th century documents indicate that at least half of the Morelos Late Postclassic population favored the northern "templados" and "semicalidos" portions of the valley above the 1400 meter contour interval (Sanders 1970:422).

In an attempt to describe contemporary landforms in a way most useful in analyzing site location, a typology was sought which was both sensitive to local conditions and usable throughout all areas of Mesoamerica. For this reason, a typology was generated similar to that used by Hammond (1963) for classification of the continental United States. Plog and Hill (1971:16-18) discuss the generation of landform types used in this system. The landform classification is depicted in Figure 7.

The most striking feature about the valley topography is the sharp contrast between, and the juxtaposition of landform types with highly differing slope and relief. More than 90% of the survey area falls within the "plains" categories. Mountain and hill categories ring the valley borders although they also occur as isolated formations in the north thrusting up from the center of the valley floor. The low hills of Las Lomas just south of Jonacatepec are of this latter type, and serve to disrupt the north to south continuity of impermanent drainages. Run-off able to bypass this formation becomes part of the intricate system of arroyos which completely dissect the southern half of the valley. As will be discussed later, these impermanent drainages appear to have been very important during the Classic. The regional surface drainage for the Amatzinac Region is depicted in Figure 6.

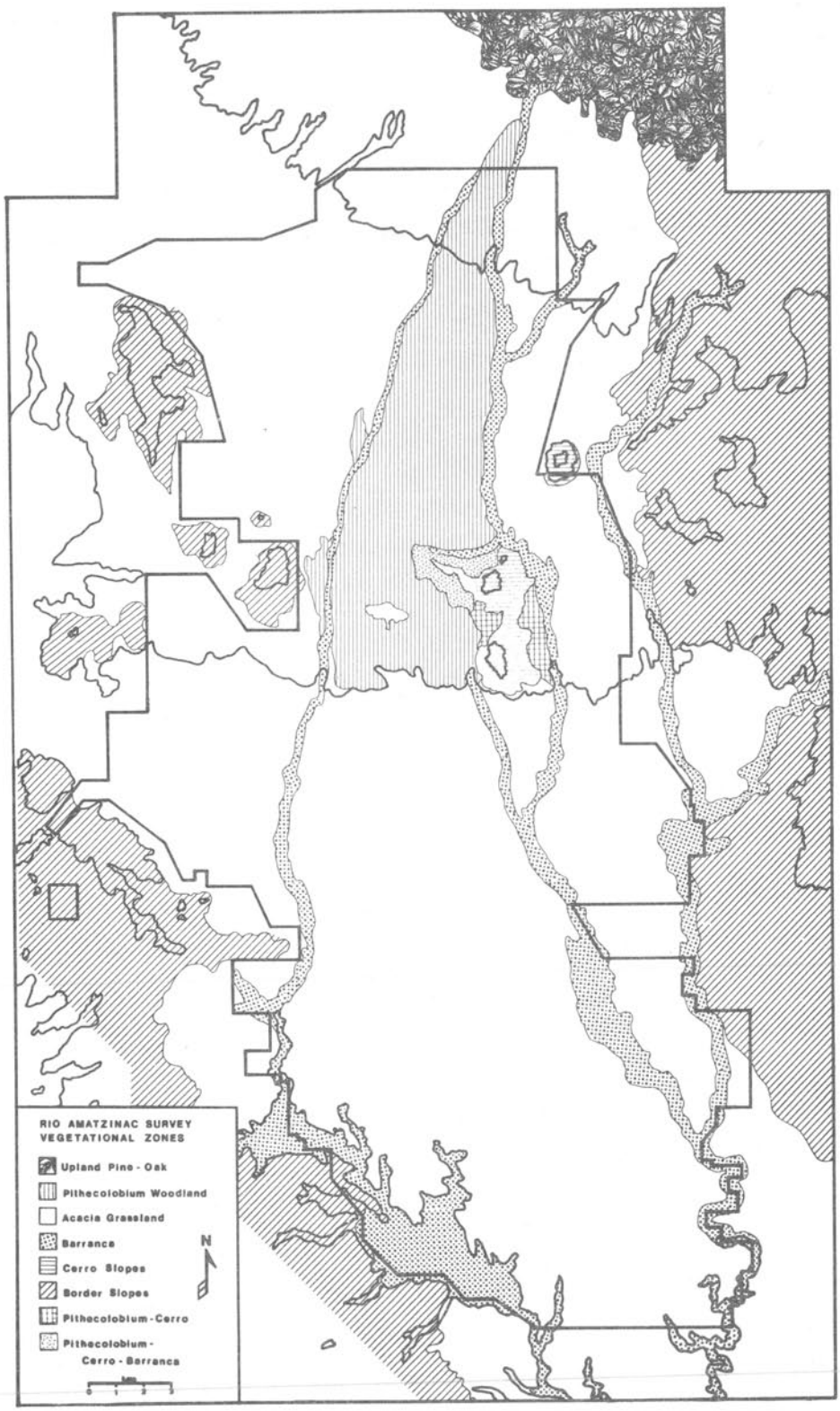

Figure 8: Rio Amatzinac Valley: Major Vegetation Zones

Vegetation Zones

The major vegetation zones throughout the valleys are being analyzed by David Buge, the Chalcatzingo Project ecologist. His work to date reflects a reconstruction of the ecosystem as it would have existed today if unmodified by modern agricultural practices (1973, 1974, 1978). His preliminary analyses are plotted in Figure 8 where he identifies five major vegetation zones and two distinct zones of vegetation overlap. Variation between zones seems to be the result of interaction between variables of temperature, precipitation, humidity retention, drainage, soil percolation, soil type, and land form. According to Buge, agricultural productivity within the valley seems more dependent upon local soil composition than any other limiting factor, a characteristic which present-day farmers take into consideration, selecting specific crops for particular soil types. A brief description of Buge's major vegetation zones follows:

1) Pithecolobium Woodland: This is largely a Flat Plains topographical area in the north central portion of the valley bounded by the Rio Amatzinac-Tenango on the east and the Rio Frio-Tepalcingo on the west. Today this is the productive portion of the valley, with a fairly rich alluvial soil. This region naturally supports the original species of Guamuchil (Pithecolobium dulce), Ceiba, Pochote, Casahuate (Ipomoea app.), Amate (Ficus app.), Ciruela (Spondias purpurea), and Pecan.

Modern valley population is densest throughout this zone, and much of the area is extensively irrigated today with water drawn from the Amatzinac river north of Zacualpan. This, undoubtedly, is an extension of the preconquest system noted by Palerm (1954) originating near Tlacotepec. Many modern canals south of Zacualpan and Huazulco irrigate narrow rectangular fields and terraces which support several mound constructions and could be prehispanic in date. Orchards around Zacualpan nurture both coffee and banana trees, but the bulk of the irrigated plots in this zone support the more traditional corn, beans, and squash.

2) Acacia Grassland: This area includes the "plains" area

east of the Rio Amatzinac, west of the Frio, and the interior portions of the valley south of the 1250 meter contour interval. As a rule the soil in this category does not exceed one meter in depth; east of the Rio Amatzinac it is found only as sparse pockets interspersed between exposed bedrock. In the south central portion of the valley, the soil in this vegetation zone is quite fertile, although loosely packed with poor moisture retention. Rainfall agriculture predominates, although portions of old hacienda irrigation systems are still in use. Under irrigation this area of the southern valley is highly productive and can support such diverse crops as sugar cane, sorghum, amaranth, cotton, and rice. The native floral species in the absence of all domestic activity are Huisache (Acacia farnesiana), Tehuistli, Venenillo, occasional Casahuates, and a large variety of grasses.

3) Barranca: This vegetation zone occurs along and in the Rio Amatzinac and Rio Frio barranca channels, as well as along a number of impermanent drainages. The presence of water in a highly restricted zone has led to the creation of this distinct zone which abounds in Nopal, Organo, Maguey, Guajiote, Casahuate, Cassia, Yellow Amate, Copal (Bursera copalifera), and Guayaba (Psidium guajava).

4) Cerro: This zone is restricted to the hills and mountains situated in the north central portion of the Amatzinac Valley. Soil in this zone does not exceed depths of 20 cms. and is absent on all rapidly descending slopes. The Cerro zone is relatively dry and the natural species which occur are Copal, Casahuate, Cuajiote, Maguey, Palo Bobo, Ciruela, Huisache (Acacia farnesiana), and various types of cactus.

5) Border Slopes: This zone approaches the Cerro zone in topographic composition although it is slightly drier. Roughly coinciding with the line of hills which delimit the Amatzinac Valley on both its east and west sides, we find a variety of natural species which include Guaje, Cuajiote, Tehuistle, Casahuate, Cibata, Huisache, Venenillo, and Chamiso (Compositae spp.). Only sporadic agriculture is practiced in this zone.

The odd topography north of Cerro Chalcatzingo next to the Rio Amatzinac and the presence of small perennial springs have allowed an interesting mixture of distinct vegetation zones along the Cerro's north exposure. It is here we find the mixed 6) Cerro-Pithecolobium, and 7) Pithecolobium-Barranca-Cerro zones. This mixing was undoubtedly important for early agriculturalists at Chalcatzingo. The wide variety of collectable resources in a relatively small area could have been exploited as a supplement to normal or poor harvests.

Chronological Chart for the Central Mexican Highlands

Estimated Absolute Chronology	Teotihuacan Valley Phases	Amatzinac Survey Periods	Basin of Morelos Phases
800	Coyotlatelco	Postclassic	Xochicalco III
700	Metepec	Late Classic	
600	Xolalpan		Xochicalco II
500		Early Classic	
400	Tlamimilolpa		
300			
200	Miccaotli		Xochicalco I
100 A.D.	Tzacualli	Terminal Formative	
0			
100 B.C.			Cerro Chacaltepec II
200	Patlachique	Delgado	
300			
400	Cuanalan		
500			
600		Cantera	Cerro Chacaltepec I
700	Chiconautla		
800		Barranca	
900	Altica		San Pablo
1000			
1100		Amate	
1200			
1300			La Juana

Chapter 4

THE TERMINAL FORMATIVE PERIOD

Introduction

The time period between 150 B.C. and A.D. 150 is called the Terminal Formative in the Valley of Mexico chronology. It was during this phase that some of the most important changes in Formative social organization took place. Very little is known about the Terminal Formative throughout the Central Mexican Highlands outside of the Valley of Mexico despite the importance of this phase for our understanding of the transition from Formative to Classic period society. Some of the changes which occurred at this time were the growth of large population clusters, the restructuring of subsistence orientations, an increase in the hierarchical control and nucleation of population, the construction of large scale civic-ceremonial architecture, and the appearance of urban planning. The foundations for a state level society were finished during this period and it may well be that the concept of "Formative" no longer describes the level of social structure after 0 A.D.

It was during this period that Teotihuacan emerged as the largest and most powerful center in the Central Mexican highlands. Two distinct growth phases have been identified. These are the Patlachique (150-0 B.C.) and Tzacualli (0-150 A.D.) phases. The earliest occupation at the site dates to the preceding Cuanalan phase (500-150 B.C.), although the population did not exceed 1000-1500 individuals. This differs sharply from population levels recorded for subsequent Patlachique phase when the total occupied area extended over 6 (Millon, Drewit and Cowgill 1973) to 8.25 square kms (Cowgill 1974).

Population growth during the Patlachique phase soared to around 20,000 inhabitants and was accompanied by impressive development in the political and economic domain. According to Millon:

> "The growth of Teotihuacan to great size during the Patlachique phase was as directly related to the growth of obsidian working and to the growth of Teotihuacan as a shrine and pilgrimage center (1973:51)."

Sanders and Price on the other hand feel that the impetus for site development lies in the managerial requirements of a large irrigation network. They feel population was drawn to the site by the irrigation potential of a number of springs found on the floor of the valley (Sanders and Price 1968, Sanders 1965a). Small scale chinampa cultivation begun at the spring area during the Cuanalan phase is believed by Sanders to have been expanded substantially during the Patlachique and Tzacualli phases (1976a:119).

The subsequent Tzacualli phase was marked by both increasing population and greater social stratification. Earlier work at Teotihuacan attributed the greater surge of population nucleation to this phase. Recent research by both Millon and Cowgill has clarified the picture considerably. Although the initial surge of population nucleation started during the Patlachique phase, the areal extent of Tzacualli phase Teotihuacan grew to around 21 to 22 square km. Total population more than doubled and, depending upon the source, ranged somewhere between 30,000-50,000 inhabitants (Millon 1973, Cowgill 1974).

The growth of Tzacualli phase Teotihuacan could not have taken place unless early Teotihuacan society were complex enough to readily provide for incorporation of outsiders (Millon 1973:54). It is the opinion of this author that Tzacualli phase growth could only have come about in a fully stratified society. Early Teotihuacan had probably already reached an incipient state level of social organization. Increased social complexity proceeded hand in hand with an increased control over the production and exchange of obsidian artifacts. Spence has identified workshop areas at this time which manufactured different types of implements out of different types of obsidian (1967). Workshops appear to cluster around the major temples in the main ceremonial area. It is quite possible, as some researchers have suggested, that the intensification of early obsidian production was financed by Teotihuacan's emerging social elites (Sanders, Parsons, and Santley n.d.).

Civic-ceremonial construction during this phase was on a "monumental" level. No less than 23 temple complexes have been dated to this time period; a great number of these were situated along the Avenue of the Dead. The Avenue of the Dead served as the principal axis for the city's layout and future urban planning. The most popular architectural arrangement was a three-temple complex. The site's dominant structures, the pyramids of the Sun and Moon, were also constructed at this time. Although it is likely that some earlier buildings were constructed along the Avenue of the Dead, no excavations have been conducted to test whether any of the structures may have Patlachique phase components. There has been considerable disagreement over the nature of Terminal Formative cultural assemblages throughout the Valley of Mexico which directly affects our ability to interpret regional population structure. Although it is clear that Tzacualli occupied the position just prior to the start of the Classic, arguments have arisen over the cultural content of the period between Tzacualli and the preceding period labeled as Cuicuilco-Ticoman III. It was originally argued by Sanders that within the Teotihuacan Valley this phase was composed of the two distinct but contemporaneous ceramic assemblages called Tezoyuca and Patlachique. Sanders (1965a:94-98) originally proposed that the Tezoyuca and Patlachique assemblages represented distinct but contemporaneous cultural entities. The difference between these two assemblages was a result of differential status, the Tezoyuca assemblage being used primarily by high status individuals residing in ceremonial-elite centers, while the Patlachique assemblage was utilized by the larger, undifferentiated population. It is now known that the Tezoyuca assemblage predates the Patlachique assemblage, offsetting Sanders' original interpretation.

West (1965) has suggested that the Patlachique assemblage was created as Ticoman traits moving into the Teotihuacan Valley from the southern portion of the Valley of Mexico were mixed with the local Tezoyuca materials. These Ticoman traits would have been introduced around 200 B.C. by migrants displaced as a result of the eruption of the volcano Xitli. Most of these displaced persons

were from Cuicuilco, which after its destruction were forced to relocate in the more thinly settled portions of the northern Valley of Mexico where they mingled or settled alongside the local populace.

Bennyhoff (1967), however, sees the difference between these two assemblages as an evolutionary one. The Tezoyuca phase, in his perspective, represented a break with the prior Cuicuilco-Ticoman III tradition and the previous ceramic homogeneity characteristic over the entire Mexican Basin. Patlachique grew out of the Tezoyuca tradition and, "represents a return to the basic Cuicuilco tradition following the rejection of the Chupicuaro tradition...[and is]... characterized by the progressive replacement of Cuicuilco forms by elements of the southern complex [Cholula tradition] (Bennyhoff 1967:24-25)." What is most interesting in these discussions is that both researchers identify relationships between the Patlachique assemblage and Cuicuilco related materials. If West's arguments prove to be correct much of the initially large Patlachique phase population at Teotihuacan may have been displaced residents from Cuicuilco.

Valley of Mexico Population

Three major demographic trends occurred during the Terminal Formative. These were an overall increase in regional population density, the regional reorganization of population, and the appearance of a dense, urban-level population cluster at Teotihuacan. A new type of settlement, the elite ceremonial precinct, appeared for the first time as part of a 5-tiered settlement hierarchy in the more densely settled rural areas. The greatest variation in regional settlement occurred as a result of the competition between the two centers of Cuicuilco and Teotihuacan. The differential "pull" exerted upon the regional population by these two centers created a distinct separation of the north to south settlement continuum found during the preceding Late Formative. The break occurred in the Ixtapalapa Region where the overall population decreased and defendable site locales were favored. Ixtapalapa, as a region, may have functioned as a buffer zone between the two competitive centers (Blanton 1972). In contrast to the buffer zone explanation,

Parsons prefers a hydraulic argument for explaining differential settlement location throughout the Valley of Mexico. From this perspective, the changes within the Valley of Teotihuacan, and the creation of independent political identities throughout Texcoco were created through the implementation of new canal irrigation systems in the north while the southern valley continued to rely upon a long established system of rainfall cultivation (Parsons 1971a).

Site location was extremely sensitive to local conditions which varied from region to region. The overall orientation was one of increased specialization in exploiting specific resources and the implementation of irrigation technology. Sites specializing in the exploitation of lacustrine resources are reported from the Texcoco, Zumpango, Amecameca, and Chalco. It is suggested that irrigation systems may have appeared for the first time at Teotihuacan (Sanders 1976a). The intensification of agricultural activity throughout the lower Piedmont zones in the Texcoco and Chalco regions is viewed by Parsons as linked to an elaboration and expansion of small scale floodwater irrigation systems (1974).

There is a break in the continuity of population growth throughout the Basin. Population grows rapidly at the start of the Terminal Formative in the north. The Zumpango region is occupied for the first time with the appearance of 26 new settlements (Parsons 1974b). Meanwhile population doubled in the Chalco and Texcoco regions (Parsons 1971a, 1971b). This contrasts sharply with what we find further to the south where population either decreases as it does in the Ixtapalpa region (Blanton 1972) or increases marginally over a wide area as it does around Amecameca (Parsons 1973b).

Most of the population in the northern Basin appears to have been organized into a number of autonomous and isolated political units centered around segregated elite districts. These centers were strategically located hilltop ceremonial precincts with the bulk of their corresponding populations distributed throughout the agriculturally productive Piedmont areas. Five such site clusters were located in the Teotihuacan Valley. These had Tezoyuca ceramic assemblages and were located along isolated hills adjacent to the

Alluvial Plain at the edge of the Patlachique Range. They were compact villages which contained ceremonial architecture and had easy access to both the usable valley bottom agricultural land and defendable positions along the hilltops.

A more elaborate picture of the same pattern is found in the Texcoco and neighboring regions to the south. Segregated elite districts in these areas were situated on isolated hilltops and were similar in many respects to the relatively isolated settlements in the Teotihuacan Valley. These were not large sites although they did contain complex civic-ceremonial architecture and were the most important components in a series of discrete population clusters throughout the region. A population cluster was composed of one or two segregated elite precincts which were linked with one or several large low-lying communities in either the Lakeshore plain or Piedmont zones. Four such political units have been identified in the Texcoco region (Parsons 1971a: 191-192) and one in Ixtapalapa (Blanton 1972). These clusters always contain a number of small settlements which together with the elite ceremonial precinct average between 2600 and 5600 persons. In Texcoco about 90% of the regional population can be found in these clusters. It is possible that each of these population clusters may represent an independent and integrated political unit. As such they represent an important socio-political advance during the Terminal Formative which may have been characterized by an increasing degree of social unrest.

Three levels of competition can be identified at the start of the Terminal Formative throughout the Valley of Mexico:

> "(1) at the highest level, between the major regional centers of Cuicuilco and Teotihuacan, in which the primary concern was over securing the allegiance of secondary political centers for purposes of trade, tribute, military alliance; (2) at an intermediate level, between either of the major centers (Cuicuilco or Teotihuacan) and any one of several secondary centers which might attempt to resist the efforts of the major center to incorporate it within its symbiotic-extractive network; and, (3) at the lowest level, between individual secondary centers, over access to local resources (Parsons 1971a:193)."

The success of these smallest centers may well have rested upon their ability to manipulate the interest of the two large centers to their own benefit.

Large integrated systems of regional population control were initiated during the Terminal Formative which culminated with Teotihuacan's complete dominance over the Basin during the Classic. Although the exact steps for this transition cannot be plotted at this time, it seems certain that they occurred rapidly after the removal of Cuicuilco as a regional competitor throughout the Valley of Mexico.

In the Teotihuacan Valley Patlachique phase population increased dramatically. The area occupied by the city increased ten-fold at the same time that there was an increase in rural settlement. This trend continued into the Tzacualli phase with a shift in settlement out of the Patlachique range and into the flanks of Cerro Gordo, Cerro Malinalco, and the gently sloping areas adjoining the alluvial plain. Although total rural population grew, there was a decrease in the variety of site types within the settlement hierarchy. The great dichotomy between rural and urban population aggregates characteristic of the later Classic period emerged at this time. Teotihuacan became the central socio-political unit and apparently integrated the entire lower valley into one large-scale irrigation network (Sanders 1976a:119).

If West's arguments (1965) are considered plausible concerning population shifts within the Basin during the Terminal Formative then we must re-examine to some extent the possible role of catastrophism in shaping the direction of the Central Mexican Classic. The last half of this period is certainly important for the foundation of Teotihuacan, for as Millon notes

> by the end of Tzacualli phase, Teotihuacan was already more than large enough to provide a base for the growth and expansion which occurred in the succeeding phase of the life of the city (Millon 1964:349).

The rapid destruction of Cuicuilco influenced the eventual structure of the Classic at least insofar as it speeded up the growth of Teotihuacan's territorial control of the Valley of Mexico. Sanders, Parsons, and Santley suggest that Teotihuacan acted like a huge vacuum cleaner during the Tzacualli phase pulling in most of the regional population throughout the Basin (Sanders, Parsons,

and Santley n.d.: Map FI-4).

This led to the massive depopulation of areas which previously supported large Terminal Formative population densities. In the Chalco Region Parsons (1971b) identified a population decline of some 16,000 inhabitants over Patlachique levels, a drop of about 80%. The Texcoco Region underwent a "substantial decrease in the total number of site, occupation area, occupational density, and regional population (Parsons 1971a: 196)." The population estimates indicate roughly a 75% reduction, some 15,000 persons. Similar, but less severe reductions took place in the Ixtapalapa and Amecameca regions where population is about 50% of its former levels (Blanton 1972, Parsons 1973b). Only in the north and northeastern portions of the basin in the Zumpango - Teotihuacan valley do populations continue to increase, undoubtedly as a result of their proximity to the city (Parsons 1974). Cuicuilco's destruction may not have been the cause of these changes but certainly would have increased the tempo of political unification in the Valley of Mexico which already was well underway. The extent to which Teotihuacan provided viable alternatives to the small segregated elite clusters in the form of its monopolistic control of vital obsidian resources, communication routes, and greater agricultural yields from sophisticated irrigation systems, may well have been the primary basis for its initial integration of the Mexican Basin.

The Rio Amatzinac Valley

Introduction

The Terminal Formative is without a doubt one of the poorest known archaeological phases in the prehistory of Morelos. Only a few sites have been reported throughout the state. Material known to be contemporaneous with Patlachique and Tzacualli assemblages is called Cuauhtepec near Tepoztlan (Muller 1956-57:125-217), Mazatepec II at Chimalcatlan (Muller 1948), Xochicalco I at the large western Morelos site of the same name (Noguera 1945), and Cerro Chacaltepec II in the upper levels of Grove's excavations at Tlaltizapan, Morelos (1968).

Unfortunately there are few good descriptions of the ceramics of this phase. Although Grove has described the ceramics from Cerro Chacaltepec, his phase II is a mix of both Late and Terminal Formative materials. Without an established regional chronology with which to work, the temporal assignments of sites in the Amatzinac Valley had to be worked out from scratch. A rough chronology was built by correlating stratigraphic materials excavated at Las Pilas and Chalcatzingo with the chronology in the Valley of Mexico. "Blank spots" were filled in with the help of seriating our surface collections against it. The result was less than ideal but still usable. The major ceramic types used to date our surface collections can be found in Appendix A. Our understanding is still less than it is for any preceding or subsequent phase in eastern Morelos. My feeling is that the Terminal Formative settlement pattern may have been under-represented as a result. This can only be tested and improved upon by additional research sometime in the presently unforeseeable future.

Population Distribution

The Terminal Formative settlement pattern in the Rio Amatzinac Valley is depicted in Figure 9. Fifty-five sites were located and the regional population was estimated at between 1362 and 3417 persons. Total population decreased slightly from former Late Formative Delgado phase levels where we have between 2517 and 3737 persons located in 57 sites (Hirth n.d.). The overall density was very similar to that found during the latter half of the Middle Formative Cantera phase (Table V).

The Late Formative was characterized by a large Regional Center (RAS-LF-20) together with small village communities. Although the greatest concentration of population is in the northern Pithecolobium Woodland zone in and around RAS-LF-20, there is little resource specialization by particular sites or site-zonal patterning to suggest that the valley was linked in a single integrated subsistence network. During the Terminal Formative we see a clear division between the northern and southern valley. It is possible that this division represents the distinct territories of two distinct and inde-

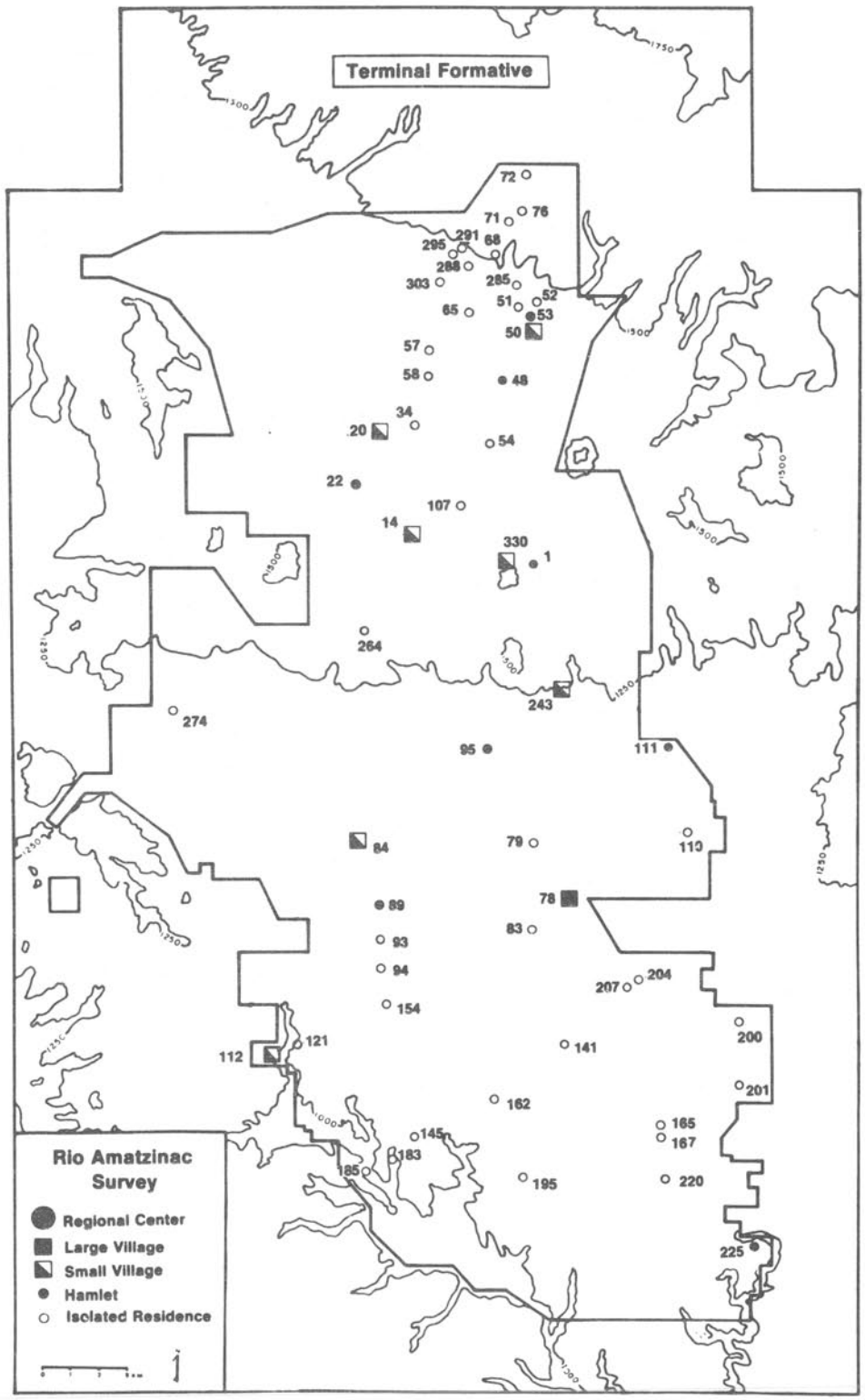

Figure 9: The Terminal Formative Settlement Pattern

pendent polities centered at RAS-TF-20 and RAS-TF-78.

In the northern half of the valley 25 settlements were found on or above the 1350 meter contour interval. This is a decrease from the preceding phase when 30 sites were found within the same region. The principal regional center during the Delgado phase (RAS-LF-20) continued to be occupied throughout the Terminal Formative. If our interpretations of surface debris distributions at this site are correct, it would appear to have diminished slightly in size. As I indicated earlier this may be an underestimate and the site may have been larger than our study indicates.

Four small villages were scattered throughout the northern valley. Sites are not strongly differentiated either in terms of size or internal complexity. There is a decrease in the population of the northern valley along with an overall reduction in the number of small hamlet communities. The clustering of small communities around RAS-20 during the Delgado phase disappeared; roughly two-thirds of the small communities during the Terminal Formative were located north of the modern pueblo of Amilcingo.

The small village of RAS-TF-50 closely resembles the segregated elite districts reported by Parsons (1971a:188-89) in Texcoco. This site was strategically placed between two steep sided barranca channels where the site could easily be defended. It also has a modest, although unusual architectural compound (Figure 10). Although the size of the resident population probably did not surpass 130 persons, no less than 12 small hamlet and isolated residences can be found within 3-4 kilometers to the north and west. Another interesting aspect of the site is the abundance of Puebla style figurines which occurs here while they are relatively scarce elsewhere throughout the valley. One private collection of these figurines was observed and photographed during the survey which numbered upwards of several hundred heads.

There is little change in the overall percentage of population living in either village or hamlet communities. Debris scatters at the sites themselves are slightly lighter and more variable than they

TABLE V

Terminal Formative Population Summary
Rio Amatzinac Valley, Morelos, Mexico

Site Number	Site in Hectares	Ceramic Intensity	Site Class	Population Estimate
1	4.50	C	H	23-45
14	7.50	B	S.V.	75-188
20	15.0	B	S.V.	150-375
22	4.50	C	H	23-45
34	.50	C	I.R.	5-15
48	2.50	C	H	13-25
50	7.50	B/C	S.V.	57-132
51	.60	C	I.R.	5-15
52	.23	C	I.R.	5-15
53	3.08	B	H	31-77
54	1.50	C	I.R.	8-15
57	.60	C	I.R.	5-15
58	.75	C	I.R.	5-15
65	.30	C	I.R.	5-15
68	.35	C	I.R.	5-15
71	.58	C	I.R.	5-15
72	.50	C	I.R.	5-15
76	.38	C	I.R.	5-15
78	35.00	B	L.V.	350-875
79	.09	C	I.R.	5-15
83	.20	C	I.R.	5-15
84	4.10	B	S.V.	41-103
89	2.50	B/C	H	19-44
93	1.75	C	I.R.	9-18
94	.40	C	I.R.	5-15
95	1.50	B	H	15-38
107	1.25	C	I.R.	6-15
110	.11	C	I.R.	5-15
111	5.50	C	H	28-55

Terminal Formative

Site Number	Site in Hectares	Ceramic Intensity	Site Class	Population Estimate
112	17.00	B	S.V.	170-425
121	.50	C	I.R.	5-15
141	.50	C	I.R.	5-15
145	.50	C	I.R.	5-15
154	.40	C	I.R.	5-15
162	.10	C	I.R.	5-15
165	.47	C	I.R.	5-15
167	.75	C	I.R.	5-15
183	.80	C	I.R.	5-15
185	.25	C	I.R.	5-15
195	.50	C	I.R.	5-15
200	.75	C	I.R.	5-15
201	.50	C	I.R.	5-15
204	.10	C	I.R.	5-15
207	.06	C	I.R.	5-15
220	.75	C	I.R.	5-15
225	1.16	B	H	12-29
243	10.00	B	S.V.	100-250
264	.50	C	I.R.	5-15
274	.31	B	I.R.	5-15
285	1.00	C	I.R.	5-15
288	.60	C	I.R.	5-15
291	.75	C	I.R.	5-15
295	.74	C	I.R.	5-15
303	.09	C	I.R.	5-15
330	7.00	B/C	S.V.	52-123
55 sites				1362-3417

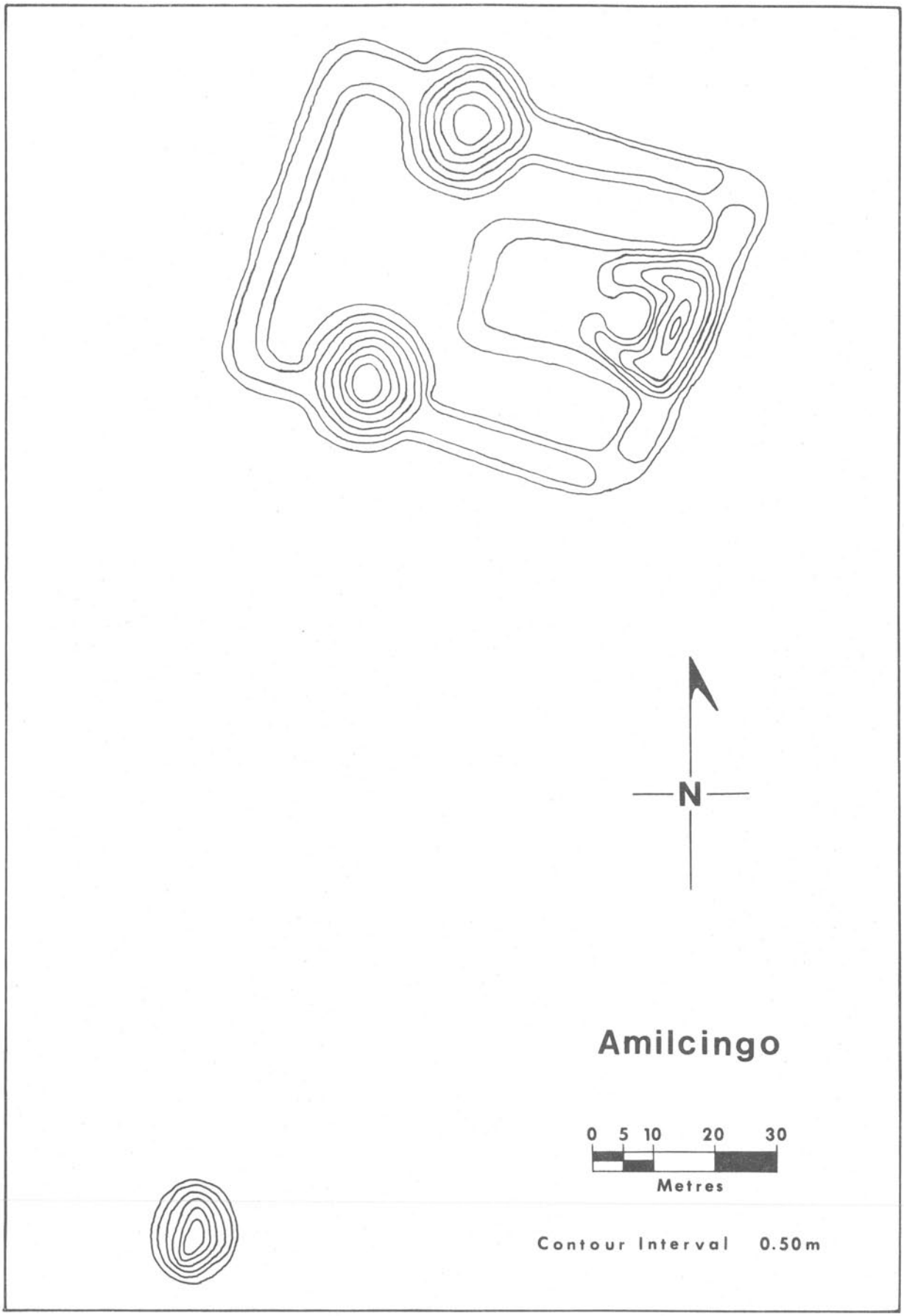

Figure 10: RAS-TF-50 Site Map

were during the Late Formative suggesting a decrease in on-site population densities. Most interesting is the shift in the location of small village communities in the southern valley.

I have noted elsewhere (Hirth 1978b) the presence of a political no-man's land which separated two territorially distinct regional polities in the northern and southern portions of the valley. Further analysis subsequent to submitting that article for publication has enhanced our understanding of this division. In the northern half of the valley this boundary can roughly be drawn between the modern pueblo of Amacuitlapilco and Cerro Chalcatzingo. The villages of RAS-330,-14, and -20 define the boundary. At the end of the Late Formative six settlements were abandoned south of this line. The only two sites which remain occupied through the phase were RAS-22 and -264. The boundary of the southern polity would lie along a line between the communities of RAS-112, -84, -95, -243, and -111.

There is an increase in population throughout the southern valley. Occupation at the two large Late Formative settlements at RAS-112 and RAS-78 continued into the Terminal Formative with the latter site emerging as a large village and the largest settlement in the valley. The southern settlement pattern appears to have taken an opposite developmental path from the north. Whereas the north was characterized by fewer rural hamlets and an increase in village settlements, the south displayed an increase in the number of hamlet sized communities and a reduction in the number of villages.

During the preceding Late Formative population had appeared in the interior portions of the valley at distances greater than one kilometer from permanent water sources for the first time. Although there was little predictive regularity attached to the site locations, the presence of several hamlet communities at regular intervals along the shallow-sided impermanent drainages suggested the possibility that small scale diversion irrigation systems may have been involved in the initial settling of the valley interior (Hirth n.d.). During the Terminal Formative, the number of these communities increased and they are clearly arranged in linear distributions along the north-to-south running barrancas. Two excellent examples of this lineality

are the "clusters" of RAS-TF-84, -89, -93, -94, -154 and RAS-TF-165, -167, and -220.

The basic subsistence orientation changed little from the preceding period. The heaviest emphasis still appears to have been on rainfall agriculture in the wetter Pithecolobium Woodland environment. A significant settlement increase occurred in the Irregular Plains slight relief topographic zone near the modern pueblo of Popotlan. The small village of RAS-50 is found in this slightly hillier area. Unfortunately, the survey zone did not extend much farther to the north or east to determine to what extent this pattern may have continued. One of the most important characteristics of this site's location is its relative isolation and restricted access from neighboring settlements.

The increase in population and the number of sites in the southern valley suggest a continued successful exploitation of the drier Acacia Grassland environment. This represents a major shift in subsistence patterns dating as far back as the Early Formative when the greatest exploitative energies and population concentration were situated in the northern Pithecolobium Woodland. The control and maintenance of diversion irrigation systems may have been an important facet of this subsistence pattern. The concomitant growth of RAS-TF-78 is interesting in this regard since it is located precisely where the steep and high barranca sidewalls of the Amatzinac widen and decrease in height. This is one of the few locales in the valley where water can be drawn from the Amatzinac with relatively little effort. It is possible that a small intensive hydraulic system may have been in operation directly below RAS-78. To date, however, all of our evidence for irrigation systems in eastern Morelos before the Late Postclassic is indirect.

During the Late Formative Delgado phase the site of RAS-LF-20 was the largest settlement in the region with a dense clustering of isolated residences in its immediately surrounding area. The result was the appearance of a strikingly compact settlement cluster in the northern Pithecolobium Woodland zone which contrasted sharply with the loosely structured and dispersed population elsewhere in

the valley. The site of RAS-20 was still the largest and probably the most important site in the north during the Terminal Formative even though it may have decreased in size. Hamlet and isolated residences no longer are found clustered around RAS-20. They cluster instead along the 1475 meter contour in the vicinity of RAS-TF-50. This shift may reflect a change in the relative prestige of communities within the northern group. The location of RAS-50 outside of the most productive agricultural area suggests that it was a special purpose site and not the political focus for the northern group as a whole. The function of RAS-TF-50 as a ceremonial center is suggested by its unique architectural compound, the absence of a large resident population, and an extremely high frequency of ceremonial paraphernalia (figurines, brasiers, censor bowls) recovered in our surface collections.

The southern valley initially gives the impression of considerably less settlement clustering than that found in the north. This is a response in part to the distribution of resources throughout the Acacia Grassland. Although fertile soils are present in many areas the feasibility of permanent settlement is at least partially dependent upon access to perennial water sources. The most attractive settlements are alongside the permanent rivers and springs. This sensitivity to water resources produced the clusters of linear stream settlements identified above.

The image of less settlement clustering in the south is incorrect when the nearest neighbor statistics are calculated for each of the Acacia Grassland and Pithecolobium Woodland environments and then compared (Table VI). The Pithecolobium Woodland zone can be characterized as approaching randomness (1.075) while the Acacia zone is slightly more clustered (.8427). The implication therefore is that given the area of the southern grasslands and the expected mean distance between sites, there is more clustering than we find in the northern Woodland. The nearest neighbor statistic for Delgado phase population in the Acacia Grassland is calculated as .7606 which suggests a slight decrease in clustering during the Terminal Formative. This probably was the result of several conditions. First, the

spread of settlement into previously unoccupied areas would generate this trend in nearest neighbor statistics (Hudson 1969). Second, the implementation of diversion irrigation systems would also favor greater periodicity of settlement within the areas where environmental factors favored their implementation.

TABLE VI

Nearest Neighbor Statistics for the Terminal Formative Phase Within the Rio Amatzinac Valley, Morelos, Mexico

	All Sites	Pithecolobium Woodland	Acacia Grassland
Terminal Formative	.665	1.075	.8427

The political integration of the southern valley can be inferred from, but not conclusively tested using the archaeological data presently at hand. The site of RAS-TF-78 grew substantially in size at the same time that diversion irrigation systems appear to be implemented in the valley interior. During the subsequent phase the number of small communities along shallow barrancas increases significantly which suggests a considerable increase in related agricultural activity. It is very possible that it had already become an important component of emerging society in the southern valley.

CONCLUSIONS

At first glance one is impressed by the number of parallels between the Valley of Mexico and Eastern Morelos and one must wonder why so few have been noticed given the striking similarities in the sociological, technological, and material aspects of the cultural assemblages. The Rio Amatzinac Valley seems to have interacted more strongly with, and was influenced to a greater degree by, the cultures of the Valley of Mexico than it had been during any preceding period. Although a number of similar developments occurred simultaneously in both regions, there were distinct organizational

differences between equivalent systems as a result of different adaptive stimuli.

Major adaptive strategies differed more as a result of differential population pressure and regionally distinct sociological variables than they did as a result of different environmental subsistence orientations. The pronounced site specialization in exploitative activities found in the Valley of Mexico is absent in the Amatzinac Valley. The location of major Terminal Formative population coincided closely with their prior Late Formative locations in the Amatzinac Region, while the two systems in the Mexican Basin were completely different.

There was very little stress in the Amatzinac Region for site location in naturally fortified locales. Fortified locales were important however in the Valley of Mexico leading to the creation of "segregated elite districts." It has even been suggested that population reduction in the Ixtapalapa Region was a result of increasingly overt competition between Cuicuilco and Teotihuacan at the start of the Terminal Formative (Blanton 1972).

The Amatzinac settlement data suggest an increase in cultural complexity during the Terminal Formative. The main development appears to be an increase in the solidarity of two regional social groups. If their social boundaries approximated the ones proposed on the basis of site clustering, then we can speak of groups which range between 1500 and 2000 persons in size. From the cross cultural perspective, groups which engage in the construction and maintenance of large special purpose architectural sites tend to be chiefdom societies with complex internal social ordering. Although this archaeological definition is less than ideal it never-the-less is a workable one for Mesoamerican societies when it is found along with evidence for internal population ranking and differential use of scarce resources. I would like to suggest that the Amatzinac population clusters reflect such social units since ranked society first appears in the Amatzinac Valley at least as early as the Middle Formative Cantera phase around 700 B.C. (Grove n.d.). It remains for future research to confirm this hypothesis or otherwise

clarify the social structure of these demographic units.

Amatzinac populations appear to have been organized similarly to those found during the Patlachique phase in Texcoco, Chalco, and the Ixtapalapa Regions. They differ in their response to regionally distinct social and environmental conditions. The Amatzinac chiefdoms, for example, are slightly smaller, less nucleated, and cover slightly larger geographic areas. They appear to be territorial and the development of diversion irrigation systems may point toward the Valley of Mexico as a strong source of influence during this period. The increased intensification of irrigation agriculture in the Teotihuacan Valley and the Texcoco region may have stimulated the rainy season diversion systems found throughout the southern Amatzinac Valley. It has even been suggested that the growth of RAS-TF-78 may also have been based on the introduction of irrigation utilizing water drawn directly from the Rio Amatzinac.

During the last half of the Terminal Formative, the Amatzinac Region and presumably other portions of Morelos came into close contact with Teotihuacan culture in the Valley of Mexico for the first time. Similarities in ceramics suggest that Teotihuacan was an important source of influence for regional Morelos populations. There is however, no evidence to suggest that the Amatzinac Region was anything other than a completely autonomous political entity during this phase. Although Teotihuacan was growing in importance during the Tzacualli phase it does not appear to have any political role in Amatzinac affairs.

An unanticipated contribution of the Amatzinac Survey has come from identifying significant amounts of Tzacualli phase material in eastern Morelos. One problem in Valley of Mexico research has been establishing whether the relative scarcity of Tzacualli material throughout the Texcoco, Chalco, Ixtapalapa, and Amecameca Regions represented a reduction in regional population during the Terminal Formative, or reflected the restriction of the Tzacualli assemblage to the Teotihuacan Valley. Clearly the Tzacualli assemblage is not restricted to the Valley of Teotihuacan, but occurs with regularity throughout eastern Morelos. Tzacualli material is more abundant

than Patlachique material which probably reflects Teotihuacan's growing supra-regional importance through Central Mexico at the end of the Terminal Formative.

At the same time that the appearance of Tzacualli phase material helps to mark the beginning of strong Teotihuacan influence in Morelos it also provides us with additional evidence about social conditions in the Valley of Mexico. If Tzacualli material can be found as far away as Morelos in substantial quantities why should it not be found with equal frequency throughout Texcoco or Chalco? Since it is not found with frequency in these two areas we are left with exploring one of two alternative explanations. Either 1) Patlachique assemblages continued to be utilized in areas of the Valley of Mexico at the same time that Tzacualli assemblages were being used in Teotihuacan, or, 2) the absence of Tzacualli assemblages throughout the Valley of Mexico reflect real population decreases of the type suggested by Sanders et. al. (Sanders, Parsons, and Santley n.d.). Based on our Morelos data, the second of these two explanations appears to be the more acceptable with populations in the Valley of Mexico moving to and relocating at a rapidly expanding Teotihuacan.

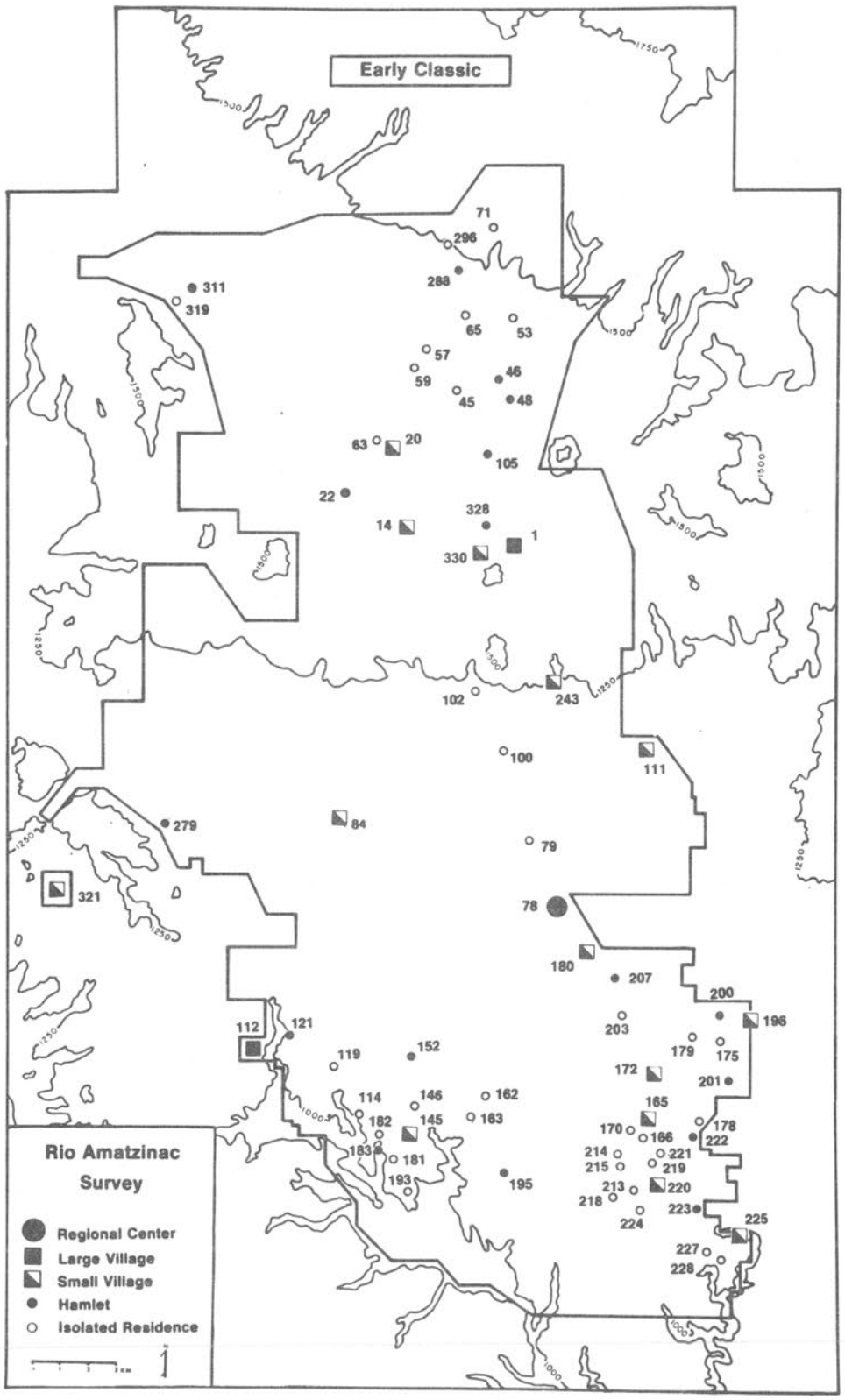

Figure 11: The Early Classic Settlement Pattern

Chapter 5

THE CLASSIC PERIOD

The Classic period can be divided into four major phase divisions within the Valley of Mexico. These are the Miccaotli (150-200 A.D.) and Tlaminilolpa (200-450 A.D.) phases which are often grouped together as the Early Classic and the Xolalpan (450-650 A.D.) and Metepec (650-750 A.D.) phases which are called the Late Classic. Over these periods Teotihuacan society reached its florescence and spread throughout Central Mexico and the adjoining environs. Outlying areas such as the Valley of Morelos were influenced by and incorporated into its expanding socio-economic domain. We can better understand how Morelos was linked to Teotihuacan if we can identify how similar or dissimilar each of the two are in terms of their respective internal organization. I will begin therefore by examining the extant Valley of Mexico data dealing with population organization which will then be compared to newly collected material from Morelos.

The Valley of Mexico Demographic Summary:

The beginning of the Classic cycle stimulated some dramatic demographic changes throughout the Valley of Mexico. Teotihuacan reached its maximum size shortly after 200 A.D. By the end of the Miccaotli phase, population was lightly spread over 22.5 square kilometers. The density of population increased during the succeeding Tlamimilolpa and Xolalpan phases reaching a peak figure of somewhere between 150-200,000 inhabitants. A period of "urban renewal" has been demonstrated for these phases when the shallow surface soil was stripped to the denser tepetate horizon to provide a sturdy foundation for heavy apartment walls (Millon 1974). Construction activity was aimed at the expansion and connection of various compounds to form larger contiguous structures. Urban population densities were higher during Xolalpan than any other period of the city's history; one western portion of the site had an estimated density of 8000 persons per square kilometer. Population in the subsequent Metepec phase declined which foreshadowed the

beginning of the end for the large center.

Population was densest at the outskirts of the city adjacent to the best agricultural land (Millon 1973:38). It is apparent that the bulk of the city's population was engaged in agricultural activity. Millon suggests, however, that the population was still highly differentiated with a significant proportion, perhaps as high as 25% being engaged in various craft specializations (1970:1080-1081). By the end of the Tlalmimilolpa phase Teotihuacan was truly cosmopolitan in nature. Tzakol period Mayan and contemporaneous Veracruz ceramics have been found along the eastern margins of the city where visitors, envoys, and traders were probably housed (Millon 1964:351). In addition, excavations at site 7: N W6 uncovered a barrio of Oaxacan people whose homeland was more than 200 miles to the south (Millon 1973:68).

All of the Valley of Mexico was under Teotihuacan's direct political control by the Miccaotli phase. If Sanders, Parsons, and Santley are correct in positing a massive population nucleation at Teotihuacan during the First Intermediate phase 4 (Tzacualli), then their Middle Horizon (Classic) pattern reflects another population migration back into the rural areas of the Basin (Sanders et. al. n.d.). Teotihuacan continued to dominate regional demography with the bulk of the Basin's population residing within the city's boundaries. This claim suggests a much greater degree of population restructuring and movement than had been suggested previously. Whether rural depopulation took place at the beginning or end of the Tzacualli phase the result was still the same, a restructuring of regional population to fit the design of a controlling urban elite. From the beginning of the Classic, rural population appears to have been intentionally geared toward the production of a surplus to meet the city's subsistence needs.

Teotihuacan more than doubled its size at the start of the Classic swelling from a Tzacualli phase level of 30,000 inhabitants to at least 65,000 in the Early Classic. When the Valley of Mexico is viewed as one demographic unit a series of demographic anomalies become apparent during the Patlachique/Early Classic transition.

We are presented with a situation where the growth of Teotihuacan depended upon an immigration of persons from rural areas but where the decrease in rural population at the end of the Patlachique apparently exceeds the amount of persons hypothesized as having been resettled within the city limits during either the Tzacualli or Classic phases. If the survey material accurately indicates such a trend then we must conclude that the growth of Teotihuacan had a negative or parasitic effect on the development of its rural landscape, a characteristic which Hoselitz discusses at length in his treatment of urban-rural evolution (1955). Classic populations may have stagnated or even declined due to processes involved in the growth and development of Teotihuacan and not have continually increased as traditionally thought (Sanders 1972).

Socio-economic Organization:

A number of sites in the Texcoco and Ixtapalapa regions appear to have specialized in exploiting specific resources such as salt, fish, waterfowl, or other aquatic resources from the lake margins. On the whole however environmental diversity does not appear to have been very important in structuring the work activities at the community level. Most of the population in the southern Valley of Mexico was attracted to the Lower Piedmont zones where rainfall cultivation or simple irrigation could have been practiced. There is little evidence for any large irrigation system of the type proposed for the area immediately surrounding Teotihuacan. We likewise lack excavated data from any rural community outside of the Teotihuacan Valley which would help us substantiate claims for specialized agricultural activities. The dispersed nature of these rural communities allows us to infer that a "calmil" cultivation pattern was employed where the residential structure was normally located adjacent to, or within, its garden plots.

This differs from the rural situation observed in the Teotihuacan Valley where even small village communities were tightly nucleated, laid out along grid coordinates, and perhaps specialized in one-crop production. Excavations at TC-8, in the northern

piedmont of the Lower Teotihuacan Valley, suggest a dependence of rural population on the market economy and craft specialists of the central city (Sanders 1967). Evidence for the manufacture of ceramics, lithic and wooden tools was almost entirely absent. Sanders has credited this absence to the centralized control and redistribution of all nonlocal resources by Teotihuacan's central market. Obsidian blades and scrapers were certainly used in high proportions in what appears to have been maguey processing at the site, but these appear to have been procured directly from lithic workshops located by Spence in the central city (1967).

Classic settlement patterns so far reported in the Valley of Mexico contrast sharply with Late Postclassic Aztec settlement which was highly sensitive to land form, ecological zone, and agricultural system. Classic settlement patterns are strongly non-ecological in character and resemble to a greater degree, the sixteenth-century Hispanic-Colonial pattern when Indian populations were purposely moved to easily accessible communities for the purposes of facilitating taxation, proselytization, and labor exploitation (Sanders 1967:132).

Changes in Classic social structure may have been the result of the emergence of the calpulli system of kinship organization. Millon has suggested that the apartments at Teotihuacan were inhabited by large corporate work groups based upon extended family kinship organization (1970, 1976). Sanders' valley excavations suggest that rural populations were organized very similarly to the rural Aztec calpullecs although with a greater degree of urban dependency and influence (1965a).

Settlement patterns indicate a social structure with a great degree of centralized political authority. The system is administratively top-heavy resulting in atrophy of mid and low level organizational mechanisms. In contrast to the Terminal Formative, where population was structured in a five-step hierarchy of site types and rural population densities were high, the Classic is characterized by a reduction in total rural population, and the reversion to a three-step hierarchy dominated by one large center 10-20 times the size of any other community. Teotihuacan was at

the top of the hierarchy, with a range of small rural village-hamlet communities not surpassing 10 hectares on the bottom. These communities were linked to Teotihuacan through a number of regional centers located at Xico Island, Cerro de la Estrella, Atzcapotzalco, Tultepec, and Portezuelo. Regional centers coordinated and controlled local exploitative tasks and served as small market centers for their immediate regions. These were essentially large village communities (expressed in terms of my comparable Morelos site-size classification) and never expanded much beyond 70 hectares in size and 1000 persons in population. Rural-urban interaction and symbiotic exchange probably decreased as one moved out into the hinterland, a function of transportation cost. Local symbiosis was not as strong perhaps during the Classic as we would sometimes presume (Blanton 1972:190-191). The location of Teotihuacan off in the northeast corner of the Valley of Mexico and the absence of a well-developed hierarchy of nested administrative centers precluded the formation of any highly developed intraregional exchange network other than direct economic centralization and redistribution controlled by the central city.

The Rio Amatzinac Valley, Morelos

A good portion of the research conducted in Morelos during the past 10 years has focused on the social development prior to 500 B.C. Although we now have a fair understanding of the Formative chronology, the later phases, especially the Classic, are still poorly known. Prior to this study the most complete descriptions of Classic phase material were from excavations at Xochicalco (Noguera 1945, 1947; Muller 1974) and Chimalacatlan (Muller 1948). Classic material had been reported from the upper excavated levels of Gualupita (Vaillant and Vaillant 1934), at Chalcatzingo (Pina Chan 1955a, 1956-57), Olintepec (Pina Chan 1956-57), Xochimilcatzingo (Pina Chan 1956-57), Ehecatepec near Tepoztlan (Muller 1956-57) and Cerro Chacaltepec (Grove 1958), but had not been described in enough detail to establish the sub-phase controls necessary for a meaningful analysis of settlement patterns.

One of the objectives of the Proyecto Chalcatzingo settlement

survey was to measure the degree of regional population restructuring which accompanied Teotihuacan influence in eastern Morelos. This meant identifying the range of local ceramic and lithic artifacts manufactured during the Classic and correlating their sequence of development with events in the Valley of Mexico. This had to be done before we could effectively date and evaluate materials collected from the reconnaissance. Fortunately, excavations were initiated at the Classic site of Las Pilas, Jonacatepec by the Instituto Nacional de Antropologia while the survey was in progress. I was invited to analyze a portion of the excavated material during the summer of 1973. This provided enough chronological control to phase the Amatzinac settlement patterns into Early and Late Classic periods contemporaneous with those of the Valley of Mexico. A brief description of the ceramic attributes used in dating the surface collections can be found in Appendix A. We look forward to the publication of the final report from the work at Las Pilas which has been under the direction of Argla. Guadalupe Martinez Donjuan of the INAH since 1974.

Early Classic Settlement Patterns

Population Distribution:

The settlement pattern found in the Rio Amatzinac Valley during the Early Classic is depicted in Figure 11. A total of 69 sites was identified and the regional population is calculated to have ranged between 3118 and 7359 persons (Table VII). The Early Classic was clearly a period of significant population increase and demographic restructuring throughout the Amatzinac Region. Population was more than twice the size of Terminal Formative levels. Thirty-four sites which had Classic occupations could not be further subdivided into either Early or Late subdivisions because they lacked sufficient diagnostic material to make the assignments. Most of these unphased sites are small isolated residences. The population estimates for these sites vary between 247 and 685 persons. It is my hope that future work in the area will assist in redefining their period of occupation.

The uneven division of Terminal Formative population between

the northern and southern portions of the valley continued. In the northern portion of the valley the Terminal Formative population which amounted to between 518 and 1265 persons in 26 sites did not change significantly. During the Early Classic we find 527-1275 persons located in 20 settlements. The small village communities of RAS-14, RAS-20, and RAS-330 continued to be occupied. The site of RAS-TF-50 is abandoned while a new small village appeared at RAS-1.

The leveling-off of population in the north was counterbalanced by a tremendous increase in the southern valley. During the Terminal Formative 844-2152 persons were located in 29 settlements. This increased to 2591-6084 persons in 49 sites. The site of San Ignacio (RAS-78) grew from a large village during the Terminal Formative to a regional center during the Early Classic. It was the largest and most influential community in the valley and the focus for a number of socio-political changes in the southern valley.

There were only three small village communities in the southern valley during the Terminal Formative. The number increased to 11 during the Early Classic with six of these appearing for the first time at the southern end of the survey zone. Virtually the entire Early Classic population increase can be accounted for by the growth of RAS-EC-78, RAS-EC-112, and a multitude of new sites situated below the 1050 meter contour interval. The site of RAS-112 continued to grow and is represented as a large village at this time. Three of the six southernmost small village communities, RAS-172, RAS-180, and RAS-196 had contained some amount of Terminal Formative occupation. The most striking demographic change however was the appearance of 21 new hamlet settlements below RAS-78 and RAS-112.

The settlement configuration of the entire Rio Amatzinac Valley can be characterized by the emergence of a dominant regional center with a concomitant increase in the size and organization of rural population. It should be noted that the growth of a major regional center in conjunction with an <u>increase</u> in the population and number of rural sites is virtually unique for all portions of

TABLE VII

Early Classic Population Summary
Rio Amatzinac Valley, Morelos, Mexico

Site Number	Size in Hectares	Ceramic Intensity	Site Class	Population Estimate
1	20.00	C	S.V.	100-200
14	16.50	B	S.V.	165-413
20	6.00	B	S.V.	60-150
22	1.50	B	H	15-38
45	.50	B	I.R.	5-15
46	.85	B	H	9-21
48	3.00	C	H	15-30
53	1.50	C	I.R.	5-15
57	1.28	C	I.R.	5-15
59	.25	C	I.R.	5-15
63	.50	C	I.R.	5-15
65	.35	C	I.R.	5-15
71	.28	B	I.R.	5-15
78	61.31	B	R.C.	613-1533
79	.10	C	I.R.	5-15
84	6.30	B	S.V.	63-158
100	.72	C	I.R.	5-15
102	1.12	C	I.R.	5-15
105	3.00	C	H	15-30
111	15.72	B/C	S.V.	118-236
112	25.00	A/B	L.V.	438-938
114	.22	C	I.R.	5-15
119	.20	C	I.R.	5-15
121	3.00	C	H	15-30
145	10.35	B	S.V.	104-259
146	.16	C	I.R.	5-15
152	1.69	A	H	43-85
162	.16	B	I.R.	5-15
163	.45	C	I.R.	5-15
165	4.72	A	S.V.	118-236

Early Classic

Site Number	Size in Hectares	Ceramic Intensity	Site Class	Population Estimate
166	1.00	C	I.R.	5-15
170	1.19	C	I.R.	5-15
172	13.45	A/B	S.V.	236-454
175	.36	C	I.R.	5-15
178	.10	B	I.R.	5-15
179	.18	C	I.R.	5-15
180	10.00	B	S.V.	100-250
181	.49	B	I.R.	5-15
182	.50	B	I.R.	5-15
183	3.02	B	H	30-75
193	.05	C	I.R.	5-15
195	2.25	B	H	23-57
196	15.00	B	S.V.	150-375
200	3.00	B	H	30-75
201	1.25	B	H	13-32
203	.26	C	I.R.	5-15
207	2.90	C	H	15-29
213	.08	C	I.R.	5-15
214	.70	C	I.R.	5-15
215	.09	C	I.R.	5-15
218	.48	C	I.R.	5-15
219	.19	C	I.R.	5-15
220	4.50	B	S.V.	45-112
221	.19	C	I.R.	5-15
222	1.55	C	H	8-16
223	4.00	B	H	40-100
224	.22	C	I.R.	5-15
225	5.00	B	S.V.	50-125
227	.28	C	I.R.	5-15
228	.50	C	I.R.	5-15
243	5.10	B	S.V.	51-127
279	1.60	C	H	8-16

Early Classic

Site Number	Site in Hectares	Ceramic Intensity	Site Class	Population Estimate
288	.83	B	H	8-21
296	.41	C	I.R.	5-15
311	1.50	B	H	15-38
319	.57	B	I.R.	5-15
321	15.00	B	S.V.	150-375
328	.75	B	H	8-19
330	7.25	B	S.V.	72-181
69 sites	292.52	TOTAL POPULATION		3118-7359

the Mexican Highlands surveyed to date which maintained contact with Teotihuacan during the Classic. As we have seen in the Valley of Mexico the pattern is more typically one of rural population decline relative to urban growth or its dispersion into small settlements directly controlled by a regional center.

Although further investigation is required to determine the specific reasons behind this settlement configuration, a tentative explanation can be offered at this time. The growth of RAS-EC-78 appears to be directly related to its emergence as the region's dominant political authority. Although authority was centralized, much of the population was dispersed throughout the southern landscape, probably to intensify local agricultural activities. The well ordered settlement hierarchy appeared which efficiently administered and maximized production in these dispersed populations. The small village communities were intermediate administrative centers complete with civic-ceremonial architecture. Hamlet and isolated residences were linked to these small villages which were linked in turn to RAS-EC-78. The site of RAS-EC-112 may have functioned as a hierarchical intermediate for small village communities located at the southwest corner of the valley (RAS-145) and in the unsurveyed mountain area to the west. The site of RAS-EC-321 would be an example of a site linked to RAS-112 in this western area. The strength of the hierarchical relationships between the sites in the southern valley can be seen by the "nesting" of hamlet settlements within the service hinterlands of the small and large village communities.

It appears that the large and small village communities were distributed to control and coordinate the greatest amount of hinterland activity. The hierarchical arrangement is most apparent in the southern half of the valley. In the north, hamlet and isolated residences do not appear to have been as tightly clustered around their immediately higher-ordered central-places (small villages). The variation in hierarchical nesting between the northern and southern portions of the valley may be the combined result of: 1) the residual effect of Terminal Formative integration under RAS-20

in the northern valley, or, 2) different subsistence activities which stressed different settlement configurations in each portion of the valley.

Socio-economic Organization

An important aspect of the Early Classic subsistence pattern was the continued exploitation of the dry Acacia Grassland in the southern valley. Exploitation may have intensified as a result of implementing more intensive irrigation technology. Although the presence of irrigation is extremely difficult to demonstrate archaeologically, there is evidence to suggest that it may have existed at San Ignacio. Here the deeply incised sidewalls of the Rio Amatzinac disappear and the vertical drop decreases to about three meters. A number of artificial terraces were built into the Amatzinac which may have been used to ease the water out of its natural course to the fields above. Likewise, aerial photographs of this area reveal faint linear soil marks which may be the remains of irrigation canals.

As I mentioned earlier, the area south of Las Lomas is dissected by a complex network of shallow sided barrancas. These barrancas carry seasonal runoff the length of the valley until it is added to the Rio Amatzinac or Rio Frio at the southern end of the valley. Most of the southern settlements are situated directly adjacent to these natural waterways. Their importance in determining settlement location suggests that diversion irrigation systems were a major adaptation at this time. The location of all the Early Classic residences is along the extreme lower reaches of these barrancas where the collection of water is the greatest. A strong emphasis was placed on locations where two or more of these barrancas merged, maximizing overall water collection. Although this form of exploitation was probably first initiated during the preceding Terminal Formative, it reached its greatest utilization during the Classic. The most important facet to be noted from the position of these southern settlements is that the regional hinterland was intentionally structured at the start of the Classic. If Terminal Formative sites had remained along the northern reaches of these

runoffs they would have prevented the successful operation of more extensive systems in the south.

It has been suggested elsewhere that many of the southern communities were engaged, at least for a portion of their productive energies in cotton production (Hirth 1977, 1978b). Climatically, the southernmost portion of the valley is best suited for this type of agriculture. Its hot and dry climate is a natural deterrent to destructive insect plague. Small scale cotton production today is restricted to this southern subclimate where lesser amounts of chemical spraying are necessary and it still is a profitable enterprise. Sanders and Price (1968, Figure 10) include this area of Morelos in the cotton producing areas for Tenochtitlan during the Late Postclassic. The discovery of cotton bolls in a Late Postclassic context during the 1973 excavations at Chalcatzingo, Morelos supports this contention.

The subsistence system clearly reflected a strong southern emphasis. The stagnation of population growth in the northern Pithecolobium Woodland environment was probably the result of a major reliance upon irrigation technology and the emergence of a specialized agricultural economy in the drier Acacia Grassland. If drier climatic conditions were a prerequisite for specialized cotton production, many of the communities in the slightly wetter north may well have engaged in a greater range of unspecialized products to augment the regional subsistence base. Establishment of cotton production as a major activity during the Classic will have to await further investigation. It is likely that it would have been combined with other crops since production of cotton at the time of European contact was essentially in or near house plots. The important thing to note about this system, however, is that despite the "crop mix" it would appear that we have a clear case of <u>regional</u> production specialization. This is quite different from the type of individual site specialization found during the preceding Formative phase. With regional specialization an adjustment is required not at the level of the individual site, but for the system as a whole.

An analysis and comparison of ceramic assemblages in the Rio Amatzinac Valley with those of the Valley of Mexico indicates strong interaction with Teotihuacan during the Early Classic. Although the assemblages are not identical, large quantities of Teotihuacan trade wares are found and locally made ceramics appear to be copies of counterparts in the Valley of Mexico. A large proportion of obsidian recovered at Classic sites is the green Pachuca variety apparently also a Teotihuacan controlled commodity (Spence 1967: 510-11). The presence of a strongly influenced artifact assemblage in combination with the already noted demographic changes, an increase in total population, and the restructuring of its regional distribution, point to the direct intervention of Teotihuacan's powerful and manipulatory political authority. The Amatzinac Region appears to have been an important area in Teotihuacan's sustaining hinterland. It should be recognized, however, that the internal organization of hinterland areas and their articulation with Teotihuacan were different in Eastern Morelos than they were in the Valley of Mexico. It appears that these organizational differences are due to the distinct roles they played in the emergence of Teotihuacan society but this will be discussed later in greater detail.

Appendix A presents a brief description of the diagnostic ceramics used to identify Classic sites and gives a fairly good idea about the strength of Teotihuacan contact. One of the most striking characteristics of the Amatzinac Region is the preponderance of Thin Orange, a widespread Classic tradeware found in large quantities at Teotihuacan. Thin Orange is found in virtually <u>every</u> regional settlement in the survey zone. Thin Orange is a common Classic diagnostic throughout much of Mesoamerica, and is generally assumed to be a good indication of Teotihuacan contact. The quantity of Thin Orange in the Amatzinac region is much higher than it is in either western Morelos (Angulo and Hirth n.d.), eastern Puebla (Hirth and Swezey 1977), Puebla-Tlaxcala (Dumond 1972:108-109) or northern Tlaxcala (Snow 1969).

The next most frequent ware was the category of Rose on Granular White, another important tradeware for Teotihuacan. It appears from

the quantity of Rose-on-Granular that it was more important in the Amatzinac sites than it was in the Valley of Mexico. Although the source of Thin Orange is assumed to lie somewhere in southern Puebla or Veracruz, the origin of Granular ware is unknown. As at Teotihuacan, Granular ware in eastern Morelos occurs principally in the amphora form. Excavated material from Las Pilas, Morelos places its initial appearance within a mixed Late Formative-Terminal Formative horizon. This date has been confirmed by excavations at Cuautlita, Coatlan del Rio, and Miahuatlan, Morelos by Hirth and at Cacahuamilpa, Guerrero by Litvak and Angulo. The wide array of forms and decoration found in these excavations suggests some yet to be identified portion of western Morelos or eastern Guerrero as the center-of-production for this poorly constructed, yet aesthetically pleasing Classic trade ware.

Another striking similarity between the Valley of Mexico and Amatzinac ceramic assemblages is found in the utilitarian forms, specifically the olla. Although the pastes are composed of local clay, the form, surface treatment, and even firing practices appear to have been identical. It is unlikely that utilitarian ceramics such as ollas were ever traded over long distances except as containers for the goods they held so that the similarities we note should generally reflect strong cultural interaction with Teotihuacan Valley and do not appear at all until the end of the Tlamimilolpa phase.

Not all aspects of the Amatzinac assemblage parallel that of Teotihuacan. Regional variations are clearly apparent. In ceramics for example figurines are rare throughout the Amatzinac. Talud-tablero architecture is absent while ballcourts are found. Ballcourts are rare during the Classic throughout the highlands and none have been found at Teotihuacan itself. Four Classic ballcourts have been identified in the valley at RAS-78, RAS-112, RAS-180, and RAS-330 (Chalcatzingo). This last ballcourt was excavated as part of the Proyecto Chalcatzingo and dated to the late Tlamimilolpa or early Xolalpan phase. One of the Classic pyramids excavated at Chalcatzingo is likewise unusual in that it had round corners which

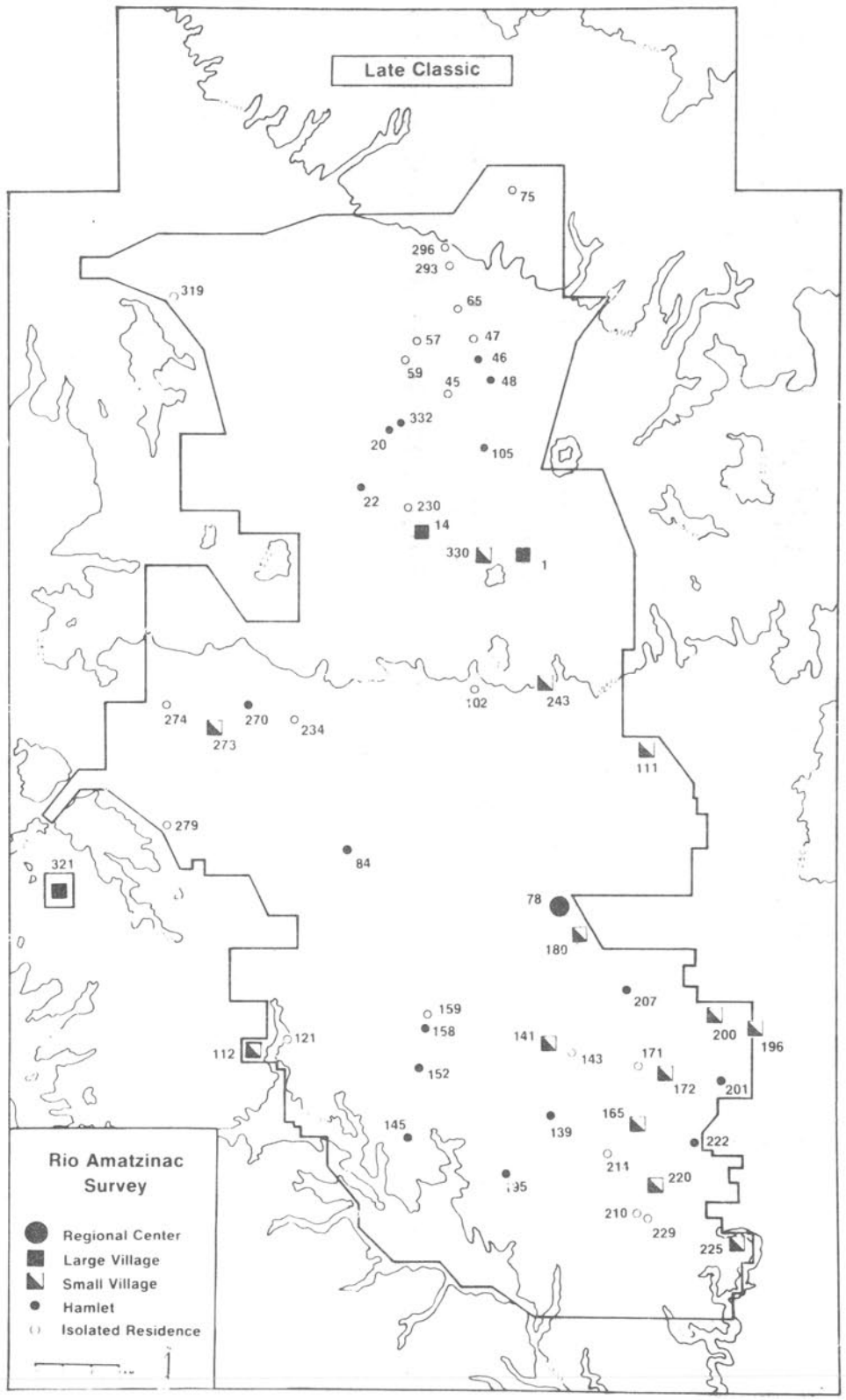

Figure 12: The Late Classic Settlement Pattern

have not been reported elsewhere in Central Mexico during the Classic.

The southern Terminal Formative chiefdom served as a structural springboard for demographic reorganization during the Classic. San Ignacio (RAS-EC-78) was a large regional center and probably had the same administrative role in Teotihuacan's sustaining hinterland as did the Valley of Mexico sites of Portezuelo and Atzcapotzalco. It was as large or larger than either of these two sites and its principal concern was probably the coordination of regional productive activities and collection and forwarding of regional surpluses to Teotihuacan. Although the Amatzinac Region may have had a similar function in the city's sustaining hinterland as did portions of the Valley of Mexico like Texcoco or Chalco, we must remember that it was clearly unique in terms of its demographic development and internal organizational structure.

The close similarity in a number of utilitarian ceramic wares between the Amatzinac Region and the Valley of Mexico might be interpreted to suggest that a body of Valley of Mexico residents could have accompanied the increased social interaction with Teotihuacan. Teotihuacan administration may have required the relocation of a few administrative personnel, but it remains to be seen whether any sort of proletariat migration occurred. Until evidence suggests otherwise, I would tend to doubt it; the overall population increase of 3942 inhabitants between the Terminal Formative and Early Classic periods can comfortably be accounted for by an annual growth rate of less than one half of one percent over the length of the phase.

Late Classic Settlement Patterns

Population Distribution:

The settlement configuration in the Amatzinac Region during the Late Classic is depicted in Figure 12. A total of 55 sites were positively identified, with a total regional population of between 3606 and 8427 inhabitants (Table VIII). A complete range of settlement types is still represented. Population increased

slightly, with an increase of 1068 persons over the preceding phase. More interesting however was the restructuring of population as the phase progressed.

Beginning around 500 A.D., the former emphasis upon southern valley specialization and population dispersal began to weaken. Although San Ignacio (RAS-LC-78) continued to be the most important center during the Late Classic, population in the northern portion of the valley increased in size relative to the south. RAS-LC-1 emerged as the second largest settlement in the valley while RAS-LC-14 grew to large village status. During the preceding Early Classic the northern area had a total of 20 settlements and a population estimated between 529 and 1275 persons. Although the number of sites remained at 20 during the Late Classic the population rose to between 716 and 1552. This increase in the size and number of northern settlements was balanced by a decrease in the south. The large village site of RAS-112 which had served as an intermediary link between the rural farmsteads and the large center of San Ignacio decreased in size to a small village. This probably reflects an increase in centralized control within the valley with administrative accountability flowing directly to San Ignacio. There is an overall decrease in the "nesting" of hamlet and residence communities in and around small villages all of which point to the sort of "linearization" of administrative institutions discussed by Flannery (1972).

The greatest single effect of centralizing authority in this way was an abandonment of the southwest corner of the valley around the modern town of Quebrantadero. Rural communities in this area which were previously "nested" under RAS-45 were completely abandoned in the Late Classic. Both RAS-112 and RAS-45 diminished in size. The emphasis is still on settlement-subsistence activities in the Southwest portion of the valley. Although the number of small communities dropped to about half of what it was during the Early Classic, the number of small villages increased from five to seven during the same period. This is part of the continual trend toward <u>increased</u> population nucleation that started midway through

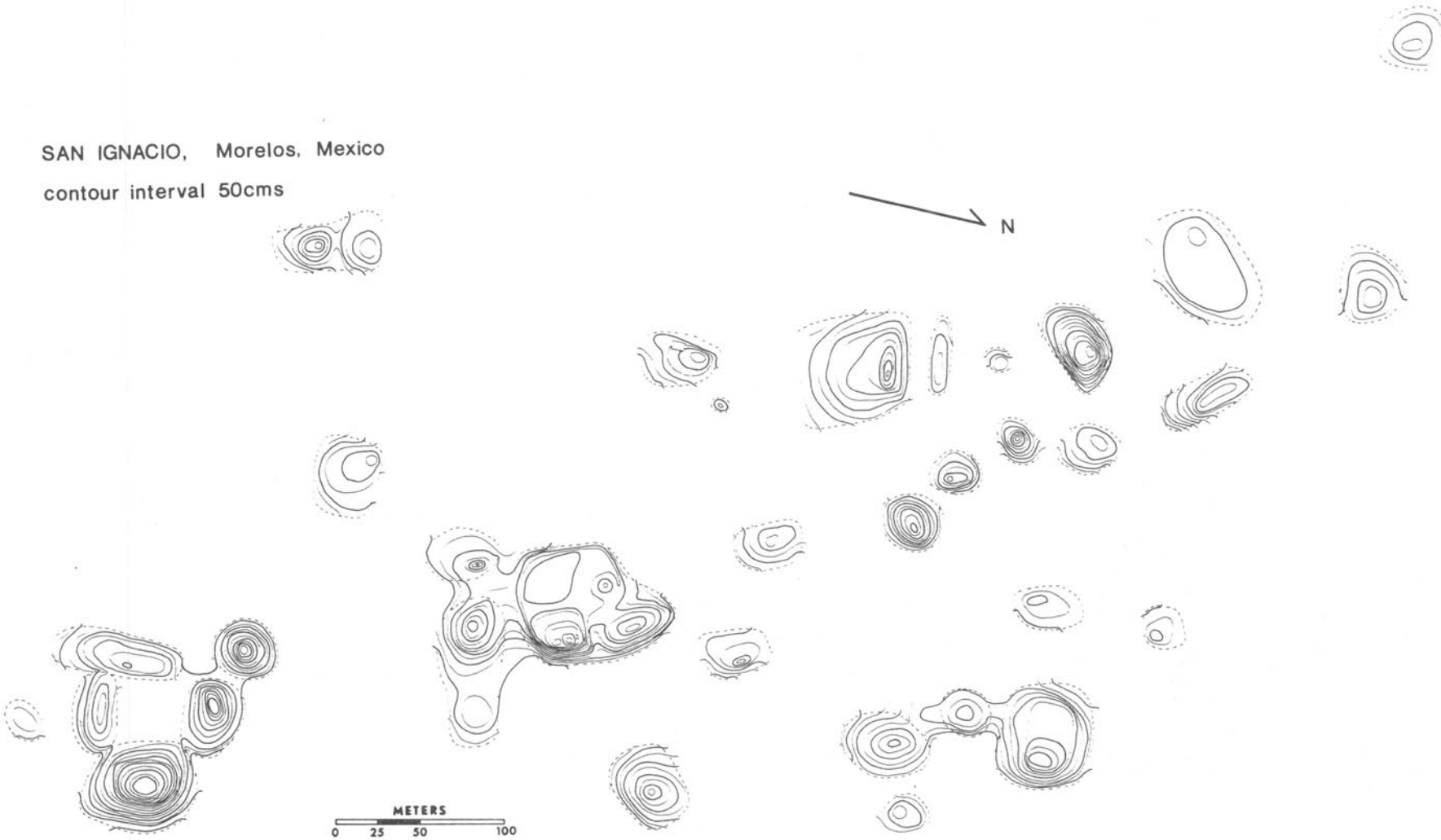

Figure 13: San Ignacio (RAS-78) Major Ceremonial Zone Site Map

TABLE VIII

Late Classic Population Summary
Rio Amatzinac Valley, Morelos, Mexico

Site Number	Size in Hectares	Ceramic Intensity	Site Class	Population Estimate
1	25.00	B	L.V.	250-625
14	20.70	B	L.V.	207-518
20	5.00	C	H	25-50
22	2.20	B	H	22-55
45	.50	B	I.R.	5-15
46	1.10	B	H	11-28
47	.59	C	I.R.	5-15
48	4.65	C	H	23-46
57	1.28	C	I.R.	5-15
59	.25	C	I.R.	5-15
65	.28	C	I.R.	5-15
68	.25	C	I.R.	5-15
75	.15	C	I.R.	5-15
78	79.84	A/B	R.C.	1197-2661
84	5.00	C	H	25-50
102	1.12	C	I.R.	5-15
105	2.00	C	H	10-20
111	15.72	B/C	S.V.	118-236
112	12.50	A/B	S.V.	218-469
121	1.15	C	I.R.	5-15
139	1.70	A	H	43-85
141	2.01	A	S.V.	51-101
143	.52	C	I.R.	5-15
145	4.00	B	H	40-100
152	.68	B	H	7-17
158	1.16	B	H	12-29
159	.25	C	I.R.	5-15
165	4.72	A	S.V.	118-236
171	1.49	C	I.R.	5-15
172	10.00	B	S.V.	100-250

Late Classic

Site Number	Size in Hectare	Ceramic Intensity	Site Class	Population Estimate
180	10.00	B	S.V.	100-250
195	2.25	B	H	22-55
196	15.00	B	S.V.	150-375
200	5.00	B	S.V.	50-125
201	1.00	B	H	10-25
207	2.90	C	H	15-29
210	.32	C	I.R.	5-15
214	.70	C	I.R.	5-15
220	7.43	B	S.V.	74-186
222	3.42	C	H	18-45
224	.22	C	I.R.	5-15
225	5.00	B	S.V.	50-125
230	.12	C	I.R.	5-15
234	.22	C	I.R.	5-15
243	9.00	B	S.V.	90-225
270	.71	B	H	7-18
273	12.00	C	S.V.	60-120
274	.31	B	I.R.	5-15
279	1.00	C	I.R.	5-15
293	.24	C	I.R.	5-15
296	.41	C	I.R.	5-15
319	.57	B	I.R.	5-15
321	26.00	B	L.V.	260-650
330	10.25	B	S.V.	103-258
332	2.00	C	H	10-20
55 sites	321.88	TOTAL POPULATION		3606-8427

the Classic.

This increased population nucleation can be seen in a number of ways. The number of small hamlet and isolated residences dropped from 52 during the Early Classic to 38 during the Late Classic. At the same time that the number of small communities was diminishing, the number of large villages was increasing from one to three. The number of small villages remained the same (13) although there are some interesting changes in the location of all village communities within the valley.

The number of village communities decreased in the northern valley despite the appearance of two large villages at RAS-1 and RAS-14. The site of RAS-LC-321 reached large village status at the same time that RAS-LC-112 dropped in size to a small village. The reason behind this could have been the loss of RAS-112's position within the settlement hierarchy at an intermediary position between San Ignacio and the rural population in the southwest corner of the valley and the mountain area to the west. The growth of RAS-321 in the west suggests that it may have taken this on as a new role.

The increase in size of San Ignacio in and of itself was more than enough to account for the total population increase within the Amatzinac Region during the Late Classic. San Ignacio grows to just under 80 hectares in size with an extensive civic-ceremonial complex of well over 50 mounds. A sketch map of the ceremonial zone can be found in Figure 13. The concomitant reduction in the number of dispersed hamlets throughout the southern valley suggests that the rural population may have been relocated within the limits of San Ignacio. This trend could also account for the growth of the large village communities of RAS-1, RAS-14, and RAS-321 in each of their respective areas, as well as the two new small villages in the southeastern corner of the valley where we found the densest Early Classic habitation.

This trend may have intensified during the last 100 years of the Classic during what is normally called the Metepec phase in the Teotihuacan chronology. Figure 14 depicts the Late Classic sites which we know from our surface collections were definitely occupied during the Metepec phase. It appears that only the largest

sites continued to be occupied up through the end of the Classic. Care should be taken not to misinterpret this figure. No attempt is being made to estimate the size of the Metepec phase settlement. The sites represented are only those Late Classic settlements where Metepec material was found. We could not maintain enough control over the collections, nor was the material abundant enough, to calculate a regional population estimate for this period. As is fairly evident, the largest sites are the most frequently represented. Some of the smaller sites may also have been occupied contemporaneously but because the period is so short, Metepec phase influences may not have impacted and left their mark on the ceramic assemblages in the Amatzinac Region. This is precisely what happened during the Late Postclassic. Aztec domination of the area was just over 80 years in duration which was not long enough to impact the local ceramic assemblage as we view it from the archaeological perspective.

Two interesting aspects of the Late Classic settlement configuration emerge as a result of our analysis. We can see a selective stress for 1) more defendable locales, and 2) greater population density in the northern valley by the end of the Classic which might suggest a shift in local subsistence patterns. San Ignacio started to wane in importance toward the end of the Classic losing some of its regional influence to growing settlements at RAS-LC-321 and the combined influence of the neighboring sites of RAS-LC-1 and RAS-LC-330. The need for defendable site location was symptomatic of Teotihuacan's faltering grip over the Amatzinac Region and increased competition for economic resources by centers throughout the Mexican Highlands.

Socio-Economic Organization

The available data on subsistence activities suggest very little in the way of individual site specialization. Judging from site location, floodwater irrigation systems continued to be important in the exploitation of the southern valley but not to the extent that they had been during the first half of the Classic. No less than 14 isolated residence and hamlet communities located on or within 250 meters from the seasonally filled shallow barrancas were aban-

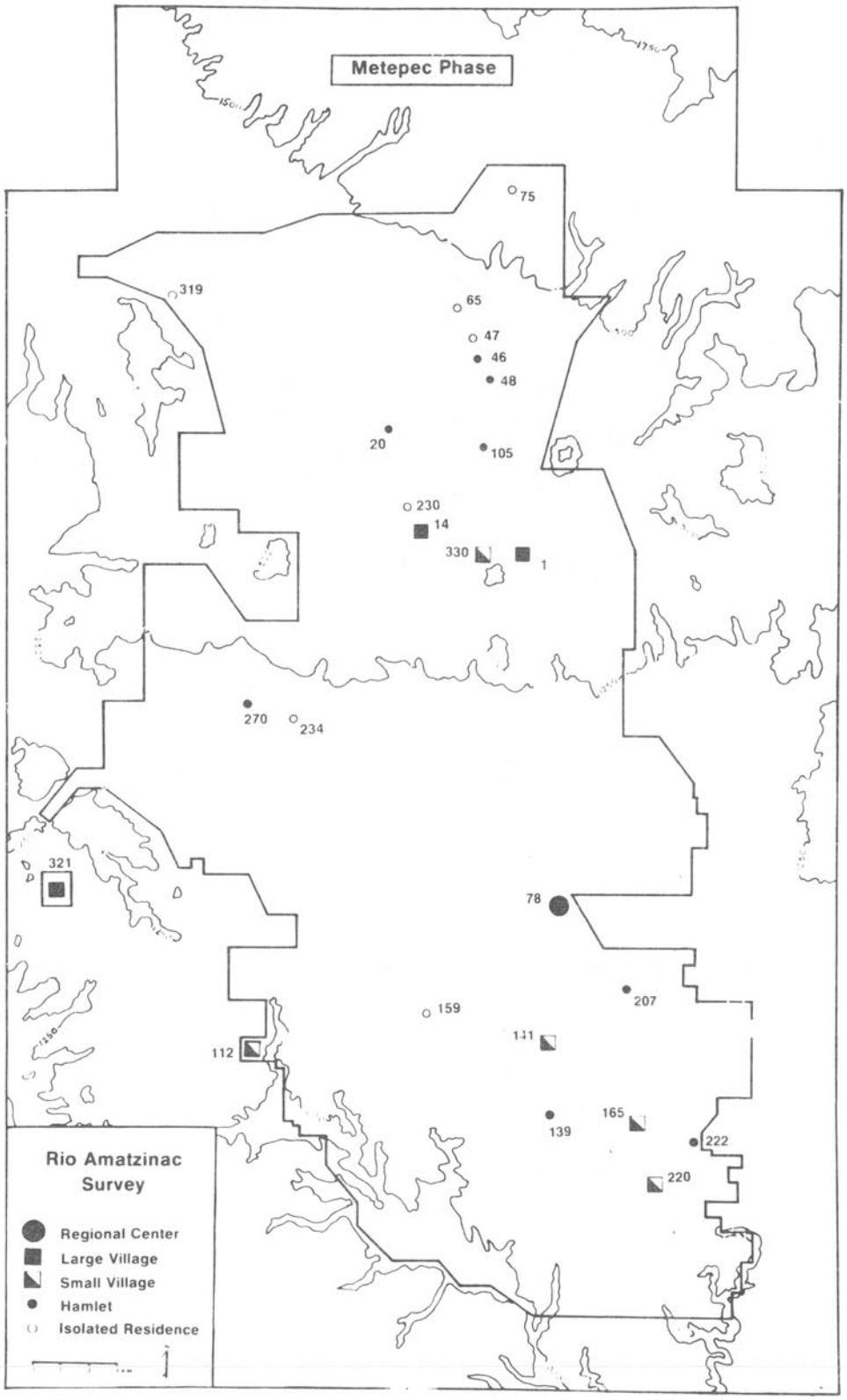

Figure 14: Metepec Phase Settlement Pattern

doned at the start of the Late Classic. Increased emphasis was again placed upon rainfall agriculture in the northern half of the valley and grew in strength as the major subsistence orientation as the Classic drew to a close. I do not believe, however, that the decreased utilization of flood water irrigation was directly related to a reduced demand for its specialized agricultural produce or a result of system inefficiency. These were expensive systems to maintain and administer, the return from which may not have warranted their continuation over time. Although drier climatic conditions might have reduced the productivity of these systems and favored a return to rainfall agriculture in the north, this does not explain why they were only discontinued in the southwestern portion of the valley unless administrative factors were also involved.

For all practical purposes the Amatzinac Region remained an important sustaining area for Teotihuacan during the Late Classic. As the Classic drew to a close, however, it is clear that these connections became weaker and less frequent. Although the ceramic assemblage was still influenced by the Valley of Mexico, the similarities were as strong as they had been during the late Tlamimilolpa and Xolalpan phases. Some ceramic classes are well represented. Xolalpan and Metepec phase mold-made figurines enjoyed a much wider distribution than did the mold-modeled and modeled counterparts of the Early Classic. Thin Orange punctate and the Late Classic "flecha" variety of Rose on Granular White are frequently found. The intricately stamped, molded, and carved vessels which served as a Teotihuacan hallmark for this period are rare, but still represented at about 20 percent of the sites. Shallow outflaring monochrome dishes, an important Metepec bowl form, occurred but had a very restricted regional distribution. Little similarity existed, however, in the plainware or utilitarian assemblages of the two regions. This stands in glaring opposition to the former Early Classic situation where similarities were especially striking in olla forms. The shortnecked olla forms which are highly diagnostic of Late Xolalpan and Metepec occupations throughout Teotihuacan and the Texcoco Region are rare in the Amatzinac Region.

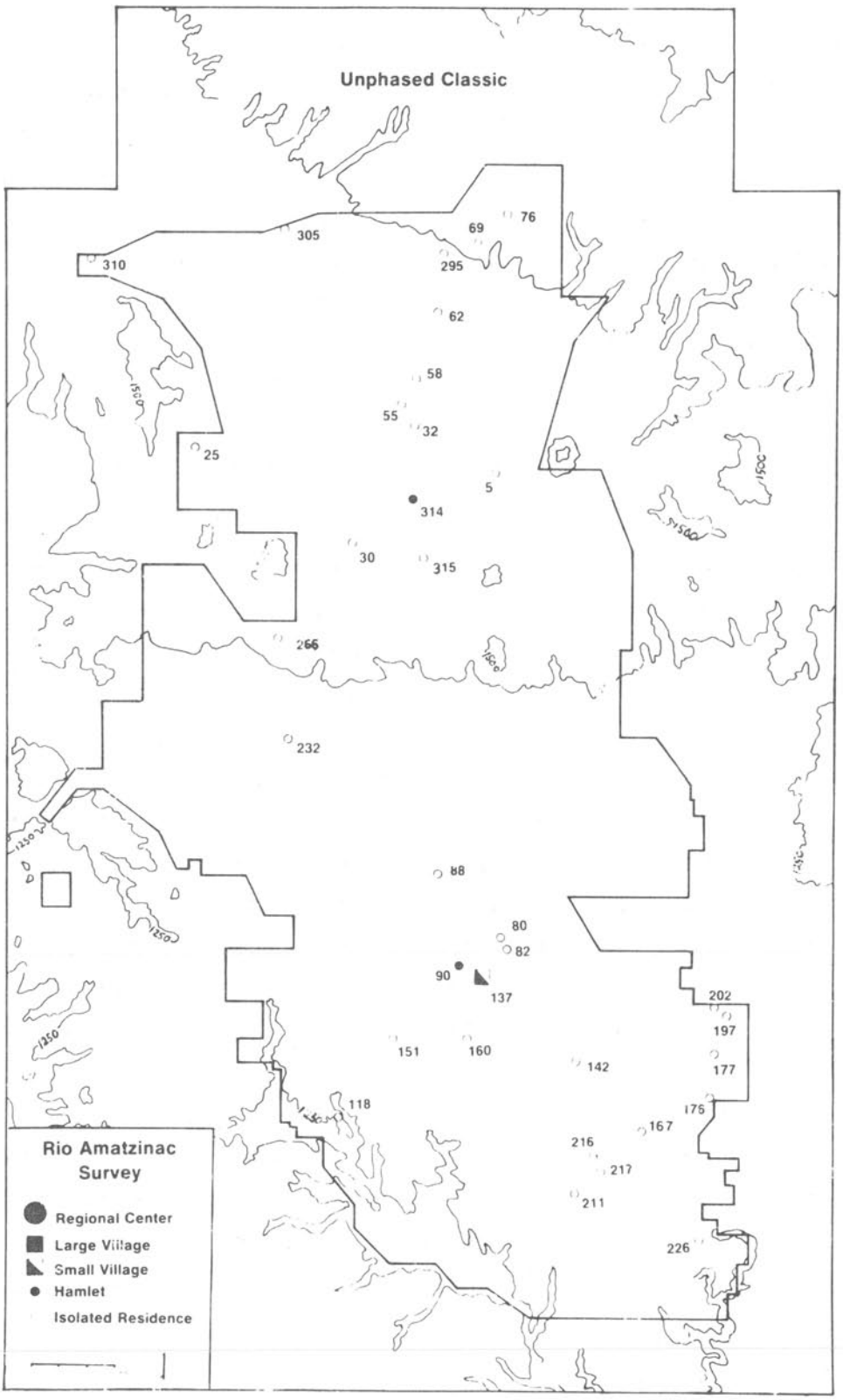

Figure 15: Unphased Classic Settlement Pattern

Some time during the Late Classic, contact with western Morelos began to make itself felt in the Amatzinac Region. Although the ceramic assemblage was still more closely related to the Valley of Mexico, the increased occurrence of external basal flanging and molded basal breaks on flatbottomed cylindrical vases suggests the growing importance of Xochicalco and its "as-yet" enigmatic functional position in highland development. Other diagnostic forms such as the Z-angle bowl occur during the subsequent Early Postclassic, but they, like the basal flange forms, show closer decorative similarities with the Valley of Mexico than they do with Xochicalco. Surface treatment on a number of Z-angle forms in the survey collections is very similar to the contemporaneous Coyotlatelco red-on-buff tradition from the Valley of Mexico.

Social organization during the Late Classic was characterized by a very apparent increase in centralized administration. The number of small isolated residences decreased and this population was relocated at an increasing number of village communities. This trend may have been related to a partial abandonment of diversion irrigation systems and the produce they generated. Although this point will be discussed in greater detail in the subsequent chapter, this entire configuration may have been an adaptation to shrinking supply of extraregional resources and not the willful design of a stronger, centralized government.

Unphased Classic

A total of 34 Classic sites were located throughout the Amatzinac Valley which could not be assigned with any certainty to either of the early or late subphase divisions because of the low number of diagnostics recovered in the surface collections. These sites are depicted in Figure 15. Most of these sites are small hamlet or isolated residence communities with populations not exceeding between 20-30 persons. Population estimates for this group of sites are between 247 and 685 persons reinforcing the idea of a strong rural focus in subsistence and settlement activities during the Classic (Table IX). These sites are noteworthy because they underscore the importance of rural dispersion as a significant aspect

of Classic settlement patterns in the Amatzinac Region. If we can identify the precise subphase of these small sites in the future we will be able to further clarify the nature of sociopolitical changes in the Amatzinac Region after the Classic period was underway.

Conclusions

In recent years it has become increasingly clear that Teotihuacan dominated the daily socio-economic activities of numerous culture groups throughout the Central Mexican highlands. According to Parsons (1971a) this provided Teotihuacan with an unimpeded flow of necessary foodstuffs to support its large population. Control over these areas was maintained through the nucleation of population into administrative centers and movement of at least a portion of the population into Teotihuacan. Teotihuacan grew at the moment that outlying areas were depopulated and it is speculated that population nucleation was the principal means to facilitate control over the "productive output" of labor in both agricultural and craft specializations. Regional activities throughout the south and central Valley of Mexico would have been controlled by Teotihuacan through administrators in a number of secondary regional centers usually numbering about 1000 inhabitants. Although regional populations operated primarily as subsistence suppliers for the large urban aggregate, they were neither ecologically specialized in their productive activities nor aided by irrigation technology.

This population model, although it is a good one for explaining developments in the Valley of Mexico, should be used with some caution when talking about other areas of Central Mexico. Trends of population growth in other areas of Central Mexico need to be tested and not merely "derived" from known events in the Valley of Mexico. I have noted earlier in this report that if the regional population estimates are compatible with those for estimating the size of Teotihuacan, then its entire net population increase during the Early Classic can be accounted for by the relocation of regional population from Texcoco and Chalco at the end of Patlachique. Despite the use of different field methods, it is interesting to

TABLE IX

Unphased Classic Population Summary
Rio Amatzinac Valley, Morelos, Mexico

Site Number	Site in Hectares	Ceramic Intensity	Site Class	Population Estimate
5	.31	C	I.R.	5-15
25	.01	C	I.R.	5-15
30	.58	B	I.R.	5-15
32	.45	C	I.R.	5-15
55	.68	C	I.R.	5-15
58	.54	C	I.R.	5-15
62	.26	C	I.R.	5-15
69	.10	C	I.R.	5-15
76	.38	C	I.R.	5-15
80	.38	C	I.R.	5-15
82	.20	C	I.R.	5-15
88	.41	C	I.R.	5-15
90	3.20	C	H	16-32
118	.21	C	I.R.	5-15
137	4.87	B	S.V.	49-122
142	.42	C	I.R.	5-15
151	1.39	B	H	13-35
160	.33	C	I.R.	5-15
167	.21	C	I.R.	5-15
176	.21	C	I.R.	5-15
177	.31	C	I.R.	5-15
197	.36	C	I.R.	5-15
202	.14	C	I.R.	5-15
211	.27	C	I.R.	5-15
216	.32	C	I.R.	5-15
217	.37	C	I.R.	5-15
226	.22	C	I.R.	5-15
232	.39	C	I.R.	5-15
266	1.20	C	I.R.	5-15
295	.39	C	I.R.	5-15

Unphased Classic

Site Number	Size in Hectares	Ceramic Intensity	Site Class	Population Estimate
305	.61	C	I.R.	5-15
310	1.21	C	I.R.	5-15
314	.30	C	I.R.	5-15
315	2.25	C	H	11-22
34 sites		TOTAL POPULATION		239-673

note that none of the investigators working in either northeastern Puebla or Tlaxcala have reported population increases between the Terminal Formative and Classic periods (Garcia, Cook 1973, 1978, Snow 1969, Tschol 1966). The same is true for western Morelos (Angulo and Hirth n.d.). It is becoming increasingly possible that the absolute population growth may have reached a stable plateau or even declined slightly in Central Mexico during the Classic.

In the Rio Amatzinac Valley, the premise of "control-through-nucleation" and the transition from the Terminal Formative to the Classic was substantially different than what we can observe in the Valley of Mexico. Instead of a massive rural-to-urban population migration, the Amatzinac Region was characterized by an increase in rural population and the appearance of more diversified settlement hierarchy. Population was relocated not into one particular community but into a specific ecological zone, the southern Acacia Grassland. Small hamlet and village communities sprang up in combination with the growth of a dominant center in the southern valley. Maintaining a substantial degree of rural population was extremely important in the specialized production of subsistence foodstuffs and/or a cotton industrial crop with a floodwater irrigation system. From a functional point of view the Amatzinac Region was very similar to portions of the Valley of Mexico which were engaged in the production of a variety of surpluses consumed or used in Teotihuacan. From a structural point of view however many of the demographic and organizational aspects of the Amatzinac system were directly opposite from that observed in the Valley of Mexico at the same time.

During the Late Classic the structural similarities of the two regions became much more similar. Population increase slowed and by the last gasp of the Classic the Amatzinac population may have begun to decline. Without a doubt population moved into fewer and larger sites during the Late Classic. The Early Classic hierarchy of administrative centers and corresponding site "nesting" began to dissolve. The importance of rural settlement in the southern Acacia Grassland diminished. Nearest neighbor analysis suggests a decrease in settlement clustering in the southern Acacia Grassland during the Late Classic (Table X). At the same time there was a shift from randomness to more clustered settlement in the northern Pithecolobium Woodland. Conditions and events which stimulated the appearance of the Teotihuacan system during the Tzacualli phase did not impact the Amatzinac Region in a similar way. The characteristic phenomena of rural-to-urban population migration, a topheavy centralization of authority, and population stagnation finally appeared in eastern Morelos but as the result of distinct environmental conditions and with a different developmental history.

The Valley of Mexico and the Amatzinac Valley differed greatly in the major events which brought about the emergence of Teotihuacan. They had different "specializations" within Teotihuacan's sustaining hinterland which affected their level of regional socio-political organization. In the case of the Amatzinac Valley, initial contact with Teotihuacan had a generative impact upon its regional economy. Membership in Teotihuacan's sphere of economic exchange would have created a new demand for Amatzinac subsistence products. The result as I have hypothesized was rapid economic growth, and specialization in production activities to maximize newly available returns to scale. The forces behind the growth of rural settlement and its hierarchical organization during the Early Classic are best approximated by the ideas of Gibbs:

> Continued improvement in transportation and communication make it possible for a population to obtain services and maintain existing socio-economic relations without a high degree of concentration. The result is...a more even spatial distribution of population. The basis of population distribution in (this ultimate) stage...is residential dispersion and not a decline in interdependence; this means

> that the deconcentration does not result in widely scattered communities that have virtually no economic relationships with one another (1970:173).

And in a different way by Kingsley Davis:

> The same forces which have made extreme urbanization possible have also made...dispersion possible, and the dispersion itself has contributed to further urbanization by making large conurbation more efficient and more endurable (1955:436).

TABLE X

Nearest Neighbor Statistics for
Classic Phases Within the
Rio Amatzinac Valley, Morelos, Mexico

	Terminal Formative	Early Classic	Late Classic
All sites	.665	.607	.614
Pithecolobium Woodland	1.075	1.198	.895
Acacia Grassland	.843	.675	.786

These two authors are discussing centrally organized administrative systems which maintain control over dispersed populations. The Early Classic settlement pattern was a sophisticated and an administratively expensive system to establish and maintain. It continued in operation as long as it benefited from its specialized position within the Teotihuacan system of commerce. The Amatzinac system is an example of economic specialization at the "regional" level as opposed to site-specific specialization by individual settlements in the environmental zone in which they occur.

The specific hypothesis that has been examined in this chapter is that the Rio Amatzinac Valley was included within the sustaining hinterland of Teotihuacan during the Central Mexican Classic. The work so far clearly indicates that this indeed was the case. It is also clear, however, that many of the basic assumptions about the processes of growth and structure of regional population in Teotihuacan's hinterland sustaining areas do not apply in the Amatzinac

Region. Although both regions exhibit trends of continual population nucleation and rural abandonment throughout the Classic, the reasons behind these trends and their stages of development are strikingly different. Teotihuacan society did not have a strong impact on Amatzinac population structure until the end of the Terminal Formative. For the first time Morelos populations are controlled by a social entity in the Valley of Mexico. Prior to this time Morelos populations operated as socially autonomous groups.

Chapter 6

CONCLUSIONS

To this point I have restricted my discussion to an analysis of population development within the Rio Amatzinac Valley. Comparison with the Valley of Mexico was used to help identify the processes at work and the conditions which set them in motion. Little attempt was made to incorporate these findings into the broad perspective of Central Mexican prehistory, so that will be undertaken here. To date no other full scale, intensive settlement survey has been published for Morelos. As a result any conclusions reached about population development in the state as a whole must be viewed as speculation until data are forthcoming from other regions. Research being conducted in western Morelos by the Proyecto Coatlan del Rio is beginning to shed light on the demographic development of that region, but we must await the final analysis of that material before our comparisons are complete.

The Late and Terminal Formative

Development after 500 B.C. was characterized by the appearance of complex chiefdom societies throughout most of the Central Mexican highlands. During the Late Formative (550-150 B.C.) we see a number of important developmental changes. Population expanded and we see the appearance of numerous large settlements and better integrated political systems to control regional population. Centralized economic systems appeared organized around a political authority which regulated the distribution of resources (Sanders and Price 1958:132). There was a shift in the nature of interregional trade away from long distance exchange for sumptuary goods with areas such as the Gulf Coast or Oaxaca to what can best be called intermediate exchanges (Renfrew 1975) within the highlands. Scarce resources still moved throughout Mesoamerica but through a reduced number of trade connections as redistributive systems emerged, and interregional exchanges became more and more the tasks of persons in chiefly offices (Pires-Ferreira and Flannery 1976).

A number of important centers appeared throughout the highlands as early as the Middle Formative which maintained control over the collection, movement, and redistribution of agricultural and natural resources in loosely structured trading areas. Through time a number of these settlements grew to become large and powerful trading centers. The transition from a free trade area to controlled hinterlands came about as small elite groups gained a monopolistic control over the acquisition and redistribution of key resources. Important centers are found during the Late Formative at Cuicuilco, in the Valley of Mexico, Tlalancaleca in Tlaxcala, Amalucan in the Valley of Puebla, and Coatlan del Rio in western Morelos.

By the Terminal Formative (150 B.C.), the number of major mercantile trade areas had shrunk and only two areas were functioning as relatively distinct trading spheres. These were centered in the Valley of Mexico and the Valley of Puebla. The destruction of Cuicuilco toward the end of the Late Formative placed Teotihuacan in control of its former trade area. In fact the ability to sustain large Patlachique and Tzacualli phase populations at the site was probably made possible in part through a widening of the Valley of Mexico exchange sphere. A number of new areas were rather loosely incorporated at this time including the northern Puebla-Tlaxcala area due east of the Valley of Mexico, a portion of northern Morelos on the southern slopes of the Ajusco Mountains, and probably a portion of the greater Toluca Basin. This contrasted with the strong control Teotihuacan began to exercise over the Valley of Mexico. The portion of the Valley of Puebla in and around Cholula resisted Valley of Mexico influence until around 0 A.D. when characteristics of the Patlachique assemblage began to be absorbed.

During the Late Formative, the Amatzinac Region appears to have been as involved in trade with Puebla to the east as it was with the Valley of Mexico. As Cuicuilco grew in power at the close of the Late Formative, contact between Morelos and the Valley of Mexico became more and more important. In the northern and northwestern portions of the state a number of sites, such as Pantitlan, Gualupita, and Ehecatepec, show strong cultural affiliations with

Cuicuilco. It is likely that they were directly incorporated into its Late Formative sphere of trade. Although a good deal more work needs to be done on the Morelos Late Formative, it appears that strong Cuicuilco interaction was probably restricted to north central Morelos. Similarities between Amatzinac materials and Ticoman style artifact assemblages are most likely the result of contact with these sites than direct interaction with the Valley of Mexico.

The Late and Terminal Formative periods in Morelos were characterized by the appearance of a number of distinct regional chiefdoms. Two social groups are found in the Amatzinac Region by the end of the Terminal Formative: one centered in the northern half of the valley at Amacuitlapilco (RAS-TF-20), and the other in the southern portion of the valley at San Ignacio (RAS-TF-78). The distribution of regional population around and between these two settlements suggests they were independent centers for what I have hypothesized as two regionally autonomous demographic units. There is no correlation between settlement occurrence and the proximity of defendable locales to suggest that these polities were hostile toward one another. There is, however, a hiatus in the continuity of regional settlement which suggests the existence of a vacant no-man's-land separating the two polities. The nucleation of population on either side of this buffer zone helps to demarcate the spatial limits of the two chiefdoms. The formation of lines of "frontier" village settlements to bound and protect an area is an important facet which should not be overlooked in the evolution of society in Central Mexico. They reflect the emergence of "territorially defined groups and associations, an important characteristic of early states" (Krader 1966). The Terminal Formative in the Amatzinac Region reflects the final stage of local population development after the decline of Chalcatzingo as the major site in the region after 500 B.C. (Grove et. al. 1976). Teotihuacan influence begins to make itself felt toward the end of the phase with the appearance of Tzacualli phase material at some Amatzinac sites.

The Classic Period

Teotihuacan Influence in the Amatzinac Region

The beginning of the Classic period brought many portions of the Mexican highlands under the control of Teotihuacan's expanding socioeconomic network. The Amatzinac Region was one of these. I have discussed the profound socio-demographic changes which accompanied the growth of Teotihuacan in the Valley of Mexico and have pointed out how it impacted regional organization in the Amatzinac Region. Inclusion within Teotihuacan's growing sphere of pan-Mesoamerican commerce brought about a new level of economic activity in eastern Morelos. The Amatzinac Region gained access to a wider supply of goods moving through its interregional exchange network. Being included within the Teotihuacan system increased the total demand for Amatzinac produce and stimulated the agricultural specialization noted in the southern portion of the valley.

Terminal Formative floodwater irrigation systems in the southern valley were apparently expanded at the start of the Classic. Two-thirds of the thirty new settlements established in the south during the Early Classic were located in areas where diversion irrigation was possible. Fifteen of these are small settlements located along the downstream portions of impermanent drainages where water collection is greatest. The number of new settlements established on or within 250 meters of impermanent drainages jumps to 30 when all phases of the Classic are considered. Population increased significantly and with increased contact with Teotihuacan we find a familiar trend, the relocation and restructuring of regional population. Amatzinac population was shifted from the northern portions of the valley to the drier south in accordance with the requirements of specialized rural agriculture. Population was distributed throughout a large number of hamlet and small village communities, hierarchically tied to the primary regional center of San Ignacio through a well developed settlement hierarchy.

The Amatzinac data forces us to expand our model of Teotihuacan society so that a wider array of factors can be accommmodated within a processual framework. Population growth and structure in the Amatzinac Region were different than have been found in other highland

areas surveyed to date. Because of regional agricultural adaptations, the demographic trends of rural depopulation and urban growth which are characteristic of the Valley of Mexico do not appear at the onset of the Classic. They appear as the Classic draws to a close and for different reasons than they did in the Valley of Mexico. Changes in the size and structure of rural population levels in the Valley of Mexico occurred as a result of the formation and emergence of Teotihuacan. The abandonment of rural areas and the nucleation of population during the Late Classic in the Amatzinac Region were the result of system inefficiencies created by Teotihuacan after it had become a Mesoamerican power. Population nucleation and rural abandonment found during the Classic in the Valley of Mexico were synonymous with the formation of the Teotihuacan system, while the same events in the Amatzinac Region occurred as the Classic drew to a close.

During the Early Classic specialization in subsistence activities may have required the formation of control mechanisms to coordinate and structure work in the rural areas. In the Amatzinac Valley these activities were organized through the establishment of the administrative hierarchy already discussed. Toward the end of the Classic hierarchical organization of rural population began to break down. Population was nucleated into fewer and larger settlements and there was greater centralization of political control. The growth rate for regional population slowed and internal settlement complexity diminished. There was a decrease in regional specialization and portions of the floodwater irrigation systems were abandoned.

During the Early Classic the initial socioeconomic restructuring of areas under Teotihuacan control would have led to immediate increases in the returns to scale through an increase in efficiency in the flow of commodities. This allowed the appearance and operation of a number of expensive and specialized settlement-production systems. The Rio Amatzinac Valley is an example of one such region. During the last 100 years of the Classic, the economic machine of Teotihuacan bogged down. A decrease in the overall efficiency of

the Teotihuacan polity would have led to reduced interregional exchange. Specialized regional subsystems like the Amatzinac Region would either have been eliminated one after another or forced to adjust in other ways to a lesser flow of commodities. This then was the weakness of the Teotihuacan system. As time went by the administrative cost of expanding mercantile activity over Mesoamerica finally caught up to and began to surpass the benefits (profits) derived. Decreases in the total returns to the system were not matched by a reduction in the structure of institutionalized relationships which linked all of the remaining subsystems.

The nucleation of rural Amatzinac population into fewer and larger settlements toward the end of the Classic was in part a response to these conditions. Where regional population dispersion was a functioning part of agriculture specialization, rural abandonment led eventually to reduced productivity. This not only reduced the size of exportable surpluses but had a compounded effect upon the Teotihuacan system as a whole. The elimination of specialized subsystems would have reduced the total supply of commodities available and flowing throughout the system. As scarcity increased within the system, it was advantageous for individual consumers to relocate closer to, or at the source of, regional supply, the large regional centers, to insure the free and unimpeded access to goods and resources. Late Classic nucleating population in areas outside the Valley of Mexico may partially have been motivated by the need to maintain access to an ever decreasing supply of scarce resources. For the most part, the data necessary to test this proposition are not adequate. Only in the eastern valley of Puebla do the same processes appear to be taking place (Hirth and Swezey 1977).

These events foreshadowed the eventual collapse of Teotihuacan system. Scarcities of Amatzinac goods (including cotton) in combination with other shortages across the highlands, could have led to nucleation in other subsystems as well. The result would have been a decrease in total systemic productivity in a net amount greater than the sum of decreased productivity in any one of its specialized subsystems. As a response, hinterland populations would

have continued to nucleate creating another problem for Teotihuacan, the presence of large hinterland population aggregates.

It is an established fact in urban geography that an increase in the number of urban residents creates the need for more services and more service-related specialists (Jacobs 1969). In complex societies, these needs are fulfilled by full time specialists which are supported by an agricultural surplus. The quantity of full time specialists engaged in production and administrative activities at Teotihuacan was undoubtedly large. The support of these and other individuals was dependent upon the flow of agricultural commodities and resources from the rural areas into the city. Teotihuacan as market center and administrative capital controlled and consumed a good portion of its system's resources. The danger of nucleating population in hinterland areas is that critical surpluses for Teotihuacan are consumed by the growing, non-agricultural populace of regional centers in the hinterland. Not only may agricultural productivity decline but also the supply of available resources flowing throughout the system and into Teotihuacan would decrease at an increasing rate. I believe that the collapse of Teotihuacan was predicated, at least in part, upon its inability to counter disequilibrium in its more distant hinterlands. The Teotihuacan system collapsed from the inside as it did not have the sociopolitical means necessary to maintain its economic establishment.

A Model for the Integration of Regions Under Teotihuacan Control

Based upon the observations presented and discussed in this and preceding chapters a general model for the Teotihuacan Classic can be suggested which attempts to take into account some of the functional, structural, and historical aspects of the Central Mexican Classic. This brings us to a point raised earlier but set aside until now. That is, some of the organizational variation found within Teotihuacan's political domain was a function of its historical development and not planned out ahead of time. There appears to be considerable variation in the intensity and distribution of Teotihuacan artifacts and culture throughout Mesoamerica. Its influence does not occur in homogeneous blocks as would be expected if regions were systematically added to an empire through conquest.

Teotihuacan influence is strongest along natural corridors of trade and communication. There is good evidence to suggest that the control of resources on a large scale was a primary factor for the spread of Teotihuacan influence throughout Mesoamerica. By comparison with the Late Postclassic, low population densities during the Classic presented less in the way of potential competition for resources flowing between regions. Teotihuacan could have been selective in its control of key regions. There was less risk of disarticulation of key regions from the system through competition than there was for the Aztecs during the Late Postclassic. When populations were denser, demands on resources were greater, and competitive polities were more numerous. The situation just described in combination with the natural discontinuities of transportation routes, agricultural productivity, and scarce resources would suggest a multicomponent model for the integration of Teotihuacan's socioeconomic realm. As we now envision it, the Teotihuacan network was composed of at least four distinct subsystems.

The first and most basic of these subsystems was Teotihuacan's primary area made up of the areas which directly participated in the emergence of Teotihuacan during the Terminal Formative. The primary core was a relatively small area which included all of the Valley of Mexico and perhaps a small portion of the neighboring regions of western Tlaxcala and southern Hidalgo. Teotihuacan was the dominant social and economic community for these regions during the Terminal Formative. This area should be archaeologically identifiable by a relatively high percentage of Tzacualli style artifacts in the site assemblages. It was within this core area that Teotihuacan developed its characteristics which would classify it as a Primate City (Blanton 1976). This involved a significant amount of demographic restructuring at the onset of the Classic. A large segment of the regional population in the more densely settled areas was nucleated within the urban center. These relocated populations engaged in full time craft specialization or intensive cultivation in the Teotihuacan Valley. Rural population specialized in specific agricultural and collective exploits in the production of a surplus for consumption in the central city. The most prevalent settlement

type was the hamlet-village compound with regional production activities coordinated by small regional centers rarely exceeding 1000 inhabitants.

The second subsystem can be called the core margins, which together with the core area supplied the remainder of the urban center's requirements. These areas were dominated by Teotihuacan after it emerged as a major state power. These areas were not involved directly in the creation of Teotihuacan's unique urban society, but helped to support it as its realm engulfed them after about 300 A.D. The demographic structure of these areas varied considerably with the functions they fulfilled. Some areas, like the Amatzinac Region, where there was a considerable degree of regional specialization in agriculture, required significant population restructuring. In other areas the addition of Teotihuacan administration was less severe and there was continuity in the type and intensity of local activities. This secondary core area integrated a wide range of apparently distinct culture groups into a single system. Some of the regions included in this subsystem appear to be the Rio Amatzinac Valley and portions of central and northwestern Morelos; the Toluca Basin; areas of southern and central Hidalgo; south, southeastern, and central Puebla including the large and powerful center of Cholula; portions of Tlaxcala; and perhaps a small part of northeastern Guerrero.

The third subsystem was centered around a long distance trade network which articulated very distant areas with Teotihuacan. The distinguishing characteristic of regions in this subsystem is that they were too distant to be involved in the daily subsistence maintenance of Teotihuacan. Regions in this subsystem supplied a variety of other critical resources and raw materials too distant to fall within the immediate control of the Teotihuacan core area. Control of key resource areas was achieved, according to Parsons, by the movement and ascendancy of segments of the Teotihuacan political elite into positions of local political importance thereby taking and assuring control of local production. Long distance outposts were established which controlled "the production of, and/or

access to, critical goods and products required by Teotihuacan" (Parsons 1971a:239). In addition they became important markets for Teotihuacan's products, a factor often overlooked in the growth of large prehistoric commercial systems. I doubt that Teotihuacan's extensive system of long distance trade could have been maintained without a strong military backup potential. Areas included within this subsystem would have included the Kaminaljuyu-Lake Amatitlan and Santa Lucia regions of Guatemala, portions of Veracruz in and around the site of Matacapan, the Cotzumalhuapa-Esquintla region, and other scattered areas throughout the Rio Blasas depression in Guerrero.

The fourth and last category of Teotihuacan influence includes those areas which interacted with, but were politically outside or independent of Teotihuacan control. Some of these were too distant and/or too powerful to control directly. Others simply did not offer any economic attraction for interaction and may have been purposefully tribalized along the lines suggested by Price (1978) to make controlling them easier. These areas functioned independently of the other three subsystems and are more difficult to identify archaeologically because they absorbed Teotihuacan style paraphernalia at different rates. Indeed, some areas which had very little contact with the Valley of Mexico may be characterized by Teotihuacan style cultural assemblages simply as a result of passing merchants and trade with regions directly under its control. Areas which would fit into this fourth category would include Monte Alban and its dependent hinterland areas, portions of western Morelos south of Xochicalco, parts of Tlaxcala and southern Puebla, and other places where Teotihuacan ambassadors are suggested to have visited, such as Tikal and other sites along the Usamacinta.

In summarizing I would like to reiterate several points. First the Amatzinac Region appears to have been an important area in Teotihuacan's sustaining hinterland. Contact between the two areas is evident in the similarities of their cultural assemblages. The impact of Teotihuacan society on the local population can be measured using the readjustment of existing social relations which accompany

contact. I have used settlement pattern data to make this comparison. Our existing model of Teotihuacan society has been developed out of extensive research in the Valley of Mexico. Despite the model's suitability for the area of its origin I have not tried to use it as an explanatory mechanism for Morelos. To do so would be naive. When presenting the Amatzinac data I have attempted to point out situations when a direct application of the model would be incorrect. I have also tried to identify and sort out real similarities between the model and the superficial ones. When looking toward the future we can expect any model of Teotihuacan society to change and expand as we identify the range of its plasticity in adapting to new environments.

A number of suggestions can be made for investigators interested in pursuing research on Teotihuacan in the future. There is an urgent need for problem-oriented research outside the Valley of Mexico. An excellent example of this type of research is the trade route survey being conducted in the northeast corner of the Mexican Basin by Thomas Charlton of the University of Iowa. We can predict that Teotihuacan influence will vary greatly across Mesoamerica. It followed trade routes and spread into areas where key resources could be found at the same time that it bypassed other regions entirely. To define adequately the limits and composition of Teotihuacan's socioeconomic domain we need documentation not only where its impact was strong but also where it was weak. To do this we must go beyond comparative studies of potsherds. We need to develop better interpretive schemes in which to handle the data. What, for example, would we expect mercantile activity and empire building to look like during the Classic? Should we look for a bureaucratic or market-based economy (Polanyi 1957)? What would be their archaeological correlates? Perhaps, the best place to begin is with the Late Postclassic societies where there is a good historical data base to supplement archaeological studies. Organizational models could then be projected backward into the prehistoric record and tested with archaeological materials.

I would like to conclude on a methodological note. Large scale settlement reconnaissance is an extremely productive approach. A

good amount of information can be collected using teams of surveyors and a dragnet approach for relatively little expense. While they locate a multitude of small and medium sized sites which are important to our analysis, they generally fail to collect enough material to do more than establish the size of the site and its corresponding dates of occupation. During the Amatzinac survey sites had to be repeatedly collected to get samples of material which were large enough to make any sort of meaningful comparison. Nevertheless some of the ideas presented in this report require more rigorous testing before they can unequivocally be accepted as fact. I would suggest that multistage field projects would help to resolve this problem. Initial reconnaissance and surface collection needs to be combined with more intensive surface and subsurface testing. Interpretations of reconnaissance data would be enhanced by testing specific hypothesizes about the composition and interrelationships of sites.

This study has attempted to examine the structural aspects of Teotihuacan society through an analysis of prehistoric events which accompanied Teotihuacan contacts in eastern Morelos. It was intended to increase our understanding of the cause-and-effect relationships involved in the formation of Teotihuacan's socioeconomic domain. I hope that other researchers will pursue some of the same questions in each of their respective areas and in doing so adopt a systematic approach which will help clarify the cultural impact which Teotihuacan had on Mesoamerican society.

APPENDIX A

CERAMICS

The primary purpose of this section is to present the range of ceramic indicators used to estimate the site size and temporal placement of Amatzinac Settlements encountered during the survey. A cursory examination of this section will quickly indicate that this is not an in depth ceramic analysis, nor is it a classification of ceramic material in any other than a very loose sense of the word. In some cases the ceramics have been grouped into types with their own implied function. In other instances, one or two particular attributes, such as coloration or plastic decoration which cut across a wide array of types, have been selected as good temporal indicators in any particular type. Time and resources did not allow for the necessary excavations to establish a broad regional chronology for the Amatzinac Region. The major emphasis of research effort has therefore been on a stylistic correlation of recognizable Amatzinac types with ceramic types from already established Central Highland chronologies.

Excavations at Chalcatzingo have helped to resolve problems with the ceramic complements from the Terminal Formative and Late Classic periods. Excavations at Las Pilas, Jonacatepec have provided a scant but unbroken sequence from the Early Formative through the Late Postclassic periods. Material pertaining to the Terminal Formative and Classic periods has proved to be invaluable for the purposes of my analysis. The discussion presented below is drawn from my analysis of the Amatzinac surface collections in combination with stratigraphically available materials from Las Pilas and Chalcatzingo.

TERMINAL FORMATIVE

I. Utilitarian Ware

A. PLAIN WARE MATTE OLLAS: (Figure 16a-f)

Discussion and Form: The predominant form is the beveled wedge rim, although slightly rounded and everted rims occasionally appear. Rim diameter varies from 16 to 27 cms. Wall thickness ranges from .4 to 1.0 cms. No pieces were recovered that were large enough to reconstruct more than the rim and the neck portions of the vessels. For this reason, some of the sherds now classified as olla fragments may be fairly large basins or bowls. Although this hinders the overall interpretation of vessel form, it does not affect the major intent of this study, the temporal seriation of settlements.

Paste: Color ranges from reddish yellow (5YR 6/8-8), to yellowish-red (5YR 5/6-8), to brown (7.5YR 5-6/4). Tempering materials are white and grey translucent particles and small, black particles which may be flakes of mica. Temper averages about 40% of the entire sherd volume. Most of the sherds seem to have been completely oxidized and then intentionally smudged.

Surface Treatment: Normal vessel color varies from a yellowish-red (5YR 5/8) to reddish-orange (2.5YR 4-5/6), to reddish-brown (5YR 5/4). Smudging gives certain portions of the vessel a greenish-grey tint. Burnishing is rough, restricted to horizontal strokes. Sherds lack luster and the overall appearance is crackled.

Comparable Material: Rattray (1973, Fig. 32f-h) illustrates similar "red-brown" ollas under her Late Tzacualli Ollas from Teotihuacan. A few of the forms illustrated by Parsons and Blanton (1971, Fig. 61) from the Tzacualli period in the Texcoco Region seem to be roughly similar.

B. PLAIN WARE BURNISHED OLLAS: (Figure 16g-l)

Discussion and Form: Rims and necks are the only vessel fragments in our collection, the largest being 9 cms. in length. The predominant form is the wedge rim with a square or slightly rounded rim. Rim diameter is considerably more varied than in the Matte Ollas, ranging between 16 and 38 cms. Body thickness ranges between .4 and 1.3 cms. Because of the overall small sherd sizes in my sample collection, some of the material which has been classified as ollas may have been large outflaring basins.

Paste: Color varies from a yellowish-red (5YR 4-5/6, 2.5YR 5/6), to a reddish-brown (5YR 5/3-4). Tempering materials are small, black and clear crystalline particles. Most of the sherds appear to have been fully oxidized.

Surface Treatment: Coloration varies from a reddish-brown (5YR 4/4, 2.5YR 4/4) to a yellowish-red (5YR 5/4-6). Horizontal burnishing is the predominant type and fine striations are visible in the clay. Exterior and interior surfaces are finished in the same fashion.

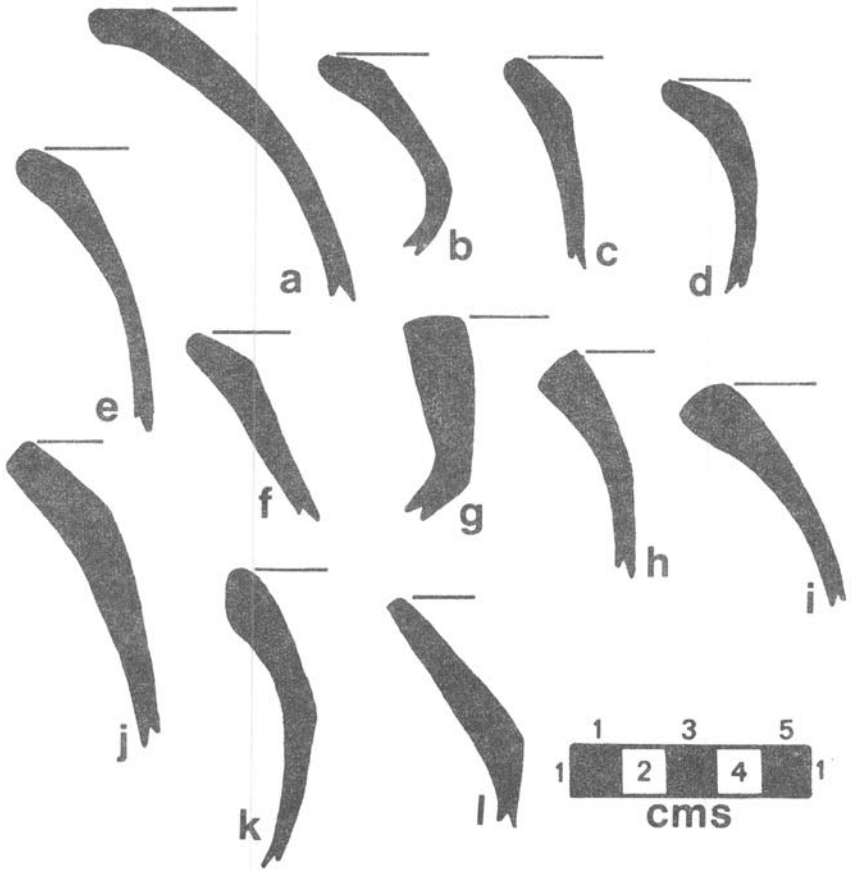

Figure 16
Terminal Formative
Olla Forms

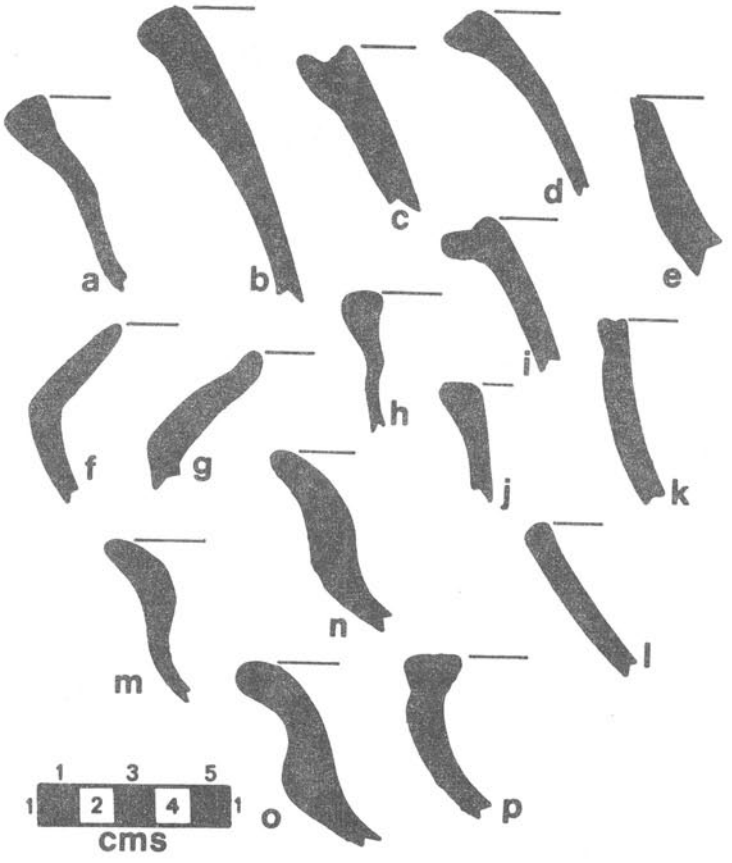

Figure 17
Terminal Formative
Plain Ware Forms

Comparable Material: Rattray (1973, Fig. 32, 33) illustrates a number of seemingly identical pieces from Teotihuacan under the category of "Late Tzacualli Burnished Wares." Blutcher (1971) also illustrates a number of forms from her Patlachique phase which are very similar to my Burnished Ollas.

C. PLAIN WARE BASINS AND BOWLS: (Figure 17)

Discussion and Form: The principle forms are deep, flaring basins; often with irregular sides and broad square wedge shaped rims, small shouldered bowls, large hemispherical basin/bowls, and outflaring bowls. Large wedge rim basins varied between 22 and 46 cms. in diameter, small shouldered bowls between 24 and 22 cms., hemispherical bowls between 16 and 25 cms., and the outflaring bowls between 20 and 28 cms. Overall vessel height could not be determined from relatively small fragments in the sample collections.

Paste: Color varies from a yellowish-red (5YR 4-5/6), to red (2.5YR 4-5/6), to brown (7.5YR 5/2-4), to dark grey (10YR 4/1). The dark grey paste coloration is restricted to hemispherical bowl categories, often with incised or punctate decoration. Tempering material varies between 15 and 30% of the total sherd volume of sand and pumice particles. Pastes are normally medium to finely textured, except for the shouldered bowl forms which are characterized by consistently fine pastes. Sherd bodies are only partially oxidized.

Surface Treatment: Square rimmed basins, shouldered bowls, and outflaring bowls were largely unslipped and unburnished. Interior and exterior coloration are the same and range between a yellowish red (5YR 5/6) to brown (7.5YR 5/4). Small striations in the paste suggest that the surface was smoothed while the clay was still wet.

Some of the hemispherical basin-bowls appear to have been slipped. Interior and exterior coloration is the same as the other forms with the addition of dark greyish-brown (10YR 4/2) and a distinct yellowish-red (5YR 4/8). Rough horizontal burnishing was noted on a few sherds. Rims are often decorated by direct edge finger impression, gouging, pinching, "pie-crusting," or shallow lateral incision.

Comparable Material: This material is similar in a number of ways to Rattray's (1973, Fig. 18, 32) Early and Late Tzacualli Burnished Wares.

II. Decorated Ware

A. POLISHED MONOCHROME WARE: (Figure 18a-i)

Discussion and Form: The primary forms appear to be shouldered and flaring walled bowls. Rim diameter varies from 12 to 24 cms. Wall thickness varies from .8 cms. in the larger bowls to .5 cms. in the small ones.

Paste: Color varies from yellowish-red (5YR 4/8), to brown (7.5YR 5/4), to a reddish-brown (5YR 2.5/2). Paste is normally medium texture, 25-30% temper, although some very fine clays were noted.

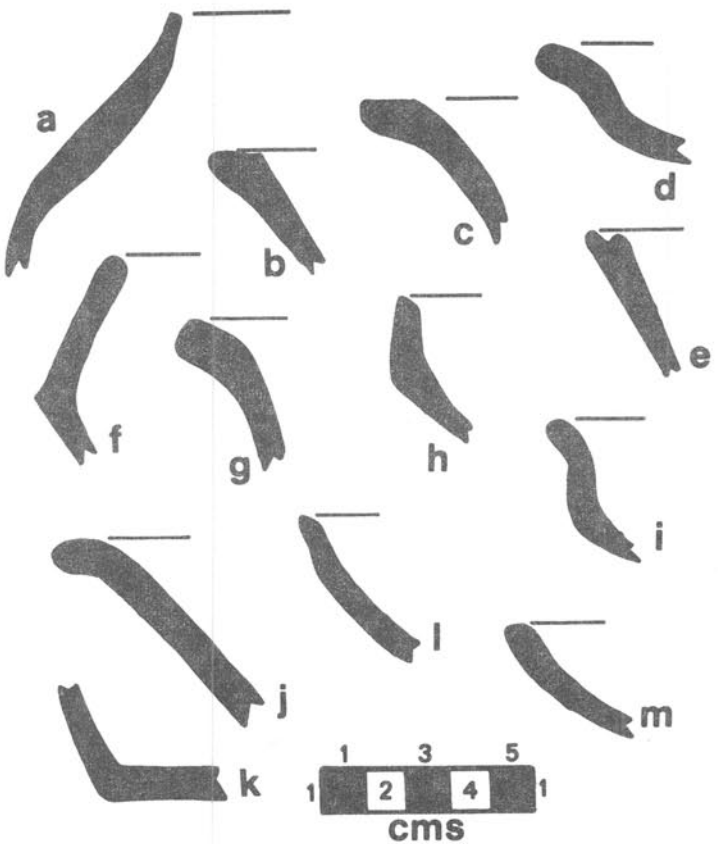

Figure 18
Terminal Formative
Decorated Wares

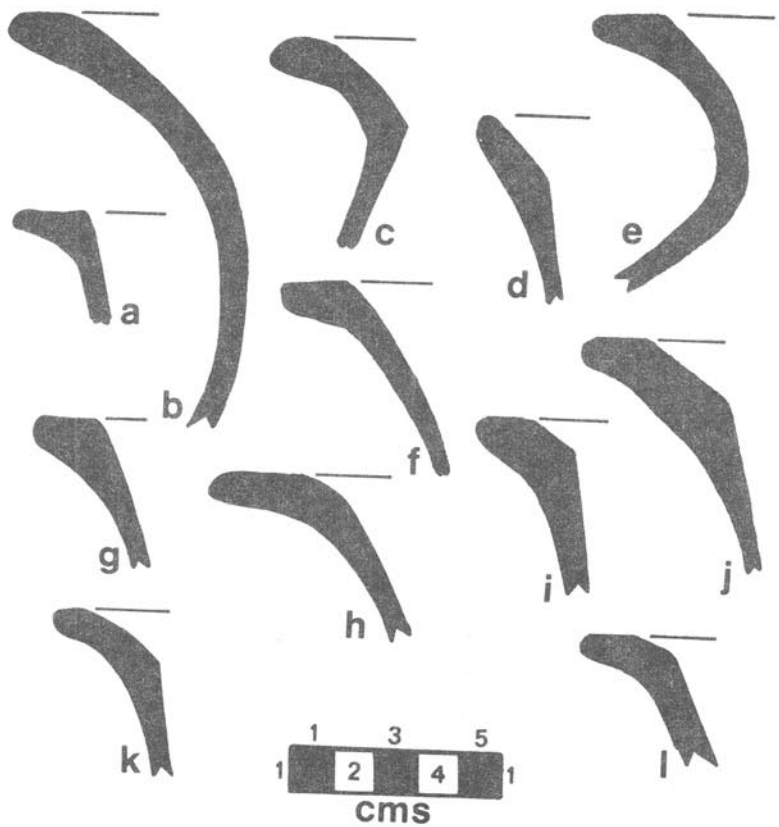

Figure 19
Early Classic
Olla Forms

Clay inclusions, when they occur, appear to be fine grained white, orange, and shiney, black particles. All but a small percentage of the sherds appear to have been completely oxidized.

Surface Treatment: Interior and exterior surfaces received the same treatment. Color ranges from a brown-black (7.5YR 3/2, 7.5YR 2.5/0) to a reddish-yellow (5YR 4/4-6, 2.5YR 3/4). Surfaces are normally horizontally burnished in some cases reaching a highly lustrous finish. Burnishing will occasionally run at right angles to itself, first vertically, and then finished horizontally. Some sherds feel slightly waxy to the touch. Direct rim punctation is rare but occasionally occurs.

Comparable Material: Noguera (1943, Fig. 16-18, 21) illustrates a number of similar forms in his "Barro Negro" variety from El Tepalcate. Rattray's (1973, Fig. 35, 36) "Late Tzacualli Polished Monochrome Ware" from excavations at Teotihuacan, also appears very similar. Rattray also illustrates similar material from Pueblo Perdido (1968, Fig. 1). Parsons and Blanton (1971) report similar material from Texcoco.

B. RED ON BUFF: (Figure 18j-m)

Discussion and Form: This ware occurs in low frequency throughout the survey area. The predominant forms are simple, flaring bowls and dishes, occasionally with small, rounded rims. Rim diameter varies from 10 cms., in small dishes, to 24 cms. in the larger bowls. Body thickness varies between .5 and 1.0 cms.

Paste: Color is normally brown (7.5YR 5/2-4). Tempering material comprises about 10% of the sherd body and are very small, white particles. Clay texture is fine and most of the vessels in the type collection were only partially oxidized.

Surface Treatment: The exterior of the vessel is normally undecorated except for an occasional red band about .7cms. in width which runs horizontally along the rim; this band is always a continuation of interior rim slipping. Burnishing is always present and varies from smooth to rough. Unslipped portions of the exterior are dark brown (7.5YR 4/2) to reddish-brown (5YR 4-5, 5YR 4/6).

The interior of the vessels are slipped from a weak red (7.5YR 4/4-6), to a dark red (7.5YR 3-4/6). Motifs are simple bands and parallel, horizontal bands which extend down the sides. Vertical, red bands are rare. Burnishing often brings the ware to a high luster and exterior red slipping is occasionally specular.

Comparable Material: Parsons and Blanton (1971) describe similar material from the Texcoco Region.

C. WHITE ON RED: (Figure 18)

Discussion and Form: This ware occurs rarely within the survey zone but is worth mentioning because this ware occurs in higher percentages from other areas of Mesoamerica. The simple hemispherical bowl is the only form represented in the sample.

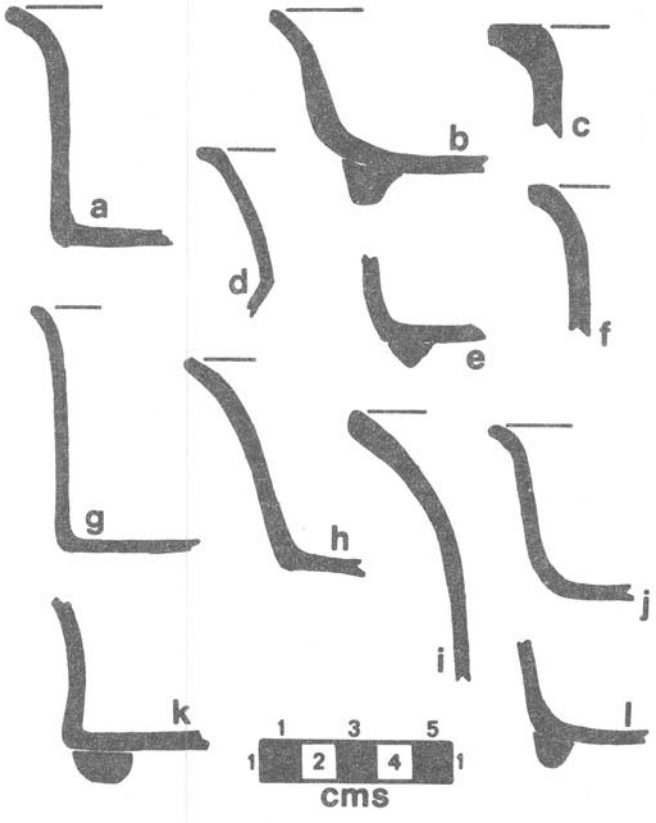

Figure 20
Early Classic
Decorated Wares

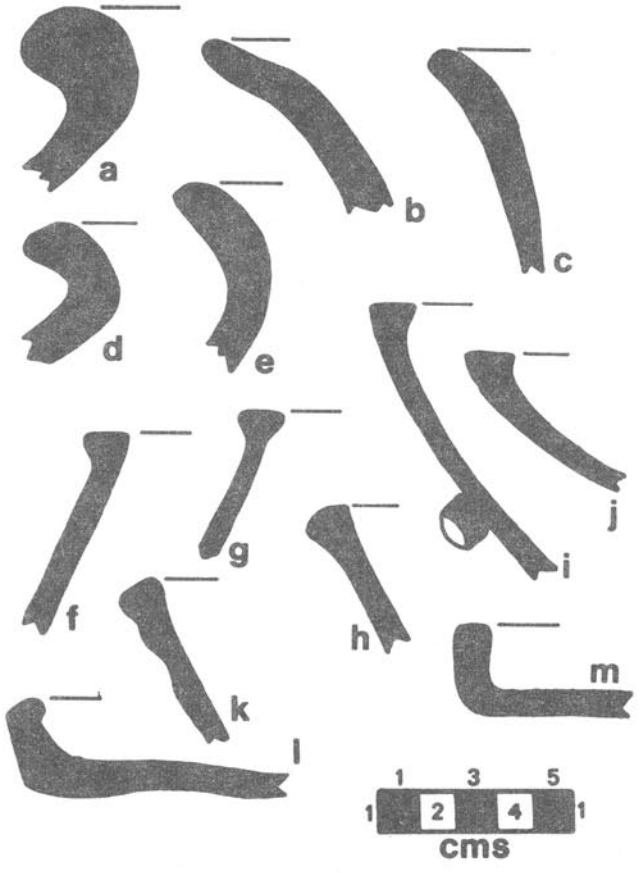

Figure 21
Late Classic Ollas
and Classic Basins
and Comals

Paste: This paste is a yellowish-red (5YR 4/6). Texture is compact and temper predominately consists of small flecks of pumice and sand. Fracture is usually sharp.

Surface Treatment: The exterior of these vessels are covered with a strong, red slip (7.5R 4/8, 10R 4/6) over which a thick yellow-white (10YR 8/3-4) paint is applied. This white paint occurs as a single, thick, horizontal band which extends between 2 and 3 cms. below the rim exterior. The exterior of the vessel was burnished after the white paint was applied, in some cases smearing the white across the surface of the red.

The quality of interior finish is quite variable. Some sherds are slipped white, while others are red; all are horizontally burnished. Other vessels are unslipped and left the natural buff color (5YR 6/6).

Comparable Material: This ware is similar to the White-on-Red Ware described by Parsons and Blanton (1971) for their Tezoyuca-Patlachique phase in Texcoco. Decoration in my sample is less ornate and distinctly different from that illustrated by Noguera (1943, Fig. 1:24-28), Millon, Drewitt, and Bennyhoff (1965, Fig. 110a-j), and Rattray (1973, Fig. 20a-j).

III. Special Decorated Ware

A. WHITE GRANULAR WARE:

Discussion and Form: This ware could only be identified in very low frequency throughout the survey area, but is of interest because it developed into an important trade ware across the Central Mexican Highlands during the subsequent Classic Period. Although no rims were encountered, the body fragments, necks, and bases were from jar and olla forms. It is even quite possible that the amphora form, which predominates during the Classic, began to appear at this early date (Rattray 1973:108).

Paste: The paste is porous, evenly fired, and completely oxidized, Fracture is relatively uneven and small chips usually disintegrate when they are broken from the sherd body. Small, black, white, and translucent particles are found throughout the pinkish to reddish-yellow paste (5YR 8/3-4, 5YR 7/4-6), which may be hornblende and quartz.

Surface Treatment: In all cases the interior of the vessels were rough, unfinished, and highly porous. The exterior vessel treatment varies from a matte to a hard burnished white. The slip on the matte variety, by far the most common, is a thick, soft, stucco-like paint, which has a tendency to flake off leaving an irregular, splotchy, white cast on the sherd. One sherd in the collection has a simple, black geometric design painted over the matte white exterior.

The exterior slip on the burnished variety is pinkish-white (7.5YR 8/2-4). The burnish is irregular over most of the vessel except on the neck where striations are predominantly vertical. Although the slip will occasionally be cracked and pocked, the slip to body fit is excellent. This ware has a tendency to appear "boney" in character.

Comparable Material: Rattray describes a Late Tzacualli Granular Ware from the excavations in the Pyramid of the Sun at Teotihuacan which seems to be identical to my matte variety. Vaillant and Vaillant (1934) discuss a similar white from Gualupita.

CLASSIC

I. Utilitarian Ware

A. EARLY CLASSIC PLAIN WARE OLLAS: (Figure 19)

Discussion and Form: These are excellent diagnostics for Early Classic habitation areas in the Amatzinac Valley and are identical to Valley of Mexico forms. The principle forms are strongly everted, flattened, and wide beveled rims. Rim diameter ranges between 22 and 36 cms. Body thickness varies between .5 and 1.3 cms. These forms probably developed out of the beveled matte finish ollas already described for the Terminal Formative.

Paste: Coloration is distinct and varies from a weak red (10R 6/8), and red (2.5YR 5/6), to a light brown (5YR 6/6, 5YR 5-6/4), and brown (7.5YR 5/4). Paste is highly tempered, between 40 and 50% of the sherd volume, with grey, white, and reddish-brown particles. These particles may be as large as 1 mm. in diameter. Sherd bodies are completely oxidized with a brown discoloration often found on the interior surface of the rim. The reason for this discoloration is not clear, but may be the result of purposeful firing not wholly unlike the Terminal Formative practice of extensive matte olla smudging.

Surface Treatment: No slipping or painting were noted on any of the sherds. Shallow striations are found both on the interior and exterior of the vessels which suggests that the vessels were smoothed while the clay was still wet. The exterior surface is only poorly burnished and color consistently falls within the range of yellowish-red (5YR 6-7/6, 5YR 6/8), and reddish-brown (5YR 5-6/4, 5YR 5/3).

The interior surface is frequently well burnished. Curiously, the rim is often a different color than the rest of the body. Although this may first be misinterpreted as a weak, red slip (2.5YR 6/6, 2.5YR 5/4), or soil stain, close inspection reveals that it was a result of a differential firing.

Comparable Material: Rattray (1973, Fig. 51, 52) illustrates similar ollas which she calls "Early Tlamimilolpa Burnished Ware." Parsons and Blanton (1971, Fig. 63) illustrate nearly similar forms for the Early Classic Period in Texcoco and note a similar paste discoloration on the vessel interiors.

B. LATE CLASSIC PLAIN WARE OLLAS: (Figure 21a-e)

Discussion and Form: Late Classic ollas are far less abundant than the Early Classic forms but are still good diagnostics for this phase. It is quite possible that some of the earlier forms continue into the later half of the Morelos Classic. Both short

and flaring necked ollas are noted. The short necked forms, with rolled over rims are most similar to, and probably contemporary with, similar Metepec phase ollas in the Valley of Mexico. Rim diameter ranges from 24 to 42 cms. Body thickness varies between .6 and 2.3 cms., with the greatest widths achieved at the rim.

Paste: Color ranges from brown (7.5YR 5/4) to reddish-brown (5YR 5/4, 5YR 6/6). Vessels are moderately to heavily tempered with white and grey black particles. Sherd bodies are normally only partially oxidized and the outflaring varieties occasionally have interior discoloration similar to the Early Classic ollas. This discoloration is relatively infrequent however.

Surface Treatment: Color ranges from reddish-brown (5YR 5/4-6) to red (2.5YR 5/6). Wet clay smoothing striations often occur. Burnishing is most prevalent on the rim interior and is normally horizontal. The interior and exterior are essentially the same in treatment.

Comparable Material: Parsons and Blanton (1971, Fig. 66) illustrate forms from the Texcoco Region which are similar to the short necked Amatzinac ollas.

C. PLAIN WARE BASINS: (Figure 21f-k)

Discussion and Form: These principally are outflaring and slightly restricted crater mouth basins, occasionally with side handles. Seemingly unique to Morelos, these basins could not be phased into early and late subphases. The presence of a thin red band along the rim edge of several forms suggest a Late Classic-Early Postclassic transition which must be explored by future excavation. They occur in high frequency throughout the valley, in association with Thin Orange in Late Classic sites in the southern valley. Vessel diameter ranges from 24 to 56 cms. with body thickness between .7 and 1.5 cms.

Paste: Coloration is a persistent reddish-brown (5YR 5/4), to a yellowish-red (5YR 5/6). Vessels are heavily tempered with quartzite, mica, and hornblende particles.

Surface Treatment: Vessels are unslipped except for the already mentioned red-rim banding. Exteriors are normally roughened either through scraping or shaving the vessel, or by forming it within a vessel with its sides coated with sand. Occasional striations are found on the exterior near the rim.

The interiors are normally smooth, although a few roughened surfaces were noted. Coloration varies from light-brown (7.5YR 6/4) to reddish-brown (2.5YR 4/4). Burnishing is relatively smooth although a high lusterous finish was probably never sought. When simple red slipping occurs along the rim, it is usually a dark red (10R 3/6) color.

Comparable Material: The closest comparable ceramic would be the ware called "Tlajinga Rough" found at Teotihuacan and in the northern Valley of Mexico (Rattray, personal communication).

D. COMALS: (Figure 21m,1)

Discussion and Form: Only two comal forms could be associated with Classic habitation, and they could not be phased into early and late subdivisions. The form is a simple basal break, short sided comal which varies between 46 and 60 cms. in diameter. Overall body thickness varies between .8 and 1.2 cms; average vessel height is 2.5 cms.

Paste: Color varies from reddish-brown (5YR 5/4) to light-red (2.5YR 6/6). Temper is large grey to black particles, and the clay texture is loose. Air bubbles occur frequently throughout the vessel body.

Surface Treatment: The predominant color is a reddish-brown (5YR 4-5/4) although usage has darkened the unslipped vessels in many areas. The bottoms are rough and appear to have been formed on sand. The exterior of the comal walls are unburnished but streaked as a result of smoothing. The interior of the vessel was lightly burnished.

Comparable Material: This form of comal was probably unique to Morelos.

II. Decorated Service Ware

A. EARLY CLASSIC MONOCHROME: (Figure 20a-f)

Discussion and Form: The principle form is the flaring wall basal break dish with a flat bottom and small solid nubbin supports. Rims are either direct or outflaring. Overall vessel height varies between 4 and 6 cms., and rim diameter ranges between 15 and 22 cms.

Paste: Color varies from a light-brown (7.5YR 6/4), to a yellowish-brown (5YR 5/6), to a reddish-brown (5YR 5/4). The majority of the sherds are only partially oxidized, in many cases less than 25%. Amount of natural temper seems to vary with the color of the paste. Temper comprises between 10 and 15% of the sherd in the light-brown pastes and increases to about 30% in the reddish-brown pastes. Small translucent black and dull white specks predominate in the light-browns; while white, grey, and small orange particles are found in the reddish-browns. Texture is relatively compact although small air bubbles are visible in both paste types. Fracture is variable.

Surface Treatment: The exterior is usually executed in light-brown (10YR 5-6/4), to reddish-brown (5YR 3/3, 5YR 3-4/4), to very dark grey (5YR 3/1), and black (7.5YR 2.5/1). Burnishing is predominately horizontal, although the two of the deepest specimens in my type collection had exterior vertical polishing which switched back to horizontal burnishing on the rim area. Stick trail marks are clearly visible on the light and reddish-brown surfaces.

The interior surface is usually the same color as the exterior surface. Burnishing is always horizontal, normally heaviest around the rim and decreases in intensity towards the bottom of the vessel.

Comparable Material: Rattray (1973, Fig 54, 57) illustrates similar material from her excavations at Teotihuacan. Parsons and Blanton (1971) discuss similar material from Texcoco.

B. EARLY CLASSIC RED-ON-BUFF: (Figure 20g-l)

Discussion and Form: This ware occurs in moderate to low frequency across the survey zone. The principle form is the cylindrical, basal-break tripos vase with parallel and flaring sides which reaches its greatest diameter at the rim (Sejourne 1966, Fig.). These vases have flat bases and nubbin supports which are normally pointed and average between 1 and 1.5 cms. in height. Rim diameter varies in the sample from 10 to 25 cms. Wall thickness range between .3 and .6 cms. Simple hemispherical bowls were also noted but in very small quantities.

Paste: The paste is finely texured and inclusions are rare. Sherds are normally only partially oxidized to a yellowish-red (5YR 5/6). Fracture varies from sherd to sherd but is most often moderately sharp.

Surface Treatment: This ware has a reddish-brown (5YR 4/4), brown (7.5YR 5/4), and yellowish-red (5YR 5/6) unslipped background which is the natural color of the clay. Dark red paint (7.5R 3/6), usually specular, is applied to the exterior of the vessel. The most prevalent designs are wide bands on the exterior base of cylindrical vases, parallel horizontal bands, and large circular motifs which are normally solid, but occasionally enclose a simple cross. Sherds occasionally show signs of post-fire engraving which outline the red geometric decorations.

Interior decoration is absent, although a few sherds are slipped dark-brown to black (5YR 2.5/2-0). Both horizontal and vertical stick trail burnishing is noted on the interior and exterior vessel walls after the red paint has been applied and allowed to dry.

Comparable Material: Although regional variation exists, Rattray's (1973) "Early Tlaminilolpa Bichrome Ware" seems to be similar in many respects. Also similar to Parsons and Blanton's (1971) "Red-on-Buff" and Tolstoys' (1958) "San Martin Red-on Buff Burnished Ware."

C. LATE CLASSIC MONOCHROME WARE: (Figure 22)

Discussion and Form: The principal forms are basal flange cylindrical vases, basal break bowls or vases with large hollow cylindrical supports, and shallow wide-rim dishes. This later form probably has a short temporal span and is contemporary with simi-Metepec phase material in the Valley of Teotihuacan (Rattray, personal communication).

Paste: Coloration varies from yellow-red (5YR 5/6), to strong brown (7.5YR 5/6), to grey-brown (10YR 5/2). Temper comprises about 30% of white and translucent specks. Texture is moderately compact and fracture is irregular. Most of the sherds in my type collections are only partially oxidized, especially the shallow dishes.

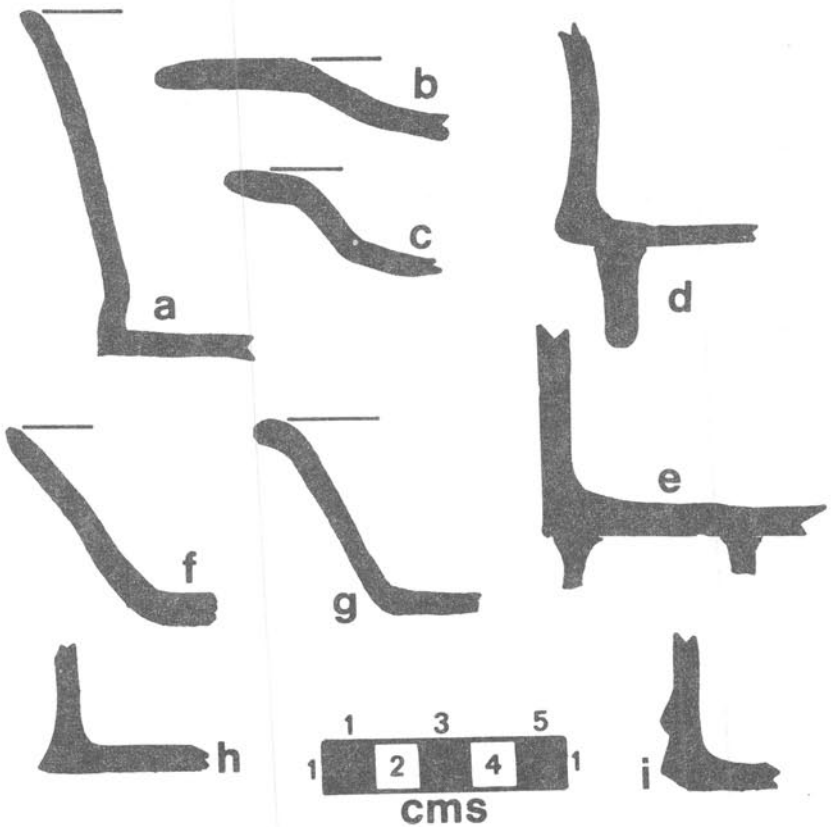

Figure 22
Late Classic
Decorated Wares

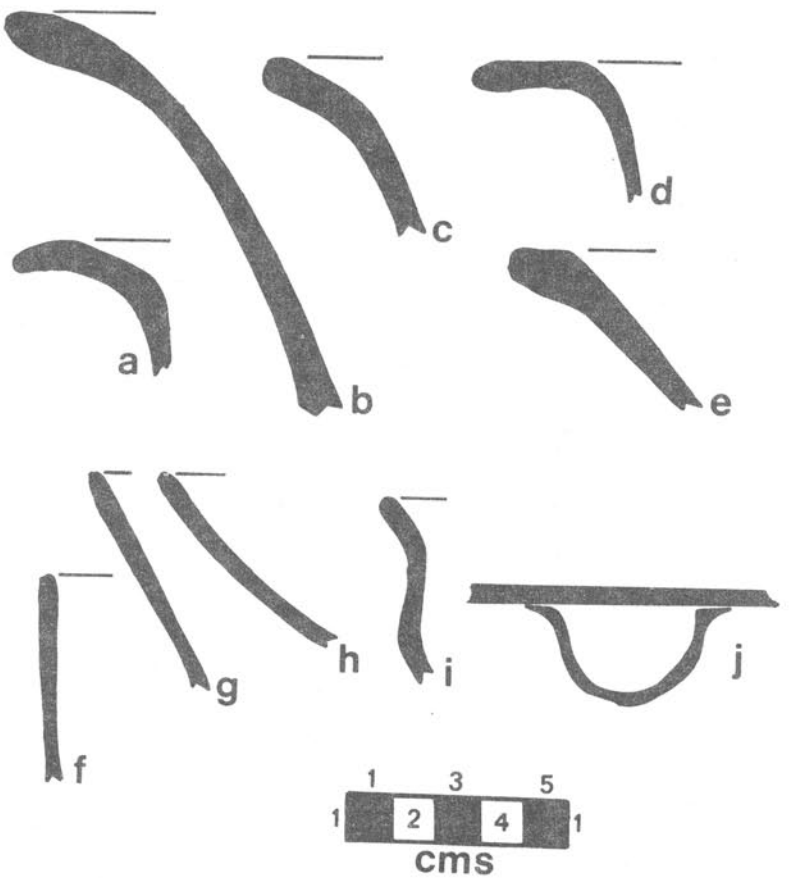

Figure 23
Special Classic Wares
Rose on Granular White
Ware and Thin Orange

Surface Treatment: Coloration and burnish treatment varies considerably. Color ranges from a brown (7.5YR 4-6/4), to red-brown (5YR 4/4), to dark grey-brown (10YR 3/2). Exterior burnishing on vase forms may be both horizontal or vertical and shallow excising may be present just above the base on the basal flange vases. Exterior decoration is generally absent on the shallow wide-rim dishes which maintain the natural yellow-red (5YR 5/6) clay coloration.

Color on the vessel interior is the same as it is on the exterior of basal break forms executed in light-brown (7.5YR 6/4). Basal break forms in brown (7.5YR 4/4), to reddish-brown (5YR 4/4) have the same or darker colored interiors. Shallow wide-rim dishes are usually brown to dark brown. Interior burnishing is always horizontally stick-trailed; basal break interior bottoms are generally unburnished.

Comparable Material: Parsons and Blanton (1971) describe very similar basal break bowls from their Late Classic phase in Texcoco. My basal flange forms may be similar to the "Cafe Claro" and "Cafe Obscuro" material described by Noguerra (1945, 1947b) from Xochicalco.

D. LATE CLASSIC RED-ON-BUFF: (Figure 22d-g)

Discussion and Form: This ware occurs in low to moderate frequency across the survey area. Vessel form is difficult to ascertain due to small sherd size, but they apparently are basal break cylindrical tripod vases with large hollow round and rectangular supports. Shallow bowls and flaring dishes normally do not have supports and small cylindrical vases occur with distinct basal flanges.

Paste: Paste is a reddish-brown (5YR 5/4-6) and temper is comprised of sand and pumice specks which are translucent to grey in color. Sherds on the whole are more highly tempered than the Early Classic Red-on-Buff assemblage. The ware fractures unevenly and although most sherds are between 100 and 75% oxidized, a few sherds were apparently fired in a reducing atmosphere.

Surface Treatment: No exterior decoration was noted on the shallow bowls and flaring dishes beyond an occasional .5 to 1.0 cm. red band along the rim edge. The remainder of the vessel is the natural buff (5YR 5-6/4), to dark brown (5YR 3.4) color. Burnishing is horizontal across the exterior dark red rim (715R 3/6) and stick trailed across the rest of the vessel. The exteriors of vases with supports and basal flanges are slipped red (7.5R 3/8) either completely or with a simple band along the base. The predominant exterior color is normally buff to dark brown.

Interior decoration consists of broad horizontally banded rims or parallel lines, never extending more than half way from the rim. Red is often highly specular, ranging from a weak red (7.5YR 4/6), to a dark red (7.5R 3/8). Burnishing is horizontal, often of better quality than the burnishing on the vessel exterior.

Comparable Material: Tolstoy's (1958) undifferentiated Classic "San Martin Red-on-Buff Burnished Ware" may be partially equivalent. Bowl and shallow dish forms are similar to those discussed by Parsons and Blanton as are their basal-break vases with large hollow cylindrical supports (1971, Fig. 64b). Blanton (1972) mentions, but does not illustrate, basal flange vessels from the Ixtapalapa Peninsula. Noguera (1945, 1947b) discusses a "Ceramica Roja Pulida" from Xochicalco with large hollow supports and "reborde basal" which may be related to Classic Red-on-Buff.

III. Special Decorated Service Ware

A. THIN ORANGE: (Figure 23f-j)

Discussion and Form: This ware occurs in high frequency across the Amatzinac Valley and is the best single diagnostic for identifying Classic habitation even at small Isolated Residences and Hamlets. The predominating form is the ring-base bowl although it also occurs in figurines, masks, basal break vases, plaques, and molded forms. Although this ware persists unchanged in many forms throughout the length of the Classic, the appearance of punctate incision and stamping as decorative motifs, and mold-made forms are good indications of Late Classic occupation.

Paste: Shepard (1946:198) has described the typical Thin Orange paste which is similar to the Amatzinac variety. Paste is orange and composed of highly diagnostic small white fragments, which according to Rattray (1973:166) is derived from extremely weathered chlorite mica shists. Air bubbles are often visible and fracture is sharp. Temper is often visible through the exterior slip.

Surface Treatment: Vessels are smooth and apparently slipped both on the interior and exterior in orange (5YR 7/8) and red-orange (2.5YR 6/8). Burnishing is horizontal. Incising and stamping are restricted to the exterior of vessels. In the Late Classic Punctate variety, indentations usually occur between parallel line incisions and above and below horizontal S-shaped motifs called "Ilhuitl" or "Xonecuilli" motifs. Squash form bowls are the most prevalent molded form. The purposefully addition of a grey to greenish-grey (5YR 3/2) overcast, sloppily applied to either the interior or exterior of the vessels, is also a good indicator of Late Classic occupation.

Comparable Material: Good descriptions and illustrations are numerous for this ware. A few of these are Sejourne (1966, Fig. 131, 132, 135), Armillas (1944, Lamina 2), and Rattray (1973).

B. ROSE-ON-GRANULAR-WHITE WARE: (Figure 23a-e)

Discussion and Form: This ware occurs in high frequency across the Amatzinac Valley and is an excellent diagnostic for the Classic period. The predominant form is the amphora (Sejourne 1966, Fig. although ollas also occur. Although the paste is similar to the Terminal Formative Granular Ware, this ware is easily distinguished from the former by the nature of its surface treatment. Although this ware persists throughout the length of the

Classic, a "Flecha" decorative motif seems restricted to the Late Classic phase (Rattray, personal communication).

Paste: Paste is similar to the Terminal Formative ware, being porous with black, white, and occasionally red temper particles. Color varies from pinkish-grey (7.5YR 7/2), to pink (5YR 8/4), to reddish-yellow (5YR 7/6). Fracture is relatively irregular.

Surface Treatment: Vessel interiors are in all cases rough and unfinished, except for interior rim surfaces which are rough polished. The exterior surface is covered with a thin white wash which varies in color from cream (10YR 8/3) to pink (7.5YR 8/4). Weak red designs, varying from dusky red (10R 3/3) to red (10R 4/6), were then applied over the white in a haphazard fashion in horizontal bands running around the base, sides, and neck of the vessel. These bands varied from 1.0 to 4.0 cms. in thickness. Occasionally red bands between .3 and 1.0 cms. are found along the interior rim. Very little burnishing was noted in the type collection.

The "Flecha" varient is identical in all but two respects to the Rose-on-Granular-White already described. The white slip normally approahces a pinkish-grey (7.5YR 6/2) color and most importantly have .2 to .5 cms. red "feather" motifs vertically adorn the necks of olla and amphora forms.

Comparable Material: Parsons and Blanton (1971) describe a "Granular Red-on-White Ware from Texcoco which appears to be identical to my Rose-on-Granular-White category. Tolstoy (1958) likewise describes a "Granular Red-on-Yellow" from the northern Valley of Mexico which seems to be the same ware. Rattray (1973, Fig. 49) illustrates an Early Classic Granular Ware which seems to be identical to the Amatzinac variety.

APPENDIX B

SITE DESCRIPTIONS

RAS-1

NATURAL SETTING: The site is located at the 1400 meter contour interval on the lower slopes of the north and east faces of Cerro Delgado. The site overlooks the Rio Amatzinac to the east while a permanent spring is located 250 meters to the southwest. The vegetation zone is a mix of the Pithecolobium, Barranca Alluvium, and Cerro types. The site is situated in the High Hills topographic zone.

MODERN UTILIZATION: The talus slopes are used for grazing. A few terraces along with the lower portion of the site are planted in a mix of corn, beans, and squash. Cultivation is restricted to the rainy season and all ground preparation is with teams of oxen. The site is located southeast of the village of Chalcatzingo.

ARCHAEOLOGICAL REMAINS: The site has been continually occupied from the Middle Formative Barranca phase onward through into the Late Postclassic. Terminal Formative material is lightly distributed over a 4.5 hectare area; no structures could be identified. The Early and Late Classic occupation is considerably larger. Early Classic material is lightly distributed over a 20 hectare area. Late Classic material is found over a 25 hectare area and is roughly twice as dense. A few of the mound constructions may date to the Classic. The heavy Late Postclassic occupation at the site has disturbed the site to a great extent and some of our estimates for site boundaries may be too high. No residential architecture could be associated with Classic surface debris. Classification: Terminal Formative Hamlet, Early Classic Small Village, Late Classic Large Village. Other Occupations: Middle Formative Barranca Phase Hamlet, Middle Formative Cantera Phase Hamlet, Late Formative Delgado Phase Hamlet, Early Postclassic Small Village, Late Postclassic Regional Center.

RAS-5

NATURAL SETTING: The site is situated on the 1375 meter contour interval 255 meters east of the Rio Amatzinac. It is situated in the Flat Plains topographic zone. The nearest impermanent drainage is 250 meters to the east. The soil is shallow and the vegetation zone is Acacia Grassland.

MODERN UTILIZATION: The area was fallow when it was visited and had not been planted for several years. Nopal cactus grows atop the mounds at the site and its seasonal fruit is collected by residents in Jantetelco. The site lies adjacent to the Cuautla-Izucar de Matamoros highway and can be seen from the road.

ARCHAEOLOGICAL REMAINS: The majority of the surface debris at the site including small mound constructions appear to be Postclassic in date. A light scatter of Middle Formative material was recovered. Classic material was lightly scattered over a

little more than one quarter of a hectare. Classification: unphased Classic Isolated Residence Other Occupations: Middle Formative Barranca Phase Isolated Residence, Early Postclassic Isolated Residence, Late Postclassic Small Village.

RAS-14

NATURAL SETTING: The site is located at the natural springs on the north edge of the modern town of Jonacatepec at the 1375 meter contour interval. The closest impermanent drainage is 750 meters to the west. The topographic zone is classified as Flat Plains while the vegetation zone is Pithecolobium Woodland. The closest permanent water source other than the spring seapage is the Rio Frio 1750 meters to the west. The soil varies in depth from 2.5 meters around the spring to 1.5 meters along the site's eastern edge.

MODERN UTILIZATION: The site is situated in the present recreational Balneario de las Pilas. The outlying north and eastern portions of the site are still under cultivation. The area is irrigated and corn, beans, squash, and tomatoes are grown. Field preparation is with teams of oxen.

ARCHAEOLOGICAL REMAINS: The site was continually inhabited from the Early Formative onward. Early materials were found immediately around the spring. Middle Formative diagnostics were found to the west, southwest, and south of the present swimming pools. A small Middle Formative platform structure was encountered in the INAH excavations in 1975. Terminal Formative materials were distributed across the surface of the site and were also recovered from one test pit of the INAH excavations during 1973. Terminal Formative occupation appears to extend over at least 7.5 hectares with occasional marked build-ups. The principal component at Las Pilas dates to the Classic. Early Classic materials are distributed in medium (B-type) intensities over 16.5 hectares. Late Classic densities rise slightly covering a maximum area of 20.7 hectares. Excavations at the site by the INAH over a 6 year period have uncovered several of the 6 mounds at the site. All date to the Classic. In addition a number of enigmatic canals or underground passages were excavated in the site's central plaza. These were used for burials toward the end of the Classic. Several individual burials contained upwards of 100-150 ceramic vessels each. The results of the INAH investigations will be reported in the near future by Arqla. Guadalupe Martinez Donjuan. Classification: Terminal Formative Small Village, Early Classic Small Village, Late Classic Large Village. Other Occupations: Early Formative Amate Phase Hamlet, Middle Formative Barranca Phase Hamlet, Middle Formative Cantera Phase Small Village, Late Formative Delgado Phase Small Village, Early Postclassic Hamlet, Late Postclassic Hamlet.

RAS-20

NATURAL SETTING: The site is located along the east edge of the Rio Frio-Tepalcingo on the 1400 meter contour interval. Spring

seapage occurs along the east edge of the barranca channel below the site. The topographic zone is Flat Plains and the vegetation community is Pithecolobium Woodland with access to both the Barranca Alluvium and Acacia Grasslands zones.

MODERN UTILIZATION: Rainfall cultivation of corn, beans, squash, and peanuts. The area is prepared for planting using both teams of oxen and tractor plowing. Terraces can be found on the west side of the Rio Frio. The site is situated due North of the modern town of San Gabriel Amacuitlapilco. A hacienda period feeder canal and drainage system are located in the adjacent barranca.

ARCHAEOLOGICAL REMAINS: The site name known locally to the residents of the area is Campana de Oro. The site has been occupied continuously since the Early Formative growing to considerable proportions during the Middle and Late Formative. A number of the site's 11 mounds date to the Late and Terminal Formative periods. During the Late Formative the site appears to have been the principle site in the Amatzinac Valley. Terminal Formative material covers 15 hectares including a major occupation of the central ceremonial zone. Early Classic material is found in medium concentrations over a 6 hectare area. Late Classic debris is lightly distributed over an area 5 hectares in size. Ceramics include both domestic and tradewares. Classification: Terminal Formative Small Village, Early Classic Small Village, Late Classic Hamlet. Other Occupations: Early Formative Amate Phase Hamlet, Middle Formative Barranca Phase Small Village, Middle Formative Cantera Phase Large Village, Late Formative Delgado Phase Regional Center, Early Postclassic Small Village, Late Postclassic Large Village.

RAS-22

NATURAL SETTING: The site is located on the 1374 meter contour interval adjacent to the Rio Frio. It is situated in the Pithecolobium Woodland vegetation zone adjacent to the Barranca Alluvium. The Acacia Grassland zone is readily accessible across the Rio Frio to the west. The topographic zone is classified as Flat Plains.

MODERN UTILIZATION: The site is largely covered by the town of San Gabriel Amacuitlapilco. Some corn cultivation is practiced in the individual house plots. Some undisturbed agricultural terraces can be found along the west edge of the site.

ARCHAEOLOGICAL REMAINS: Both Middle and Late Formative debris were lightly scattered across the northwestern portion of the site. The same was true for later period material. Terminal Formative debris was lightly scattered over 4.5 hectares. Early Classic material was concentrated in fairly high proportions in a 1.5 hectare area. Late Classic material was found over a 2.2 hectare area. The bulk of the occupation at this site is Late Postclassic and associated residential debris from this phase have obscured the earlier periods. All mound construction at the site appears to date to the Postclassic. The site is located directly adjacent

to a passage across the Rio Frio. Classification: Terminal Formative Hamlet, Early Classic Hamlet, Late Classic Hamlet. Other Occupations: Middle Formative Hamlet, Late Formative Hamlet, Early Postclassic Hamlet, Late Postclassic Large Village.

RAS-25

NATURAL SETTING: The site is located on the slopes of a hill northwest of the village of Tlayca. The area is classified as Irregular Plains, slight relief. The site is situated at the 1400 meter contour within the Flat Plains topographic zone. The closest source of flowing water is a large permanent drainage 460 meters to the east. A small shallow sided barranca 1 1/2 meters deep passes the site 75 meters to the west.

MODERN UTILIZATION: The site was fallow when we visited it. It had been planted in corn and sorghum the year before. Field preparation had been with a team of oxen.

ARCHAEOLOGICAL REMAINS: Only a trace of Classic material was found at this site scattered over a 100 square meter area. Classification: Classic Isolated Residence. Other Occupations: Late Formative Delgado Phase Isolated Residence, Late Postclassic Isolated Residence.

RAS-30

NATURAL SETTING: The site is located in the Flat Plains topographic zone due west of the modern town of Jonacatepec. It is 600 meters from the Rio Frio-Tepalcingo to the west and 600 meters from the nearest impermanent drainage. The vegetation zone is Pithecolobium Woodland and the site lies along the 1375 meter contour interval.

MODERN UTILIZATION: The site was fallow when we visited it. Maize had been planted during the last rainy season. Field preparation was with teams of oxen.

ARCHAEOLOGICAL REMAINS: A light trace of Classic material was recovered in our surface collections. Debris from this period were recovered from an area slightly over a half a hectare. No remnant architecture was noted. Due to the lack of distinguishing diagnostics the site could not be phased into either Early or Late Classic subdividions. Classification: Classic Isolated Residence. Other Occupations: Late Postclassic Isolated Residence.

RAS-32

NATURAL SETTING: The site is located at the 1400 meter contour interval in the Pithecolobium Woodland zone. It is situated along a modern irrigation canal southeast of the intersection-between the Cuautla-Izucar and Axochiapan-Zacualpan highways. The topographic zone is Flat Plains. The closest permanent water source is the Rio-Frio-Tepalcingo 1050 meters to the west.

MODERN UTILIZATION: The area is irrigated and oxen-plowed. Maize was being cultivated at the time of the survey. Soils are deep

and rich in humus in the surrounding area.

ARCHAEOLOGICAL REMAINS: Classic material is lightly distributed across the surface of the site and in the adjacent irrigation ditches. The maximum site area is under half of a hectare. No in situ build-ups of architectural debris could be identified. Classification: Classic Isolated Residence.

RAS-34

NATURAL SETTING: This site is located in the Pithecolobium Woodland zone along the 1400 meter contour interval. The topographic zone is classified as Flat Plains. The closest permanent water is the Rio Frio-Tepalcingo 900 meters to the west.

MODERN UTILIZATION: The site is located directly adjacent to the Axochiapan-Zacualpan highway on the east side of the road. A modern irrigation canal borders the site on the east. Water drawn from this canal is used to cultivate the area year round. The area is planted in maize and cultivation is with teams of oxen.

ARCHAEOLOGICAL REMAINS: A light scatter of Late and Terminal Formative material is found across the site. Terminal Formative material is restricted to less than half of a hectare. No marked buildups or concentrations of construction material could be noticed which might indicate remaining residential architecture. Early and Late Postclassic materials are the largest components at this site. Classification: Terminal Formative Isolated Residence. Other Occupations: Late Formative Delgado Phase Isolated Residence, Early Postclassic Hamlet, Late Postclassic Hamlet.

RAS-45

NATURAL SETTING: The site is located in the Pithecolobium Woodland zone along the 1425 meter contour interval. The topographic zone is Flat Plains. The site is roughly 1 km. from the closest permanent water source, the Rio Amatzinac. Erosion is slight, as in rubble.

MODERN UTILIZATION: The site is situated in a solitary field northwest of the modern town of Jantetelco. Maize, beans, and squash are planted during the rainy season using teams of oxen. Irrigation canals pass within 150 meters to the west.

ARCHAEOLOGICAL REMAINS: Both Early and Middle Formative materials are found at the site. In addition Early and Late Classic materials are scattered over a half of a hectare. No marked artifact concentrations were recorded. Classification: Early Classic Isolated Residence, Late Classic Isolated Residence. Other Occupations: Early Formative Amate Phase Isolated Residence, Middle Formative Cantera Phase Isolated Residence, Early Postclassic Isolated Residence, Late Postclassic Isolated Residence.

RAS-46

NATURAL SETTING: The site is located along the 1450 meter contour interval in the Flat Plains topographic zone. The vegetation

zone is Pithecolobium Woodland. The closest permanent water source is the Rio Amatzinac 455 meters to the east.

MODERN UTILIZATION: The site lies on both sides of the modern secondary road between Jantetelco and Amalcingo. The site is partially irrigated and under constant cultivation. Maize, beans, and squash are planted in this area using teams of oxen to prepare the soil.

ARCHAEOLOGICAL REMAINS: A trace of Late Formative material was found at the site. Classic material is restricted to an area just over 1 hectare in size. The light Classic occupation is obscured by heavier Postclassic occupation at the site. Classification: Early Classic Hamlet, Late Classic Hamlet. Other Occupations: Late Formative Delgado Phase Isolated Residence, Early Postclassic Small Village, Late Postclassic Hamlet.

RAS-47

NATURAL SETTING: The site is located in the Pithecolobium Woodland vegetation zone along the 1450 meter contour interval. The topographic zone is Flat Plains. The closest permanent water source is the Rio Amatzinac 865 meters to the east.

MODERN UTILIZATION: The site is located midway between Jantetelco and Amilcingo about 500 meters west of the old road between the two towns. It is found in two adjacent irrigated fields alongside an east-west running cow path. The area is planted year round in maize, beans, and tomatoes. Field preparation is with oxen.

ARCHAEOLOGICAL REMAINS: A very light trace of Classic materials was found over an area slightly larger than one-half of a hectare. No surface rubble indicative of residential structures was noted. Classification: Late Classic Hamlet.

RAS-48

NATURAL SETTING: The site is situated along the 1425 meter contour interval within the Pithecolobium Woodland vegetation zone. The Rio Amatzinac and its Barranca Alluvium vegetation zone are located 80 meters to the east. The topographic zone is classified as Flat Plains. The site is located directly above the slightly rolling barranca edge. Erosion and surface rubble are both light.

MODERN UTILIZATION: Rainfall agriculture of maize, beans, squash, and peanuts are practiced throughout the area. Field preparation is largely with teams of oxen. Soils are shallow and a portion of the site had been allowed to fallow several years prior to our survey. The site is located on the north edge of Jantetelco on the east side of the old road to Amilcingo.

ARCHAEOLOGICAL REMAINS: Both Middle and Late Formative materials are lightly scattered across the site area. The bulk of the site debris along with the mounds appear to date to the Late Postclassic. Terminal Formative materials are distributed over a 2.5 hectare area. Classic materials are thinly scattered over just under 5 hectares. No residential architecture could be associated with

the surface debris. Classification: Terminal Formative Hamlet, Early Classic Hamlet, Late Classic Hamlet. Other Occupations: Middle Formative Cantera Phase Hamlet, Late Formative Delgado Phase Hamlet, Early Postclassic Small Village, Late Postclassic Regional Center.

RAS-50

NATURAL SETTING: This site is located along the 1450 meter contour interval. The site is 150 meters east of the Rio Amatzinac alongside the impermanent drainage of the Barranca de las Tres Escaleras. Another deeply incised impermanent drainage lies several hundred meters further to the east. The topographic zone is Flat Plains. The vegetation zone is Acacia Grassland with immediate access to the Barranca Alluvium. The soil is shallow not exceeding one meter in depth. Rubble reached light to moderate buildups across the site.

MODERN UTILIZATION: Most of the site is used for grazing. A small portion around the mound area is planted during the rainy season in maize. Field preparation is with teams of oxen due to the generally rocky soil. The site is located southeast of Amilcingo between two passes which cross the Rio Amatzinac and the Barranca de las Tres Escaleras.

ARCHAEOLOGICAL REMAINS: A light trace of Late Middle Formative and Late Formative materials is distributed across the site. The bulk of the occupation however dates to the Terminal Formative with light to moderate ceramic and lithic concentrations extending over 7.5 hectares. The site density may be underestimated because of largely undisturbed surface area. The central mound group is architecturally unique for the region. Low flanking mounds form an enclosed rectangular patio. Two mounds flank the north and south sides of the patio while a U-shaped mound is situated on the east side. Access into the patio appears to have been through the northeast and southeast corners. A solitary mound is found some 120 meters to the south. A large number of figurines and braseros are found across the site surface suggesting a substantial commitment to ceremonial activity. Classification: Terminal Formative Small Village. Other Occupations: Middle Formative Cantera Phase Isolated Residence, Late Formative Delgado Phase Isolated Residence, Early Postclassic Hamlet, Late Postclassic Hamlet.

RAS-51

NATURAL SETTING: This site is located along the 1450 meter contour interval 200 meters east of the Rio Amatzinac. A barranca pass across the Rio Amatzinac allows for easy passage into the Pithecolobium Woodland to the west. The topographic zone is Irregular Plains, slight relief. The vegetation zone is Acacia Grassland with easy access to the adjacent Barranca Alluvium.

MODERN UTILIZATION: Rainfall agriculture is the principal form. Maize is cultivated and the fields are prepared for planting using oxen. The site lies directly east of the town of Amilcingo.

ARCHAEOLOGICAL REMAINS: A trace of Middle Formative materials can be found at the site. Five small mounds at the site appear to be Postclassic in date. Rubble is moderate and Terminal Formative material is lightly distributed over a .6 hectare area. Classification: Terminal Formative Isolated Residence. Other Occupations: Middle Formative Cantera Phase Isolated Residence, Early Postclassic Isolated Residence, Late Postclassic Hamlet.

RAS-52

NATURAL SETTING: The site lies in between two impermanent barranca junctures which intersect with the Rio Amatzinac. The Rio Amatzinac and its associated Barranca Alluvium vegetation zone lie 245 meters to the west. The topographic zone is Irregular Plains, slight relief. The vegetation zone is the Acacia Grasslands. Site elevation is 1450 meters above sea level.

MODERN UTILIZATION: Maize is planted during the rainy season. The fields are prepared using teams of oxen. The site is located due east of the town of Amilcingo.

ARCHAEOLOGICAL REMAINS: A trace of Middle Formative material is found. Terminal Formative material is found lightly distributed over a 2300 m^2 area. One small mound was noted during the survey although the field had been cleared of most building materials. Classification: Terminal Formative Isolated Residence. Other Occupations: Middle Formative Cantera Phase Isolated Residence. Late Postclassic Hamlet.

RAS-53

NATURAL SETTING: The site is situated at the 1450 meter contour interval between two large impermanent barrancas. The Rio Amatzinac is located 25 meters to the south of the site along with its Barranca Alluvium vegetation zone. The topographic zone is Irregular Plains, slight relief. The vegetation zone is Acacia Grasslands. Erosion is moderate in this area while soils are shallow.

MODERN UTILIZATION: Maize is grown during the rainy season. The fields are prepared using teams of oxen. The site is located due east of Amilcingo along the north edge of RAS-50.

ARCHAEOLOGICAL REMAINS: Small amounts of Middle and Late Formative materials are found across the site. Terminal Formative residential rubble is found in light to moderate frequency over a 3 hectare area. Classic residence at the site is more restricted in size and is confined to an area just under 1.5 hectares. Rubble is moderate to high across the site. Classification: Terminal Formative Hamlet, Early Classic Isolated Residence. Other Occupations: Middle Formative Barranca Phase Isolated Residence, Middle Formative Cantera Phase Isolated Residence.

RAS-54

NATURAL SETTING: This site is located 395 meters west of the Rio Amatzinac at the 1400 meter contour interval. The vegetation zone is Pithecolobium Woodland. The topographic zone is Flat Plains. The soil exceeds 1 meter in depth and is high in humus content.

MODERN UTILIZATION: The site is cut by the Cuautla-Izucar de Matamoros highway. The northern portion is planted in corn, beans, squash during the rainy season. The southern fields are partially irrigated and planted in tomatoes and chile. Fields are worked using teams of oxen.

ARCHAEOLOGICAL REMAINS: A moderate concentration of Late Formative materials is found at the site. Densities fall off into the Terminal Formative leaving a residual light scatter of debris over 1.5 hectares. Classification: Terminal Formative Isolated Residence. Other Occupations: Late Formative Delgado Phase Hamlet, Early Postclassic Small Village, Late Postclassic Small Village.

RAS-55

NATURAL SETTING: The site is located at the 1400 meter contour interval 645 meters east of the Rio Frio-Tepalcingo. The vegetation zone is the Pithecolobium Woodland and the topographic zone is Flat Plains.

MODERN UTILIZATION: The site is located southeast of the town of Amayuca at the intersection of the Cuautla-Izucar highway with the road out of Amayuca south to Axochiapan. The area is planted during the rainy season. Crops during the previous year were maize and beans. The field was prepared with oxen.

ARCHAEOLOGICAL REMAINS: A light Late Formative occupation is found at the site. Classic materials are lightly distributed over an area just under three-quarters of a hectare. Rubble concentrations were light. No architectural remains were noted. Classification: Classic Isolated Residence. Other Occupations: Late Formative Delgado Phase Isolated Residence, Early Postclassic Isolated Residence, Late Postclassic Hamlet.

RAS-57

NATURAL SETTING: The site is located at the 1425 meter contour interval. The vegetation zone is the Pithecolobium Woodland. The closest permanent water source is the Rio Frio-Tepalcingo located 590 meters to the west. An impermanent drainage passes 280 meters to the west. The topographic zone is Flat Plains. The soil is sandy.

MODERN UTILIZATION: This site is found northeast of Amayuca in a solitary field west of the Zacualpan highway. Peanuts are the principal crop planted during the rainy season. A portion of the site was fallow when visited. The portion which had been planted during the previous year had been oxen-plowed.

ARCHAEOLOGICAL REMAINS: The site is occupied for the first time during Terminal Formative. Debris are lightly scattered over slightly more than half a hectare. Classic materials are found over the maximum extent of the site. The solitary mound construction at the site appears to date to the Middle Classic. Light sherd densities suggest a dispersed settlement pattern. Classification: Terminal Formative Isolated Residence, Early Classic Isolated Residence, Late Classic Isolated Residence.

Other Occupations: Late Postclassic Isolated Residence.

RAS-58

NATURAL SETTING: The site is located in the Flat Plains topograhic zone along the 1400 meter contour interval in the northern portion of the valley. It is located within the Pithecolobium Woodland vegetation zone. An impermanent drainage lies 480 meters to the east while the closest source of permanent water is the Rio Frio-Tepalcingo 735 meters to the west.

MODERN UTILIZATION: The site is located east of the modern town of Amayuca along the Zacualpan-Axochiapan highway. Tomatoes and chiles had been planted in the fields during the previous rainy season. The portion of the site not in permanent fallow was prepared using teams of oxen.

ARCHAEOLOGICAL REMAINS: Traces of both Early and Late Formative materials were found at this site. Terminal Formative material covers three-quarters of a hectare. Classic material is found across just over one-half of a hectare. In both cases the debris accumulation is very light. Two mound constructions appear to date in part to the Terminal Formative period. Classification: Terminal Formative Isolated Residence, Classic Isolated Residence. Other Occupations: Early Formative Amate Phase Isolated Residence, Late Formative Delgado Phase Isolated Residence, Early Postclassic Hamlet, Late Postclassic Hamlet.

RAS-59

NATURAL SETTING: The site is located 595 meters east of the Rio Frio-Tepalcingo at the 1425 meter contour interval. The vegetation zone is Pithecolobium Woodland and the topographic zone is classified as Flat Plains. An impermanent drainage is located 300 meters to the west. Soils are sandy, the rubble is light.

MODERN UTILIZATION: The site lies on the northeast edge of Amayuca. Irrigation canals are used to cultivate this field year round. Maize, beans, and chile were grown in this plot during the previous year. The area is prepared for cultivation using teams of oxen.

ARCHAEOLOGICAL REMAINS: This site was occupied for the first time during the Classic. Materials are lightly distributed over 2500 m^2. No architectural constructions pertaining to this phase were located. Classification: Early Classic Isolated Residence, Late Classic Isolated Residence. Other Occupations: Early Postclassic Isolated Residence, Late Postclassic Isolated Residence.

RAS-62

NATURAL SETTING: The site is located in the northern Pithecolobium Woodland zone at the 1475 meter contour interval. The topographic zone is Flat Plains. The Rio Frio-Tepalcingo is the closest permanent water source 595 meters to the west.

MODERN UTILIZATION: Maize is planted during the rainy season using oxen to prepare the fields. The site is due west of the town of

Amilcingo and west of the Zacualpan-Axochiapan highway.

ARCHAEOLOGICAL REMAINS: Early, Middle, and Late Formative material was collected at the site. A earlier platform mound at the site had been destroyed by farmers and the fill material spread out over part of the fields to level off the area for planting. Excavations at the site by Terry Majewski uncovered a Middle Formative occupation. The only Classic material from this site covered an area approximately 2600 m^2. Residential rubble from this phase was very light and was not clearly associated with any architectural features. Classification: Classic Isolated Residence. Other Occupations: Early Formative Amate Phase Isolated Residence, Middle Formative Barranca Phase Isolated Residence, Middle Formative Cantera Phase Hamlet, Late Formative Delgado Phase Isolated Residence, Early Postclassic Isolated Residence, Late Postclassic Isolated Residence.

RAS-63

NATURAL SETTING: This site on the 1400 meter contour interval due east of the site of RAS-20. It is situated 125 meters west of the Rio Frio-Tepalcingo along the edge of the Pithecolobium Woodland where it merges with the Acacia Grassland. An impermanent drainage lies 390 meters further to the west. The topographic zone is Flat Plains.

MODERN UTILIZATION: Maize is grown during the rainy season. The area is cultivated using teams of oxen.

ARCHAEOLOGICAL REMAINS: A trace of Early Classic material is distributed over one-half a hectare area. Surface concentrations are light and no architecture was noted during the survey. Classification: Early Classic Isolated Residence. Other Occupation: Late Formative Delgado Phase Isolated Residence.

RAS-65

NATURAL SETTING: The site is situated on the 1475 meter contour interval due east of RAS-62. It is located in the Pithecolobium Woodland vegetation zone. The surrounding topographic zone is classified as Flat Plains. It is situated roughly equidistantly between permanent water sources; the Rio Frio-Tepalcingo is located 980 meters to the west while the Rio Amatzinac is found 1250 meters to the east.

MODERN UTILIZATION: The surrounding fields are planted in maize, beans, squash, and peanuts. Portions of the surrounding area are irrigated. Field preparation is with tractor.

ARCHAEOLOGICAL REMAINS: Middle and Late Formative materials were recovered from the site along with artifacts from later time periods. Terminal Formative material is mixed with Early and Late Classic debris over an area just under one-half of a hectare. Residential debris from all three of these phases were recovered in the collections. Classification: Terminal Formative Isolated Residence, Early Classic Isolated Residence, Late Classic Isolated Residence. Other Occupations: Middle Formative Cantera Phase

Isolated Residence, Late Postclassic Isolated Residence.

RAS-68

NATURAL SETTING: The site is located along the 1500 meter contour interval 185 meters west of the Rio Amatzinac. The site is situated in the Pithecolobium Woodland zone. The topographic zone surrounding the site is classified as Flat Plains.

MODERN UTILIZATION: The area is partially in fallow used in part as an orchard. The southern portion of the site is planted during the rainy season. Maize is cultivated using teams of oxen. The site is situated roughly midway between the modern towns of Huazulco and Temoac.

ARCHAEOLOGICAL REMAINS: This site is occupied for the first time during the Terminal Formative. Materials from this phase are lightly scattered over an area under one-half of a hectare. Late Classic materials are restricted to 2500 m^2 area inside this distribution. In either case the materials do not reach peak accumulations. Classification: Terminal Formative Isolated Residence, Late Classic Isolated Residence. Other Occupations: Late Postclassic Isolated Residence.

RAS-69

NATURAL SETTING: The site is located along the 1525 meter contour interval in the northern Pithecolobium Woodland. The area is topographically classified as Flat Plains. The Rio Amatzinac lies 525 meters to the east. The soil is rich in humus content and today is heavily wooded.

MODERN UTILIZATION. This area is used today as a Walnut and Coffee orchard. The entire area is terraced and irrigation canals crisscross the entire area. Heavy leaf cover made the location of sites difficult. The site zone lies due south of the modern town of Temoac

ARCHAEOLOGICAL REMAINS: This site was first occupied during the Classic. A light scattering of Classic debris was collected over an area approximately 1000 m^2 in size. No concentrations of building materials could be noted since most of the surface rubble had been cleared and piled up along the site borders. Classification: Classic Isolated Residence. Other Occupations: Late Postclassic Isolated Residence.

RAS-71

NATURAL SETTING: This site is located in the northern Pithecolobium woodlands along the 1525 meter contour interval. The topographic zone is classified as Flat Plains. The site has ready access to permanent water and the Barranca Alluvium plant zone 115 meters to the east where we find the Rio Amatzinac. Erosion is moderate across this surface.

MODERN UTILIZATION: Maize is planted during the rainy season. The area had been plowed using teams of oxen at the time of the survey.

The site is located several hundred meters due east of the modern town of Temoac.

ARCHAEOLOGICAL REMAINS: Early, Middle, and Late Formative materials are all found at the site along with traces of Postclassic occupation. The Terminal Formative materials found at the site are restricted to an area just over one-half of a hectare and appear to be associated with a residence. A trace of Early Classic material is found in the same area covering 2800 m^2. Classification: Terminal Formative Isolated Residence, Early Classic Isolated Residence. Other Occupations: Early Formative Amate Phase Hamlet, Middle Formative Barranca Phase Isolated Residence, Middle Formative Cantera Phase Isolated Residence, Late Formative Delgado Phase Isolated Residence, Early Postclassic Isolated Residence, Late Postclassic Isolated Residence.

RAS-72

NATURAL SETTING: This site is located in the northern Pithecolobium Woodland zone 70 meters west of the Rio Amatzinac. It falls within the Flat Plains topographic zone and is situated along the 1575 meter contour interval.

MODERN UTILIZATION: The site is located on the southeast edge of the modern town of Zacualpan. It was fallow at the time of survey and had been used primarily for grazing for a considerable period of time.

ARCHAEOLOGICAL REMAINS: Late Formative remains have been identified on the site. The Terminal Formative materials are lightly scattered over less than one-half of a hectare. The heaviest occupation on the site is late Postclassic. Classification: Terminal Formative Isolated Residence. Other Occupations: Late Formative Delgado Phase Isolated Residence, Late Postclassic Isolated Residence.

RAS-75

NATURAL SETTING: This site is situated along the 1550 meter contour interval. The vegetation zone is the Pithecolobium Woodland and the surrounding topography is classified as Flat Plains. The Rio Amatzinac lies 260 meters to the east. The closest impermanent drainage is 490 meters to the west.

MODERN UTILIZATION: The area lies between the modern towns of Temoac and Zacualpan. The area is irrigated and the two crops grown are tomatoes and sugar cane. Fields are prepared for planting using teams of oxen.

ARCHAEOLOGICAL REMAINS: Some Middle Formative material was recovered from the site. The maximum site extension is during the Late Postclassic period. A light trace of Late Classic materials were collected from the site. The occupied area at this time appears under 1500 m^2. Classification: Late Classic Isolated Residence. Other Occupations: Middle Formative Barranca Phase Isolated Residence, Middle Formative Cantera Phase Isolated Residence, Early Postclassic Isolated Residence, Late Postclassic Isolated Residence.

RAS-76

NATURAL SETTING: The site is located along the 1550 meter contour interval in the northern Pithecolobium Woodland. The area is classified topographically as Flat Plains. The closest permanent water source is the Rio Amatzinac located 140 meters to the west. An impermanent drainage passes the site 40 meters to the east. The area is fairly well eroded leaving a slightly rolling landscape as slopes sharply into the barranca channels which border it on either side.

MODERN UTILIZATION: The zone was fallow when surveyed and does not appear to have been in use for several years.

ARCHAEOLOGICAL REMAINS: This site is first, occupied toward the end of the Terminal Formative. Utilitarian residential wares are distributed over a less than one-half of a hectare. Classic materials have the same distribution and likewise are sparsely represented. Surface collections were not adequate to further subdivide the Classic Phase. Classification: Terminal Formative Isolated Residence, Classic Isolated Residence. Other Occupations: None.

RAS-78

NATURAL SETTING: The site of San Ignacio is located at and above the 1100 meter contour interval in the Flat Plains zone of the southern valley. The site lies along the western edge of the Rio Amatzinac and has access to both the Acacia Grassland and Barranca Alluvium. Soil in the area is between one and two meters deep. This is one of the few places along the Rio Amatzinac where the barranca channel becomes shallow and where it is relatively easy to lift water out of the river. An impermanent drainage lies an additional 95 meters to the west.

MODERN UTILIZATION: The site is located on the west side of the town of San Ignacio and is easily seen from the road. Some of the mounds have been destroyed by the road which continues south between Tetelilla and Atlacahualoya. Maize, beans, and squash are grown during the rainy season. The fields are prepared for planting using teams of oxen. A portion of the eastern edge of the site lies within modern house plots.

ARCHAEOLOGICAL REMAINS: Middle and Late Formative materials are found at the site. The site reaches considerable proportions during the Terminal Formative. Debris from this phase are scattered over a 35 hectare area and are mixed with architectural and residential debris from the later Classic occupation. The extent of the site reached approximately 80 hectares by the end of the Classic with moderate to high densities of ceramic and lithic materials. The mound group included 37 major mound constructions including one ballcourt. The ballcourt is built along side a large platform structure which required the construction of only one solitary flanking mound. Most of the mounds are constructed of river boulder fill which has made them a popular target for individuals looking for construction fill. Thin Orange is extremely plentiful and averages between 15-20% of our collections. The site continues into the Epiclassic and has a

substantial reoccupation during the Late Postclassic. Classification: Terminal Formative Large Village, Early Classic Regional Center, Late Classic Regional Center. Other Occupations: Middle Formative Barranca Phase Hamlet, Middle Formative Cantera Phase Hamlet, Late Formative Delgado Phase Small Village, Early Postclassic Small Village, Late Postclassic Small Village.

RAS-79

NATURAL SETTING: The site is situated in the Acacia Grassland vegetation zone along the 1150 meter contour interval. The area surrounding the site is classified as Flat Plains. The Rio Amatzinac is the closest permanent water source which lies 485 meters to the east. The soil in this area averages between one and two meters in depth.

MODERN UTILIZATION: The site is approximately 400 meters east of the San Ignacio-Tetelilla railroad station. The area is only cultivated during the rainy season. Field preparation is with a tractor. Maize appears to be the principal crop.

ARCHAEOLOGICAL REMAINS: There is a trace of Late and Terminal Formative materials at the site. The Terminal Formative ceramics are principally storage vessels scattered over a 1000 m^2 area. The Classic material is likewise thinly distributed over an adjacent area of approximately the same size. The tractor plowing so severely buried the surface debris and it is possible that the site may be larger than our surface collections indicate. Classification: Terminal Formative Isolated Residence, Early Classic Isolated Residence. Other Occupations: Late Formative Delgado Phase Isolated Residence.

RAS-80

NATURAL SETTING: The site is located in the southern valley Acacia Grassland vegetation zone at the merger of two impermanent barrancas. The closest permanent water source is the Rio Amatzinac more than a kilometer to the east. The area surrounding the site is classified as Flat Plains. The soil is thin, under one meter in depth. Considerable number of small rocks in the soil.

MODERN UTILIZATION: The area is planted during the rainy season using a tractor. Maize was the only crop planted during the preceding year.

ARCHAEOLOGICAL REMAINS: A light scatter material is found across a 3800 m^2 area. Thin orange was the only identifiable diagnostic material on the surface along with a trace of colonial ceramics. Classification: Classic Isolated Residence. Other Occupations: None.

RAS-82

NATURAL SETTING: This site is located in the southern Acacia Grassland vegetation zone along the 1075 meter contour interval. The topographic zone is Flat Plains. The site lies alongside an impermanent drainage while the closest permanent water source is Rio Amatzinac 1.8 kilometers to the east.

MODERN UTILIZATION: The site is planted in maize during the rainy season. Field preparation is with oxen. The site is located southwest of San Ignacio.

ARCHAEOLOGICAL REMAINS: There is a light scatter of Class material over a 2000 m^2 area. Surface debris are negligible. No evidence for structures was noted. Classification: Classic Isolated Residence. Other Occupations: None.

RAS-83

NATURAL SETTING: The site is located in the southern Acacia Grassland environmental zone at the 1100 meter contour interval. The site is situated between 2 impermanent drainages, the closest is 125 meters to the west. The Rio Amatzinac is the closest permanent water source which is more than 1.5 kms. to the east. The area surrounding the site is classified as Flat Plains. The soil is a fairly rich loose dark loam.

MODERN UTILIZATION: A portion of the site was fallow when surveyed. The southern half of the site was planted in maize during the preceding rainy season. The area was cultivated using teams of oxen.

ARCHAEOLOGICAL REMAINS: This is a single component site. Terminal Formative material is the only type found. Debris and a small amount of residential rubble is scattered over an area approximately 2000 m^2 in size. Classification: Terminal Formative Isolated Residence. Other Occupations: None.

RAS-84

NATURAL SETTING: The site is located on the 1125 meter contour interval in the southern valley Acacia Grassland. The topographic zone is classified as Flat Plains. The site is located on either side of a small impermanent barranca. The closest permanent water source is the Rio Frio-Tepalcingo which lies more than 1.5 kilometers to the west. The soil is loose, dark, and rich looking loam. Erosion is slight to moderate.

MODERN UTILIZATION: The area immediately around and to the south of the site has been recently brought under irrigation. The site is located due east of the modern town of Tepalcingo. A jaguey (reservoir) has been constructed on the southwestern corner of the site to collect seasonal run off. The area is irrigated and continually under cultivation. Field preparation is with a tractor. The principal crops around the site include maize, beans, and squash.

ARCHAEOLOGICAL REMAINS: A trace of both Middle and Late Formative material was collected from the site. The boundaries of the site were difficult to identify and it is likely that our area estimates are too small. Terminal Formative material was moderately distributed over a 4 hectare area. Early Classic debris buildups extended over a little more than 6 hectares while Late Classic materials are lightly distributed over a 5 hectare area. It was impossible to identify the exact construction phases of the 13 platform mounds located at the site. We can at best assign them to the Terminal Formative-Classic period. Classification: Terminal Formative Small Village, Early Classic Small Village, Late Classic Hamlet. Other Occupations: Middle Formative Cantera Phase Isolated Residence, Late Formative Delgado Phase Isolated Residence.

RAS-88

NATURAL SETTING: The site is located along the 1125 meter contour interval in the southern valley Acacia Grassland vegetation zone. The area surrounding the site is classified as Flat Plains. The site is located directly adjacent to an impermanent drainage. The nearest permanent water source is the Rio Amatzinac more than several kilometers to the east.

MODERN UTILIZATION: The area is cultivated only during the rainy season. A portion of the site had not been planted. A portion of the field had been planted the previous year in maize using oxen to prepare the soil.

ARCHAEOLOGICAL REMAINS: This site was first occupied during the Classic. Classic rubble is lightly scattered over an area roughly 4000 m^2 in size. A trace of Early Postclassic material is also found across the site. No evidence for structures was forthcoming. Classification: Classic Isolated Residence. Other Occupations: Early Postclassic Isolated Residence.

RAS-89

NATURAL SETTING: The site is located in the southern Acacia Grassland of the valley along the 1100 meter contour interval. The area is classified as the Flat Plains topographic zone. The site is situated at a merger of two impermanent barrancas. The closest source of permanent water is the Rio Frio-Tepalcingo located more than 1.5 kilometers to the west.

MODERN UTILIZATION: The site is situated due east of Cerro Tepalcingo, southeast of the town of Tepalcingo. This area is only cultivated during the rainy season. Soil preparation is with teams of oxen and crops during the preceding year included maize, beans, and squash.

ARCHAEOLOGICAL REMAINS: A trace of Late Formative Delgado phase material was collected off of the site. Most of our collections produced Terminal Formative Wedge rim ollas and basins. This material was lightly to moderately distributed over a 2.5 hectare area. Six small mounds were located at the site which appear to be residential in function. Surface collections off of these structures were Terminal Formative in date. A trace of Late

Postclassic material was also recovered in our surface collections. Classification: Terminal Formative Hamlet. Other Occupations: Late Formative Delgado Phase Isolated Residence, Late Postclassic Isolated Residence.

RAS-90

NATURAL SETTING: This site is located in the southern Acacia Grassland portion of the valley. It is situated on the 1050 meter contour interval. The area immediately surrounding the site can be classified as Flat Plains. It is located immediately adjacent to an impermanent drainage. The closest permanent water source is the Rio Amatzinac several kilometers to the east.

MODERN UTILIZATION: The site is located due north of the modern town of Telixtac. The area is cultivated during the rainy season. The soil is prepared for planting using teams of oxen. Last year's crop was maize.

ARCHAEOLOGICAL REMAINS: The site was first occupied during the Classic. Debris are lightly distributed over a three hectare area and are associated with residential debris. A Late Postclassic occupation over the same area has hindered our ability to subdivide the Classic occupation into either early or late components. Classification: Classic Hamlet. Other Occupations: Late Postclassic Small Village.

RAS-93

NATURAL SETTING: The site is located in the southern Acacia Grassland vegetation along the 1075 meter contour interval. The area around the site is classified as within the Flat Plains topographic zone. The site lies on either side of a small impermanent barranca which the sites of RAS-84 and RAS-89 are likewise located on. The closest permanent water source is the Rio Frio-Tepalcingo located just under 2 kilometers to the west.

MODERN UTILIZATION: The site is located due east of Cerro Tepalcingo and due west of the town of Telixtac. The site area is planted in maize during the rainy season. Like other fields in this portion of the valley, the surface is prepared using teams of oxen.

ARCHAEOLOGICAL REMAINS: This site is occupied for the first time during the Terminal Formative. Debris from this phase are lightly distributed over a 1.75 hectare area. Surface collections off two low mound structures at this site indicate that they belong to a later occupation during the Late Postclassic. Residential rubble across the area is light to moderate. Classification: Terminal Formative Isolated Residence. Other Occupations: Late Postclassic Hamlet.

RAS-94

NATURAL SETTING: This site is located on the 1075 meter contour interval in the southern valley Flat Plains topographic zone. The vegetation zone is Acacia Grassland. Like many other sites in this area it is located on a small impermanent barranca. The closest permanent water source is the Rio Frio-Tepalcingo located more than 1.5 kilometers to the west. Soil is fine grained sandy.

MODERN UTILIZATION: The site is located several kilometers due west of Telixtac. Peanuts were planted during the previous rainy season. The field was prepared for planting using teams of oxen.

ARCHAEOLOGICAL REMAINS: A slight trace of Terminal Formative activity was recorded from the presence of several wedge rim ollas. A Late Postclassic occupation is coterminous with this early material making it difficult to identify its exact limits. Classification: Terminal Formative Isolated Residence. Other Occupations: Late Postclassic Isolated Residence.

RAS-95

NATURAL SETTING: This site is located on a small eroded outwash surface north of the town of Tetelilla. It falls within the Acacia Grassland vegetation zone. The topographic zone is Flat Plains. The site lies equidistantly between two impermanent barrancas 500 meters on the east and west. The closest permanent water is the Rio Amatzinac approximately two kilometers to the east. The soil is very shallow here averaging between 50 and 75 cms in thickness. There was a surface accumulation of medium to large rocks.

MODERN UTILIZATION: The area is used for light grazing by the people from Tetelilla. The site lies several hundred meters east of the gravel road between Tetelilla and Jonacatepec.

ARCHAEOLOGICAL REMAINS: The site is principally a Late Formative occupation. A trace of Terminal Formative on the site suggests that it continued to be occupied into this subsequent period. Terminal Formative material is lightly distributed over a 1.5 hectare area. Unfortunately the nature of the ground cover makes it difficult to determine the size of the site as precisely as we would like. A trace of Early Postclassic material was likewise found. Classification: Terminal Formative Hamlet. Other Occupations: Late Formative Delgado Phase Hamlet, Early Postclassic Isolated Residence.

RAS-100

NATURAL SETTING: The site is located on a level gradient along the 1200 meter contour interval. It lies within southern valley Acacia Grassland zone within the Flat Plains topographic zone. It is situated alongside an impermanent barranca which passes Cerro Gordo de Tenango on its west face. The soil is shallow and on the average does not exceed 50 cms in thickness. The closest permanent water source is the Rio Amatzinac located 1.3 kilometers to the east.

MODERN UTILIZATION: This site lies to the north of the modern town of Tetelilla. It is cultivated during the rainy season. The previous year's crop was maize which was planted using a team of oxen.

ARCHAEOLOGICAL REMAINS: Middle and Late Formative material was recovered from this site. There is a trace of Early Classic residential debris indicating a reoccupation of the site at a later date. The Early Classic material is confined to an area approxi-

mately 7200 m^2 in size. Classification: Early Classic Isolated Residence. Other Occupations: Middle Formative Cantera Phase Isolated Residence, Late Formative Delgado Phase Isolated Residence.

RAS-102

NATURAL SETTING: The site is situated on a small impermanent drainage which passes Cerro Gordo de Tenango on the west. The closest permanent water is the Rio Amatzinac located just under 1.5 kilometers to the east. The site is located on the 1200 meter contour interval. The vegetation zone is classified as Acacia Grassland and the topographic zone is Flat Plains.

MODERN UTILIZATION: The site is located northwest of the town of Tenango and due north of Tetelilla. The area is cultivated during the rainy season using oxen. Maize was the only crop we could detect that was planted during the previous rainy season.

ARCHAEOLOGICAL REMAINS: This site was first occupied during the Classic and is the only phase represented at the site. Early and Late Classic materials are equally distributed over the site in considerable quantity. Residential materials, fire cracked rock, and rubble from architecture were noted on the surface. The site is a little over 1 hectare in size. One platform mound was encountered. Classification: Early Classic Isolated Residence, Late Classic Isolated Residence. Other Occupations: None.

RAS-105

NATURAL SETTING: This site is located in the northern Pithecolobium Woodland vegetation zone along the 1400 meter contour interval. The topographic zone is Flat Plains. The closest permanent water source is the Rio Amatzinac which lies 405 meters to the east.

MODERN UTILIZATION: The site lies northwest of the modern town of Chalcatzingo and northeast of the dirt road leading to the bus stop of El Limon. The fields are only planted during the rainy season. The crops grown time vary between maize, beans, squash, tomatoes, and chile. Fields are prepared for planting with oxen.

ARCHAEOLOGICAL REMAINS: This site is very close to the site of RAS-54. Material is distributed over a 3 hectare area during the Early Classic. Indications for residence during the Late Classic diminish slightly and the site area drops to 2 hectares. Ceramic artifacts include tradewares as well as locally produced utilitarian wares. Classification: Early Classic Hamlet, Late Classic Hamlet. Other Occupations: None.

RAS-107

NATURAL SETTING: This site is located in the northern Pithecolobium Woodland vegetation zone along the 1375 meter contour interval. It is situated on a slight rise in the Flat Plains topographic zone. The closest permanent water is the Rio Amatzinac located 1.2 kilometers to the east.

MODERN UTILIZATION: The site is located at the Hacienda of Monte Falco on the access road leading into Chalcatzingo. The previous

year no crops had been planted. Cultivation in this site would be restricted to rainfall agriculture.

ARCHAEOLOGICAL REMAINS: A scatter of Middle Formative materials were found across this site. Mixed in were traces of Terminal Formative, Early Postclassic, and Late Postclassic material. The Terminal Formative material extended over 1.25 hectares. No residential structures could be associated with the visible ceramic debris. Classification: Terminal Formative Isolated Residence. Other Occupations: Middle Formative Barranca Phase Isolated Residence, Middle Formative Cantera Phase Isolated Residence, Early Postclassic Isolated Residence, Late Postclassic Isolated Residence.

RAS-110

NATURAL SETTING: The site is located adjacent to and above the Rio Nexapa. It is located in the southern portion of the valley alongside the Acacia Grassland, Barranca Alluvium, and Border Slopes vegetation zones. The topographic zone is classified as Open Low Hills. The site slopes toward and into the Barranca.

MODERN UTILIZATION: The site had not been cultivated for several years prior to the survey. As a result surface indications were sparse. The site itself is located southeast of the town of San Antonio. Today the area is used only for grazing.

ARCHAEOLOGICAL REMAINS: Traces of Late Formative materials were noted in the collections. Terminal Formative domestic wares were distributed over 1100 m^2. Most of the site is covered with Late Postclassic occupation. Classification: Terminal Formative Isolated Residence. Other Occupations: Late Formative Delgado Phase Isolated Residence, Late Postclassic Isolated Residence.

RAS-111

NATURAL SETTING: The site is situated in the southern valley along the 1200 meter contour interval. It lies within the Acacia Grassland vegetation zone. The area surrounding the site is classified as Flat Plains. The site lies alongside the merger of two impermanent drainages. The closest permanent water source is the Barranca de los Santos 525 meters to the east. The soil is thin here under 50 cms. in thickness.

MODERN UTILIZATION: The area has been left to fallow. The site is located northeast of the town of San Antonio.

ARCHAEOLOGICAL REMAINS: A total of 40 structures were recorded for this site most of which appear to date to the Classic period. Surface conditions were so poor that it was very difficult to collect any material at all. Terminal Formative debris was evenly distributed over 5.5 hectares on the southern end of the site. Early and Late Classic material was found over the entire 15 hectares of the site. Most of the structures are small house mounds. The larger ceremonial structures are situated on the southern end of the site. Low population estimates for this site reflect our inability to identify surface debris. Residential debris was however

found throughout the entire site area. Classification: Terminal Formative Hamlet, Early Classic Small Village, Late Classic Small Village. Other Occupations: Late Formative Delgado Phase Hamlet.

RAS-112

NATURAL SETTING: The site is situated in the rolling hills located to the west side of the Rio Frio-Tepalcingo in the southern valley. The site is located along the 1075 meter contour interval in the Irregular Plains topographic zone south of Ixlilco del Chico. The vegetation zone is a mixed Barranca Alluvium and Acacia Grassland zone. A spring is located 200 meters east of the site. The site is located alongside and above the Rio Frio-Tepalcingo. The depth of the soil is variable and ranges from three meters in depth around the spring to one meter toward the west end of the zone.

MODERN UTILIZATION: The lower portions of the site are irrigated and planted in maize and beans. Oxen are used in preparing these fields. The upper portions of the site above the watertable are uncultivated and are used primarily for grazing. The site lies directly adjacent to the road between Ixlilco Chico and Ixlilco Grande.

ARCHAEOLOGICAL REMAINS: Early, Middle, and Late Formative materials are all found at this site. The site appears to have been continually occupied up through the Late Postclassic. Fifteen mounds were noted at the site most of which appear to date to the Classic period. One ballcourt was noted on the far eastern edge of the site. Fill from this ballcourt appears to have come from Middle Formative occupation areas. Terminal Formative material is distributed evenly over a 17 hectare area. Domestic ceramics predominate in these collections especially the wedge rim olla. Early Classic material is spread over a 25 hectare area. Late Classic materials are restricted to an area just under 13 hectares. The density of materials indicates that this was a tightly nucleated village throughout the Classic. There was a light veneer of Early Postclassic material across the site. The site was fully occupied again during the Late Postclassic. Classification: Terminal Formative Small Village, Early Classic Large Village, Late Classic Small Village. Other Occupations: Early Formative Amate Phase Hamlet, Middle Formative Barranca Phase Small Village, Middle Formative Cantera Phase Small Village, Late Formative Delgado Phase Small Village, Early Postclassic Hamlet, Late Postclassic Small Village.

RAS-114

NATURAL SETTING: The site is located within the southern valley along the 1000 meter contour interval. It is situated on the rolling apron of a large impermanent drainage which leads down into the Rio Frio-Tepalcingo. The area lies within the Acacia Grassland vegetation zone and is adjacent to the Barranca Alluvium. The topographic zone is Irregular Plains, slight relief. The closest permanent water source is the Rio Frio located one kilometer to the south.

MODERN UTILIZATION: The area is normally cultivated during the summer rainy season. Field preparation is with teams of oxen. Maize was the crop grown during the preceding year.

ARCHAEOLOGICAL REMAINS: A light scatter of Early Classic material is distributed across the site, covering approximately 2200 m^2. Classic materials are well represented along with grinding stone impliments and traces of eroding residential structures. Classification: Early Classic Isolated Residence. Other Occupations: Late Formative Delgado Phase Isolated Residence.

RAS-118

NATURAL SETTING: This site is located along the 1000 meter contour interval alongside an impermanent drainage which empties into the Rio Frio-Tepalcingo. The vegetation zone would be classified as Acacia Grassland and Barranca Alluvium combined. The site is on a gently rolling surface which slopes into the impermanent barranca. The topographic area is classified as Irregular Plains with slight relief. The closest permanent water source is the Rio Frio 600 meters to the south.

MODERN UTILIZATION: The area is cultivated with oxen during the rainy season. Last years crops included maize and beans. The site is located due east of Ixlilco Grande.

ARCHAEOLOGICAL REMAINS: Classic materials are lightly scattered across the site. Permanent residence is indicated by ground stone implements and rubble from residential structures. There is also a Late Postclassic component to the site. Classification: Classic Isolated Residence. Other Occupations: Late Postclassic Isolated Residence.

RAS-119

NATURAL SETTING: The site is located along an impermanent drainage in the southern portion of the valley along the 1025 meter contour interval. The closest permanent water source is the Rio Frio-Tepalcingo over 1 kilometer to the west. The vegetation zone is Acacia Grassland. The topographic zone is classified as Flat Plains. Spring seapage is found in the impermanent drainage.

MODERN UTILIZATION: The site is located northeast of Ixlilco del Grande. The site is cultivated during the rainy season using oxen. Maize was the only crop grown during the previous year.

ARCHAEOLOGICAL REMAINS: This is a single component site. All the remains date to the Early Classic period. Residential debris is lightly scattered over a 2000 m^2 area. Rubble accumulation is light and there is little indication of any architecture. Classification: Early Classic Isolated Residence. Other Occupations: None.

RAS-121

NATURAL SETTING: The site is located at the 1025 meter contour interval in the southern valley. It is situated 125 meters east and above the Rio Frio-Tepalcingo. The site is situated within the Acacia Grassland vegetation with easy access to the Barranca Alluvium. The topographic zone is classified as Flat Plains. The site is located on the gently rolling apron of an impermanent drainage.

MODERN UTILIZATION: The site is located due east of RAS-112. The area is cultivated during the rainy season. Maize and chile were grown during the preceding year using oxen to prepare the fields. A portion of the site is also used for grazing.

ARCHAEOLOGICAL REMAINS: Late and Terminal Formative material is lightly scattered across the site. The area of Terminal Formative residence covers just under one-half of a hectare. Early Classic materials are distributed over a 3 hectare area and are associated with a number of the 7 low residential mounds in the site. Other domestic materials including ground stone implements and fire cracked rock are associated with these structures. The Late Classic habitation area is less clear but appears to be restricted to a light scatter of material over a 1.5 hectare area. Other Occupations: Late Formative Delgado Phase Hamlet.

RAS-137

NATURAL SETTING: This site is located in the southern valley along the 1050 meter contour interval. The vegetation zone in which it lies is classified as Acacia Grassland. The topographic zone is that of Flat Plains. An impermanent drainage lies 200 meters to the east. The closest permanent water source is the Rio Amatzinac roughly 3 kilometers to the east.

MODERN UTILIZATION: The site lies northeast of the town of Telixtac. The fields are cultivated during the rainy season. The soil is prepared with oxen and maize is the only crop grown.

ARCHAEOLOGICAL REMAINS: This site is first occupied during the Classic period. Classic materials are distributed over a four hectare area and is mixed in with a small amount of Late Postclassic debris. Classification: Classic Small Village. Other Occupations: Late Postclassic Small Village.

RAS-139

NATURAL SETTING: This site is located in the southern Acacia Grassland on the 1025 meter contour interval. The topographic zone is classified as Flat Plains. The site is located on an impermanent drainage. The nearest permanent water is the Rio Frio-Tepalcingo about 3.5 kilometers to the south.

MODERN UTILIZATION: This area is cultivated during the summer rainy season. Maize was the crop planted the preceding year. Soil preparation is with oxen.

ARCHAEOLOGICAL REMAINS: This site is occupied for the first time during the Late Classic. Residential debris are densely scattered over an area 1.7 hectares in size. Rubble from structures is light although it appears that the site contained residential architecture. The site continued to be lightly occupied into the Early Postclassic. No platform structures are found at this site although a wide array of domestic and ceremonial ceramics occur in our collections. Classification: Late Classic Hamlet. Other Occupations: Early Postclassic Isolated Residence.

RAS-141

NATURAL SETTING: This site is located in the southern valley Acacia Grassland vegetation zone on the 1050 meter contour interval. The topographic zone is classified as Flat Plains. The closest permanent water source are the springs 95 meters to the south of the site. An impermanent drainage begins at these springs and flows to the south. Another impermanent drainage lies 600 meters to the east.

MODERN UTILIZATION: The site lies southeast of the modern town of Telixtac and is 400 meters west of the railroad line. The area is planted in maize during the summer rainy season. Oxen prepare the field for planting.

ARCHAEOLOGICAL REMAINS: This site is first occupied at the very end of the Terminal Formative. Occupation during this period covers less than one-half of a hectare. No conclusive evidence for Early Classic habitation was recovered in the surface collections. A large Late Classic component is represented however. Residential debris including two small platform mounds are densely crowded inside a two hectare area. Surface rubble indicates the presence of other buried residential structures. Surface debris include a high percentage of Thin Orange ware along with censor fragments and figurines. There is in addition a small Late Postclassic component to the site. Classification: Terminal Formative Isolated Residence, Late Classic Small Village. Other Occupations: Late Postclassic Hamlet.

RAS-142

NATURAL SETTING: This site is located in the southern Acacia Grassland vegetation zone. The site is situated on the 1050 meter contour interval in an area classified as Irregular Plains with slight relief. An impermanent drainage lies 580 meters to the east. The closest permanent water source were the springs below RAS-141 which lie 500 meters to the west.

MODERN UTILIZATION: The site is located directly adjacent to the railroad tracks due west of Atlacahualoya. The area has been fallow for some time and is only used for occassional grazing.

ARCHAEOLOGICAL REMAINS: This is a single component Classic site. Materials are lightly distributed over a 4200 m^2 area. Permanent occupation is likely judging from the quantity of surface rubble which probably reflects subsurface structures. Classification: Classic Isolated Residence. Other Occupations: None.

RAS-143

NATURAL SETTING: This site is located on the 1050 meter contour interval in the southern Acacia Grassland vegetation zone. The area is classified as a Flat Plains topographic zone. An impermanent barranca lies 330 meters to the east. The closest permanent water is the small spring seepage below RAS-141. The next closest permanent water source is the Rio Amatzinac more than one kilometer to the east.

MODERN UTILIZATION: The site is located along the railroad tracts due east of Atlacahualoya and north of RAS-142. The area is cultivated during the summer rainy season. Maize, beans, and squash

were the crops grown last year. The area was prepared for planting using a tractor.

ARCHAEOLOGICAL REMAINS: This site is a single component Late Classic site. Ceramic and lithic materials are lightly distributed over a 5200 m^2 area. Light rubble buildups indicate the possibility of subsurface structures. Classification: Late Classic Isolated Residence. Other Occupations: None.

RAS-145

NATURAL SETTING: This site is located along the 1000 meter contour interval in the southern portion of the valley. The area is classified topographically as Flat Plains. The site lies on the fringe of a rolling apron alongside an impermanent drainage. The closest permanent water source is the Rio Frio just over one kilometer to the southwest. The vegetation community in which the site is found is the Acacia Grassland zone.

MODERN UTILIZATION: The site is located at the southwest corner of the town of Quebrantadero. The area is cultivated during the summer rainy season. Maize and beans are the principle crops harvested. The planting is done with the aid of tractors.

ARCHAEOLOGICAL REMAINS: The site is first occupied toward the end of the Terminal Formative. Debris from this phase are lightly scattered over less than one-half of a hectare. There is no direct evidence for permanent habitation during this phase. During the Early Classic the site grows to 10.35 hectares. Debris are densely clustered toward the center of the site although there are no traces for platform architecture. There are clear indications for residence during this and the subsequent Late Classic. Domestic ceramics, ground stone, and lithics are widely scattered and closely associated with materials at this time. The Late Classic material at the site covers approximately 4 hectares, and it appears that the site shrunk slightly during this phase. The site is permanently abandoned at the end of this phase. Classification: Terminal Formative Isolated Residence, Early Classic Small Village, Late Classic Hamlet. Other Occupations: None.

RAS-146

NATURAL SETTING: This site is located in the southern Acacia Grassland vegetation zone along the 1000 meter contour interval. The topographic zone is Flat Plains. The closest impermanent drainage is located 150 meters to the west. The closest permanent water source is the Rio Frio-Tepalcingo more than two kilometers to the west.

MODERN UTILIZATION: The area is cultivated during the rainy season. Maize was planted during the preceding year using oxen to cultivate the soil. The site lies due east of the modern town of Quebrantadero.

ARCHAEOLOGICAL REMAINS: A light scatter of Early Classic material is found across an 1600 m^2 area. No surface buildups of rubble suggest subsurface structures. A portion of the site may have a Postclassic occupation. Classification: Early Classic Isolated Residence. Other Occupations: Postclassic Isolated Residence.

RAS-151

NATURAL SETTING: The site is located in the southern Acacia Grassland vegetation zone at 1025 meters. The topographic zone is classified as Flat Plains. The site lies alongside an impermanent drainage. The closest permanent water source however is the Rio Frio-Tepalcingo over three kilometers to the southwest.

MODERN UTILIZATION: The site is located northwest of the modern town of Quebrantadero just east of the Tepalcingo-Quebrantadero highway. The fields are planted during the summer rainy season using oxen. The crop grown during the preceding year was maize.

ARCHAEOLOGICAL REMAINS: This is a single component site. Classic material was lightly distributed over an area 1.4 hectares in size. One small mound was located which dates to this phase. Other concentrations of rubble around the structures suggest the presence of other subsurface structures. Classification: Classic Hamlet. Other Occupations: None.

RAS-152

NATURAL SETTING: This site is located in the southern Acacia Grassland vegetation zone on the 1025 meter contour interval. The topographic zone is classified as Flat Plains. The site is located at the merger of two impermanent drainages. The closest permanent water source is the Rio Frio-Tepalcingo nearly three kilometers to the southwest.

MODERN UTILIZATION: The site is located due north of the town of Quebrantadero south of RAS-151, and east of the Tepalcingo-Quebrantadero highway. The area is cultivated during the rainy season. Maize, chile, and beans are planted using teams of oxen.

ARCHAEOLOGICAL REMAINS: The eastern portion of the site (RAS-156) was occupied during the Middle Formative. Early Classic debris are found scattered across 1.7 hectares in high quantity. Rubble is moderately high across the site along with a variety of ceramic and lithic domestic tools. Late Classic occupation is apparently restricted to 6800 m^2 on the eastern edge of the site. Classification: Early Classic Hamlet, Late Classic Hamlet. Other Occupations: None.

RAS-154

NATURAL SETTING: This site is located in the southern Acacia Grassland environment on the 1050 meter contour interval. The area is classified within the Flat Plain topographic zone. The site lies adjacent to an impermanent drainage. The closest permanent water source is the Rio Frio-Tepalcingo over three kilometers to the southwest.

MODERN UTILIZATION: The site is directly alongside the Tepalcingo-Quebrantadero highway two kilometers north of Quebrantadero. The area is occasionally cultivated during the summer rainy season. Maize was the crop planted during the preceding year. Cultivation is with oxen.

ARCHAEOLOGICAL REMAINS: There is a trace of Terminal Formative domestic debris at this site. Classification: Terminal Formative Isolated Residence. Other Occupations: Late Postclassic Hamlet.

RAS-158

NATURAL SETTING: This site is located in the southern Acacia Grassland vegetation zone along the 1050 meter contour interval. The topographic classfication is Flat Plains. The site is situated at the merger of two impermanent drainages. The closest permanent water source is the Rio Frio-Tepalcingo more than four kilometers to the west.

MODERN UTILIZATION: This site lies approximately one kilometer southwest of Telixtac. The area is cultivated during the summer rainy season. Maize was planted during the preceding summer. Cultivation was with oxen.

ARCHAEOLOGICAL REMAINS: This site is first occupied during the Late Classic. Surface debris were densely distributed over 1.1 hectares with clear indications for permanent residence. Occupation continues into the first half of the Early Postclassic. Classification: Late Classic Hamlet. Other Occupations: Early Postclassic Isolated Residence.

RAS-159

NATURAL SETTING: The site is located on the 1050 meter contour interval in the southern Acacia Grassland vegetation zone. The topographic classification is Flat Plains. The site lies between two impermanent drainages; the closest is 70 meters to the east. The closest permanent water source is the Rio Frio-Tepalcingo over 2 kilometers to the southwest.

MODERN UTILIZATION: The site lies southwest of Telixtac and due north of RAS-158. The area is cultivated during the rainy season with oxen. Maize was the only crop that we could assure was grown during the preceding year.

ARCHAEOLOGICAL REMAINS: This site was well preserved allowing a good collection of representative artifacts. The site was first occupied during the later half of the Classic. Residential debris were scattered over a 2500 m^2 area. The site was apparently occupied through the early part of the Postclassic. Classification: Late Classic Isolated Residence. Other Occupations: Early Postclassic Isolated Residence.

RAS-160

NATURAL SETTING: This site is located along the 1025 meter contour interval in the southern Acacia Grasslands. The area is classified topographically as Flat Plains. An impermanent drainage is located 265 meters to the west while the closest permanent water source is the Rio Amatzinac more than four kilometers to the east.

MODERN UTILIZATION: The area is cultivated during the summer months. Oxen are used to till the ground. Maize and beans are the principal crops. The site is located roughly 500 meters south of Telixtac.

ARCHAEOLOGICAL REMAINS: This is a single component site. Classic materials were lightly distributed over a 3300 m^2 area. Collections did not allow us to phase the site into early and late components. Classification: Classic Isolated Residence. Other Occupations: None.

RAS-162

NATURAL SETTING: This site is located in the southern Acacia Grassland vegetation zone. Topographically this area is classified as a Flat Plains zone. The site is located directly alongside an impermanent drainage. The closest permanent water source is the spring seepages east of Quebrantadero. The closest river water source is nearly four kilometers away.

MODERN UTILIZATION: The site is located roughly one kilometer east of Quebrantadero. The area is marginally cultivated using oxen. Maize is grown during the summer rainy season.

ARCHAEOLOGICAL REMAINS: The site was first occupied at the end of the Terminal Formative. Wedge rim ollas are found distributed with other debris over a 1000 m^2 area. The site expands slightly during the subsequent Early Classic period. Fairly heavy surface concentrations are found over a 1600 m^2 area associated with rubble from residential constructions and fire cracked rock. The site was abandoned at the end of the Early Classic and does not appear to have been reoccupied until the Late Postclassic when we can identify a thin veneer of settlement across the site. Classification: Terminal Formative Isolated Residence, Early Classic Isolated Residence. Other Occupations: Late Postclassic Isolated Residence.

RAS-163

NATURAL SETTING: This site is located in the southern Acacia Grassland vegetation zone along the 1000 meter contour interval. The area is within the Flat Plains topographic category. The site is located directly adjacent to a spring seepage. An impermanent drainage lies 135 meters to the west. The closest river water source is several kilometers to the southwest.

MODERN UTILIZATION: The area is due east of Quebrantadero. The fields are irrigated drawing water from north of Telixtac. Maize, beans, and squash are grown year round. Field preparation is with both oxen and tractor.

ARCHAEOLOGICAL REMAINS: A trace of early Classic materials was recovered from the area. These are represented by domestic ollas and might represent a water collecting activity more than a permanent residence. The maximal occupation appears to correspond to the Late Postclassic. Classification: Early Classic Isolated Residence. Other Occupations: Late Postclassic Isolated Residence.

RAS-165

NATURAL SETTING: This site is located in the southern Acacia Grassland vegetation zone. The site is located on the 1025 meter contour within the Flat Plains topographic zone. The site sits alongside an impermanent drainage. The closest permanent river water source is the Rio Amatzinac one kilometer to the east.

MODERN UTILIZATION: The area is cultivated with oxen during the rainy season. Maize was grown during the preceding year. The site is located approximately 900 meters south of the town of Atlacahualoya.

ARCHAEOLOGICAL REMAINS: The site is occupied for the first time toward the end of the Terminal Formative. There is only a trace of material from this period scattered over an area less than one-half of a hectare. The site grows significantly during the Early Classic. Surface debris is densely concentrated within a 5 hectare area. Rock rubble suggests the presence of subsurface structures. The site continues to be occupied throughout the Classic and into the Coyotlatelco transition. The site is then abandoned and not reoccupied again. Classification: Terminal Formative Isolated Residence, Early Classic Small Village, Late Classic Small Village. Other Occupations: None.

RAS-166

NATURAL SETTING: This site is located in the southern Acacia Grassland vegetation zone. The site is situated on the 1025 contour interval in the Flat Plains topographic zone. An impermanent barranca is located 225 meters to the east. The closest permanent water source is the Rio Amatzinac located slightly more than one kilometer to the east.

MODERN UTILIZATION: The site is located one kilometer south of the modern town of Atlacahualoya. The area is cultivated during the summer rainy season using teams of oxen. Maize was the only crop planted during the preceding year.

ARCHAEOLOGICAL REMAINS: The site was first occupied during the Early Classic. Surface debris are scattered over a full hectare. Two structures were recorded during the survey both of which appear to date to the Early Classic. One of these structures appears to be a plowed down residence. The site is abandoned half way through the Classic and is not reoccupied until the Late Postclassic. Classification: Early Classic Isolated Residence. Other Occupations: Late Formative Delgado Phase Isolated Residence, Late Postclassic Isolated Residence.

RAS-167

NATURAL SETTING: This site is located in the southern Acacia Grassland vegetation along the 1025 meter contour interval. The topographic zone is Flat Plains. The site sits alongside an impermanent drainage. The closest permanent water source is the Rio Amatzinac 1200 meters to the east.

MODERN UTILIZATION: The site is only cultivated during the rainy season. Maize was the only crop grown during the preceding year. Field preparation was with oxen. The site is located roughly one kilometer south of the town of Atlacahualoya.

ARCHAEOLOGICAL REMAINS: Terminal Formative materials are lightly distributed over an area just under one hectare in size. There are no artifact/refuse concentrations which would indicate former structures. The site is disturbed and the materials are badly eroded. A trace of Classic material was also recovered in our collections. Concentrations of Classic material were not identified in the field. Classification: Terminal Formative Isolated Residence, Classic Isolated Residence. Other Occupations: Late Postclassic Isolated Residence.

RAS-170

NATURAL SETTING: This site is located in the southern Acacia Grassland along the 1025 meter contour interval. The topographic zone is Flat Plains. The closest impermanent drainage is 480 meters away while the closest permanent water source is more than 1.5 kilometers from the site.

MODERN UTILIZATION: The site is cultivated during the rainy season. Field preparation is with oxen and the principle crop grown is maize.

ARCHAEOLOGICAL REMAINS: This is a single component site. It is occupied at the beginning of the Classic and appears to have been abandoned about midway through. No surface rubble was noted although the quantity of debris and domestic ceramics indicate permanent habitation. Debris are scattered across a 1.2 hectare area. Classification: Early Classic Isolated Residence. Other Occupations: None.

RAS-171

NATURAL SETTING: The site is located in the southern Acacia Grassland vegetation zone in an area directly adjacent to the Barranca Alluvium plant types. The site is situated on the 1050 meter contour interval in the Flat Plains topographic zone. An impermanent drainage lies 225 meters to the west. The closest permanent water source today is the Rio Amatzinac 400 meters to the east.

MODERN UTILIZATION: The site is located on the southern side of the town of Atlacahualoya and lies directly adjacent to a number of house plots. Most of the area was fallow when we surveyed it and had been for some time. A portion of the site was planted in maize the previous rainy season. Field preparation was with oxen.

ARCHAEOLOGICAL REMAINS: This site was occupied for the first time during the latter half of the Classic. It appears to have been abandoned at the end of the Classic and was not reoccupied until the Late Postclassic. Classic materials are distributed over a 1.5 hectare area and are mixed in with construction rubble. Atlacahualoya sits today in a small depression alongside the Rio Amatzinac which would have been an excellent location for a small irrigation system. Classification: Late Classic Isolated Residence. Other Occupations: Late Postclassic Isolated Residence.

RAS-172

NATURAL SETTING: The site is located in the southern Acacia Grassland in an area adjacent to the Barranca Alluvium. The site sits on the 1050 meter contour interval within the Irregular Plains, slight relief topographic zone. It lies adjacent to the Rio Amatzinac where an impermanent barranca merges with the river. The site is located on the rolling surface sloping down into the Amatzinac river channel.

MODERN UTILIZATION: The site is located southeast of Atlacahualoya. The area is cultivated during the rainy season. Maize, beans, and tomatoes were grown during the preceding year. Field preparation is with oxen. A number of terraces were also noted on the east edge of the site which appear to be prehispanic although they were not being used for planting.

ARCHAEOLOGICAL REMAINS: The site is first occupied during the Classic and appears to have been abandoned at the end of the period. There is evidence for a light reoccupation of the site during the Late Postclassic. Early Classic materials are distributed over a 13.5 hectare area. Rubble from residential constructions can still be noted in the fields although much of the stone has been cleared from the fields. In the northern portion of the site a complex of six platform mounds were encountered and mapped. Early Classic materials are densely distributed over the surface increasing to moderate intensities for Late Classic materials. The site shrinks slightly during the Late Classic when residence appears to have been distributed over a 10 hectare area. Classification: Early Classic Small Village, Late Classic Small Village. Other Occupations: Late Postclassic Small Village.

RAS-175

NATURAL SETTING: This site is located in the southern Acacia Grasslands alongside and above the Rio Nexapa where there is easy access to Barranca Alluvium vegetation zone. The elevation for the site is 1050 meters and it is located within the Irregular Plains, slight relief topographic zone. The closest impermanent drainage is 950 meters to the west. The site is in a good location for utilizing the valley uplands in combination with cultivating the fairly wide and sandy channel of the Nexapa.

MODERN UTILIZATION: The valley uplands are cultivated during the rainy season. Maize was planted during the preceding year. The site is located due east of Atlacahualoya and south of Coayuca.

ARCHAEOLOGICAL REMAINS: The site was first occupied during the Early Classic and was abandoned shortly thereafter. Classic debris are visible over an area approximately 3200 m^2 in size. Associated rock rubble suggests the presence of earlier residence structures. The site is reoccupied briefly during the Early Postclassic and later during the Late Postclassic. Classification: Early Classic Isolated Residence. Other Occupations: Early Postclassic Isolated Residence, Late Postclassic Isolated Residence.

RAS-176

NATURAL SETTING: The site is situated in the southern Acacia Grassland along the Rio Nexapa, adjacent to the Barranca Alluvium vegetation zone. Site elevation is 1050 meters and the topographic zone is Irregular Plains, slight relief. The site is located 100 meters to the west of the Rio Nexapa on the valley upland overlooking the barranca channel.

MODERN UTILIZATION: The site lies due west of the town of Tzompahuacan. The area is cultivated during the rainy season using oxen. Maize was planted during the previous year.

ARCHAEOLGOCIAL REMAINS: A trace of Classic material was collected from this site. The site extends over a small area approximately 2100 m^2. Besides the ceramic distributions on the surface no rubble accumulations could be noted. Classification: Classic Isolated Residence. Other Occupations: Late Formative Delgado Phase Isolated Residence.

RAS-177

NATURAL SETTING: This site is located along the Rio Nexapa on the valley upland slopes overlooking the river. It is located within the Acacia Grassland zone with easy access down into the Barranca Alluvium of the river. Site elevation is at 1050 meters and it is located within the Irregular Plain with slight relief topographic zone. The closest impermanent drainage is a distant 895 meters to the west.

MODERN UTILIZATION: The site lies due east of Atlacahualoya about midway between Coayuca and Tzompahuacan. The area was fallow when we visited the site and is only used for occasional grazing.

ARCHAEOLOGICAL REMAINS: There is a light scatter of Classic material over a 3100 m^2 area across the site. Late Postclassic material also occurs in our collections. Classification: Classic Isolated Residence. Other Occupations: Late Postclassic Hamlet.

RAS-178

NATURAL SETTING: The site is located at the juncture of the Rio Amatzinac and the Rio Nexapa on the valley upland overlooking the river channels. The site shares both the Acacia Grassland and Valley Alluvium vegetation zones. The site is situated at the 1025 meter elevation in the Flat Plains topographic zone.

MODERN UTILIZATION: The area is planted in maize during the rainy season. Field preparation is with oxen. The site edges slope into the barranca and these areas are used for grazing. The site is located southwest of Tzompahuacan.

ARCHAEOLOGICAL REMAINS: A light trace of Early Classic debris is located over a 1000 m^2 area. Rubble is light to moderate across the site. The site was reoccupied during the Late Postclassic. Classification: Early Classic Isolated Residence. Other Occupations: Late Postclassic Isolated Residence.

RAS-179

NATURAL SETTING: This site is located in the southern Acacia Grassland vegetation zone. Site elevation is 1050 meters and it is situated in the Flat Plains topographic zone. The closest permanent water source is the Rio Nexapa 600 meters to the southeast.

MODERN UTILIZATION: The area is farmed during the rainy season. Maize and beans were planted during the preceding year. The fields were prepared using oxen. The site lies southwest of Coayuca.

ARCHAEOLOGICAL REMAINS: Early Classic materials are lightly scattered across a 1800 m^2 area. Surface debris is concentrated around two small mounds in the center of the site area. Domestic debris collected off these mounds indicate they were residence structures. The site was not reoccupied. Classification: Early Classic Isolated Residence. Other Occupations: None.

RAS-180

NATURAL SETTING: The site is situated in the southern Acacia Grassland vegetation zone at the 1100 meter contour interval. The site lies alongside the Rio Amatzinac and has easy access to its Barranca Alluvium plant types.

MODERN UTILIZATION: The site lies due south of the town of San Ignacio and the site of RAS-78. The area was fallow and covered with huisache and apparently had not been cultivated in at least 10 years. Due to social problems in the village we were disallowed adequate access to the site.

ARCHAEOLOGICAL REMAINS. The site has an interesting ceremonial zone. Eight mounds were identified including one ball court very similar in size to the one at Chalcatzingo (RAS-330). Our surface collections are not adequate. What we can note however is the presence of Early and Late Classic materials over a 10 hectare area. Where the surface of the ground is disturbed we encountered relatively high concentrations of debris. Although best characterized as a separate site, it may be an extension of RAS-78 south alongside the river. It is separated from RAS-78 by modern habitation. We were not allowed to map the site. Classification: Early Classic Small Village, Late Classic Small Village. Other Occupations: None.

RAS-181

NATURAL SETTING: The site is located in the southern Acacia Grassland vegetation zone alongside a strip of the Barranca Alluvium plant zone. The site elevation is 1000 meters and the topographic zone is Irregular Plains slight relief. The site is located west of a large impermanent drainage which cuts deeply into the upland valley floor before joining the Rio Frio-Tepalcingo. The Rio Frio is the closest permanent water source 800 meters to the west.

MODERN UTILIZATION: The area was fallow when surveyed. It had been planted several years previous. This site is north of Chichipilco.

ARCHAEOLOGICAL REMAINS: Early Classic materials are lightly distributed over a site area just under one-half of a hectare. Material

is heavily eroded. The site appears to be a single component site. Classification: Early Classic Isolated Residence. Other Occupations: None.

RAS-182

NATURAL SETTING: The site is located in the southern valley along the 1000 meter contour interval. Vegetation zones available are the Acacia Grassland and the Barranca Alluvium. The topographic zone is Irregular Plains with slight relief. The site is adjacent and above a large impermanent barranca which cuts deeply into the valley floor at this point. The closest permanent water source is the Rio Frio-Tepalcingo 500 meters to the west.

MODERN UTILIZATION: The site is located due east of the town of Contla. The area is cultivated during the rainy season using oxen. Maize was harvested during the preceding season.

ARCHAEOLOGICAL REMAINS: Early and Middle Formative materials were collected at this site along with a good sample of Early Classic debris. The Classic occupation appears to have extended over one-half of a hectare. The site was permanently abandoned half way through the Classic. Classification: Early Classic Isolated Residence. Other Occupations: Early Formative Amate Phase Isolated Residence, Middle Formative Barranca Phase Isolated Residence.

RAS-183

NATURAL SETTING: The site is situated in the southern Acacia Grassland vegetation alongside a strip of the Barranca Alluvium plant zone. Site elevation is 1000 meters and the topographic zone is classified as Irregular Plains with slight relief. The site sits alongside an impermanent barranca on the elevated valley floor. The closest permanent water source is the Rio Frio-Tepalcingo 750 meters to the west.

MODERN UTILIZATION: The site is located southeast of the town of Contla. The area is cultivated using oxen and planted during the rainy season. The previous year's crop was maize.

ARCHAEOLOGICAL REMAINS: A trace of Terminal Formative material was recovered in our collections and it appears that the site was first occupied at this time. Early Classic materials are scattered over more than 3 hectares. Concentrations vary but some fairly dense buildups were recorded which appear to be in situ deposits. Rubble accumulations varied across the site from light to moderate with traces of destroyed stucco floors associated with debris. Two mounds can be found at this site. The highest densities of surface debris are immediately surrounding these structures. Classification: Terminal Formative Isolated Residence, Early Classic Hamlet. Other Occupations: Late Postclassic Hamlet.

RAS-185

NATURAL SETTING: This site is located along the southeastern edge of the valley at the 1000 meter contour interval. The vegetation zone in which the site lies is classified as Border Slopes. The topo-

graphic zone is Irregular Plains with slight relief. The site lies on a gently sloping hillside above and 100 meters to the west of the Rio Frio-Tepalcingo.

MODERN UTILIZATION. The site lies south of the modern town of Contla. The area is uncultivated and used for occasional grazing.

ARCHAEOLOGICAL REMAINS: A trace of Terminal Formative material is found at this site. Wedge rim ollas were distributed over a 2500 m^2 area. The bulk of the occupation in the area pertains to a later Late Postclassic component at the site. Classification: Terminal Formative Isolated Residence. Other Occupations: Late Postclassic Isolated Residence.

RAS-193

NATURAL SETTING: The site is located in the southern valley along the 1000 meter contour interval. The site lies within the Acacia Grassland and Barranca Alluvium vegetation zones. The area is disected by a number of impermanent drainages and is classified as Irregular Plains. The closest permanent water source is the Rio Frio-Tepalcingo located 390 meters to the west.

MODERN UTILIZATION: The area is farmed during the summer rainy season. Field preparation is with oxen and last year's crop was maize. The site lies due east of the modern town of Santa Cruz.

ARCHAEOLOGICAL REMAINS: This site was occupied for the first time during the Early Classic and was abandoned midway through the Classic. A small amount of domestic debris was found scattered over a 500 m^2 area which had the appearance of a solitary residence. Classification: Early Classic Isolated Residence. Other Occupations: None.

RAS-195

NATURAL SETTING: This site is located in the southern Acacia Grassland along the 1000 meter contour interval. The area is classified as a Flat Plains topographic zone. The site is more than 2.5 kilometers from the Rio Frio-Tepalcingo the closest permanent water source. An impermanent drainage lies 355 meters to the east.

MODERN UTILIZATION: The area is cultivated during the rainy season. Maize was planted during the preceding year. Cultivation is with oxen. The site lies east of the modern town of Axochiapan alongside the road and a newly constructed jahuey.

ARCHAEOLOGICAL REMAINS: The jahuey has destroyed a portion of the site. A trace of Terminal Formative material was located. The first substantial occupation dates to the Early Classic. Debris are scattered over 2.25 hectares. Concentrations of surface materials vary from light to medium with associated rubble concentrations. The site appears to have been abandoned at the end of the Classic and was not reoccupied until the end of the Postclassic. Classification: Terminal Formative Isolated Residence, Early Classic Hamlet, Late Classic Hamlet. Other Occupations: Late Postclassic Hamlet.

RAS-196

NATURAL SETTING: This site is located on a small hillside overlooking the channel of the Rio Nexapa. The site elevation is 1100 meters. The vegetation zone is classified as Border Slopes and the topographic zone is Open Hills. The Rio Nexapa is the closest permanent water source located 500 meters to the west.

MODERN UTILIZATION: The site is located due south of the town of Coayuca on the slope above the small cement factory. The area lies fallow and is covered with huisache vegetation.

ARCHAEOLOGICAL REMAINS: The site first appears to be occupied during the Early Classic. Surface debris for both the Early and Late Classic occupations cover a 15 hectare area. Erosion has been fairly severe and together with looting at the site has moved the material around quite a bit. Rock alignments indicate small residential structures. Two platform mounds were noted high up on the hillslope. Occupation may carry over slightly into the Early Postclassic. Classification: Early Classic Small Village, Late Classic Small Village. Other Occupations: None.

RAS-197

NATURAL SETTING: The site is located on the southeastern edge of the valley at the 1050 meter contour interval. The vegetation zones for the site are Barranca Alluvium and Border Slopes. The topographic classification is Irregular Plains with slight relief. The site is situated in the floodplain of the Rio Nexapa located 350 meters to the west.

MODERN UTILIZATION: The entire area is under irrigated cultivation. The crops grown include maize, beans, and squash. The area is cultivated using both tractors and teams of oxen. The site lies south of the town of Coayuca.

ARCHAEOLOGICAL REMAINS: A light scatter of Classic materials were found over the site. It was difficult to determine the exact nature of the site material due to mixing from irrigation. Classification: Classic Isolated Residence. Other Occupations: None.

RAS-200

NATURAL SETTING: This site is located in the southern valley alongside and within the floodplain of the Rio Nexapa. The vegetation zones at the site include the Barranca Alluvium and Border Slope plant communities. The site elevation is 1050 and the topographic zone is Irregular Plains with slight relief. Soil is deep and sandy.

MODERN UTILIZATION: This site is due south of the town of Coayuca. The area is irrigated and planted in maize, beans, squash, and tomatoes. The fields are prepared using both tractor and teams of oxen.

ARCHAEOLOGICAL REMAINS: The site is a mixture of Middle Formative through Late Postclassic debris. To some extent interpretation

of site boundaries and context has been made more complex because of periodic site inundation and flooding. Middle, Late, and Terminal Formative debris scatters are light. The Early Classic occupation reaches just over 3 hectares in area which increases to 5 hectares by the end of the Classic. The site is lightly occupied during the Early Postclassic but grows during the Late Postclassic. Collections taken from the fill of several of the mounds at this site indicate that they are Late Postclassic in date. Classification: Terminal Formative Isolated Residence, Early Classic Hamlet, Late Classic Small Village. Other Occupations: Middle Formative Cantera Phase Isolated Residence, Late Formative Delgado Phase Isolated Residence, Early Postclassic Hamlet, Late Postclassic Small Village.

RAS-201

NATURAL SETTING: The site is situated along the 1050 meter contour interval in the southern valley. The site lies within the Acacia Grassland and overlooks the Rio Nexapa and the Barranca Alluvium vegetation zone. The topographic zone is classified as Irregular Plains with slight relief.

MODERN UTILIZATION: The area was fallow when visited, and had not been planted for several years.

ARCHAEOLOGICAL REMAINS: Middle Formative material was found in our collections. Terminal Formative material is lightly scattered over less than one-half of a hectare. Early Classic material is distributed over slightly more than one hectare and builds up to moderate densities over the length of the site. Late Classic material is restricted to an area just over one hectare on the north end of the site. Rubble accumulations are light. Classification: Terminal Formative Isolated Residence, Early Classic Hamlet, Late Classic Hamlet. Other Occupations: Middle Formative Cantera Phase Isolated Residence, Late Postclassic Hamlet.

RAS-202

NATURAL SETTING: The site is located on the southeastern edge of the valley at the 1050 meter contour interval. The sites vegetation zones include the Barranca Alluvium and the Border Slopes. The area is included within the Irregular Plains slight relief topographic zone. The Rio Nexapa is the closest permanent water source and is located 220 meters to the south.

MODERN UTILIZATION: The site lies adjacent to the modern town of Coayuca. The area was fallow when surveyed and was being used for grazing animals in the village.

ARCHAEOLGICAL REMAINS: A light trace of Classic and Late Postclassic material was distributed across the site. No structures were noted and construction rubble was slight. Classification: Classic Isolated Residence. Other Occupations: Late Postclassic Isolated Residence.

RAS-203

NATURAL SETTING: This site is located in the southern valley along the 1075 meter contour interval. The topographic zone is Flat Plains. The Rio Amatzinac is located 135 meters to the west, and a spring is 170 meters to the north. An impermanent drainage lies 200 meters to the east. The site has access to both the Acacia Grassland and Barranca Alluvium vegetation zones.

MODERN UTILIZATION: The site is about 500 meters north of the town of Atlacahualoya. It is planted in the rainy season using oxen. The principle crop during the preceding year was maize.

ARCHAEOLOGICAL REMAINS: This site was first occupied during the Early Classic. A light scatter of material was recorded over a 2600 m^2 area. Surface rubble was light and no structures were noted. Concentrations of fire cracked rock were found associated with distributions of debris which might indicate earlier structures. A Colonial irrigation system is found at the springs north of the site which attempted to utilize the seepage for agriculture. Classification: Early Classic Isolated Residence. Other Occupations: Late Postclassic Isolated Residence.

RAS-204

NATURAL SETTING: The site is located in the southern valley in the Acacia Grassland vegetation zone. Site elevation is 1075 meters and the area is classified within the Flat Plains topographic zone. The closest permanent water source is the Amatzinac located 365 meters to the west.

MODERN UTILIZATION: The site lies south of the town of San Ignacio. The area is irrigated and maize and chile were growing in the fields when the site was visited. The planting was done with teams of oxen.

ARCHAEOLOGICAL REMAINS: Terminal Formative materials are found scattered across less than one-half of a hectare. Erosion is moderate and construction debris were noted during the survey. Classification: Terminal Formative Isolated Residence. Other Occupations: None.

RAS-207

NATURAL SETTING: The site is situated on the 1075 meter contour interval. The vegetation zone is Acacia Grassland and the area around the site is classified as Flat Plains. The Rio Amatzinac is the closest source of permanent water and is located 290 meters to the west. The closest impermanent drainage is 910 meters to the east.

MODERN UTILIZATION: The site is cultivated during the rainy season. Maize and beans were grown during the previous summer. The field was prepared using oxen. The site lies south of the modern town of San Ignacio.

ARCHAEOLOGICAL REMAINS: The site is occupied for the first time during the Terminal Formative. Wedge rim ollas and basins are clustered in a small zone approximately 600 m^2 in size. The site grows to more than 2.5 hectares during the Early and Late Classic. Surface intensities of materials are generally light throughout the site. No structures were noted and rubble accumulation was slight. Classification: Terminal Formative Isolated Residence, Early Classic Hamlet, Late Classic Hamlet. Other Occupations: None.

RAS-210

NATURAL SETTING: The site is located in the southern Acacia Grassland vegetation zone at an elevation of 1025 meters. The site is located alongside an impermanent drainage. The closest permanent water source is the Rio Amatzinac located more than 1.5 kilometers to the east. The topographic zone is Flat Plains.

MODERN UTILIZATION: The site was fallow when visited and lies directly south and alongside the Axochiapan railroad station.

ARCHAEOLOGICAL REMAINS: This site is occupied for the first time during the Middle Formative and is reoccupied during the Late Classic. Surface debris are lightly distributed over a 3200 m^2 area. Vegetation growth made it difficult to identify rubble concentrations which might indicate earlier structures. Classification: Late Classic Isolated Residence. Other Occupations: Middle Formative Cantera Phase Isolated Residence.

RAS-211

NATURAL SETTING: This site is located in the southern valley Acacia Grassland vegetation zone. The site elevation is 1025 meters and the topographic zone is Flat Plains. The site sits alongside an impermanent drainage. The closest permanent water source is the Rio Amatzinac more than 3 kilometers to the east.

MODERN UTILIZATION: The site sits immediately alongside the modern town of Axochiapan. The area is cultivated during the rainy season. Maize is grown and the ground is tilled using oxen.

ARCHAEOLOGICAL REMAINS: This is a single component Classic site. Residential debris are thinly scattered over a 2700 m^2 area. The site was classified as a simple ceramic dispersion without associated structures. Classification: Classic Isolated Residence. Other Occupations: None.

RAS-213

NATURAL SETTING: The site is located in the southern valley Acacia Grassland vegetation zone. The site is situated on the 1025 meter contour interval in an area classified as Flat Plains. An impermanent drainage is located 345 meters to the west. The closest permanent water source is the Rio Amatzinac located about two kilometers to the east.

MODERN UTILIZATION: The site is northeast of the Axochiapan railroad station. The area is irrigated through well pumping and sorghum was growing when the site was visited. Areas further to the east are only cultivated during the summer rainy season.

ARCHAEOLOGICAL REMAINS: This is a single component Early Classic site. Surface debris are scattered across an 800 m^2 area. Rubble concentrations were slight. Water action appears to have displaced the material laterally across the site. Classification: Early Classic Isolated Residence. Other Occupations: None.

RAS-214

NATURAL SETTING: This site is situated in the southern Acacia Grassland vegetation zone. The site is located along the 1025 meter contour interval and the area surrounding the site is classified within the Flat Plains topographic zone. An impermanent drainage is located 275 meters to the west. The closest permanent water source is the Rio Amatzinac more than two kilometers to the east.

MODERN UTILIZATION: The fields here are irrigated with water pumped from below surface. Maize is the only crop grown and the field is tilled using oxen. The site is located northeast of the town of Axochipan.

ARCHAEOLOGICAL REMAINS: This site is first occupied during the Classic. Early and Late Classic materials are spread over an area just under a hectare in size. Water action had moved the materials throughout the site. Much of the construction rubble had been cleared from the fields and stacked up along the field boundaries. Classification: Early Classic Isolated Residence, Late Classic Isolated Residence. Other Occupations: None.

RAS-215

NATURAL SETTING: This site is situated in the southern valley along the 1025 meter contour interval. The site lies within the Acacia Grassland vegetation zone and the Flat Plains topographic category. The closest impermanent drainage is 375 meters to the west. The closest permanent water source is the Rio Amatzinac two and one-half kilometers to the east.

MODERN UTILIZATION: The site is northeast of the modern town of Axochiapan. The area is cultivated during the rainy season. Maize was the crop grown during the previous year. The fields were prepared using teams of oxen.

ARCHAEOLOGICAL REMAINS: This is a single component site occupied during the Early Classic. Residential rubble is lightly but continuously distributed over a 900 m^2 area. No structures were noted during the survey and erosion was slight. Classification: Early Classic Isolated Residence. Other Occupations: None.

RAS-216

NATURAL SETTING: This site is located in the southern extent of the valley in the Acacia Grassland vegetation zone. The site lies along the 1025 meter contour interval within the Flat Plains topographic zone. It is located alongside an impermanent drainage.

The closest permanent water source is the Rio Amatzinac more than two kilometers to the east.

MODERN UTILIZATION: The area is planted in maize during the rainy season. Planting is done with oxen. The site is located northeast of Axochiapan.

ARCHAEOLOGICAL REMAINS: Classic materials are lightly distributed across the site area which approximates 3200 m^2. Late Postclassic material at the site made it difficult to accurately identify the extent of the Classic occupation. Thin Orange is the principal diagnostic in our surface collections. Classification: Classic Isolated Residence. Other Occupations: Late Postclassic Hamlet.

RAS-217

NATURAL SETTING: The site is located in the southern Acacia Grassland vegetation zone directly adjacent to an impermanent drainage. The site lies along the 1025 meter contour interval within the Flat Plains topographic zone. The closest permanent water source is the Rio Amatzinac more than two kilometers to the east.

MODERN UTILIZATION: A portion of the area is irrigated while the greater area around the site is only cultivated during the summer rainy season. Water for the irrigated plots is pumped up to the surface from a well. Maize and beans are the crops grown and the field preparation is with oxen.

ARCHAEOLOGICAL REMAINS: This site is first occupied during the Classic. Surface collections were not adequate to allow us to subdivide the site into early and late components. Classic occupation is distributed over an area roughly 3700 m^2. The majority of the surface debris collected dates to a Late Postclassic occupation. Classification: Classic Isolated Residence. Other Occupations: Late Postclassic Hamlet.

RAS-218

NATURAL SETTING: This site is located adjacent to an impermanent barranca in the southern valley. The vegetation zone is Acacia Grassland. The site is situated along the 1025 meter contour interval and its topographic zone is Flat Plains. The closest permanent water source is the Rio Amatzinac just over two kilometers to the east.

MODERN UTILIZATION: Rainfall agriculture is practiced and maize is the principal crop grown. Field preparation is with oxen. The site is located northwest of the Axochiapan railroad station.

ARCHAEOLOGICAL REMAINS: There is a trace of Early Classic material over a 4800 m^2 area. Rubble concentration throughout this area suggests earlier habitation structures. The site was reoccupied during the Late Postclassic. Classification: Early Classic Isolated Residence. Other Occupations: Late Postclassic Isolated Residence.

RAS-219

NATURAL SETTING: The site is located in the southern Acacia Grassland vegetation zone along the 1025 meter contour interval. The topographic zone is Flat Plains. An impermanent drainage lies 220 meters to the east. The closest permanent water source is the Rio Amatzinac 1.5 kilometers to the east.

MODERN UTILIZATION: Rainfall agriculture is practiced during the summer. Maize is grown using oxen to till the soil. The site is located northeast of the modern town of Axochiapan.

ARCHEOLOGICAL REMAINS: This is a single component Early Classic site. Debris are distributed across the surface of the site in light concentrations. The site extends over a 1900 m^2 area. Construction rubble is slight although quantities of fire cracked rock and ground stone tools were noted during the survey. Classification: Early Classic Isolated Residence. Other Occupations: None.

RAS-220

NATURAL SETTING: The site is located in the southern Acacia Grassland vegetation zone alongside an impermanent drainage. Site elevation is 1025 meters and falls within the topographic zone of Irregular Plains with slight relief. The closest permanent source of water is the Rio Amatzinac more than 1.5 kilometers to the east.

MODERN UTILIZATION: The area is cultivated during the summer rainy season. Maize, beans, and squash are planted using teams of oxen. The site is due east of the town of Axochiapan.

ARCHAEOLOGICAL REMAINS: A trace of Terminal Formative material is found here although the bulk of the site is Classic. Terminal Formative wedge rims are found over an area roughly 7500 m^2 on the southern end of the site. The site grows to more than 4.5 hectares during the Early Classic period when some of its six platform mounds located during the survey were probably built. The site expands to more than 7 hectares during the Late Classic. Surface debris are highest around the central mounds. Erosion has been slight. Much of the construction rubble has been cleared from the fields and piled up along the field borders. Classification: Terminal Formative Isolated Residence, Early Classic Small Village, Late Classic Small Village. Other Occupations: None.

RAS-221

NATURAL SETTING: The site is located in the southern Acacia Grassland about 3 kilometers northwest of Atzitzica. The site lies along the 1025 meter contour interval and the topographic zone is Flat Plains. The closest permanent water source is the Rio Amatzinac 1.25 kilometers to the east. The site lies directly adjacent to a large impermanent barranca.

MODERN UTILIZATION: The area has not been cultivated for several years. Old field boundaries could be found however and it is possible that the field was on a long crop rotation.

ARCHAEOLOGICAL REMAINS: A trace of Late Formative material can be found on the site. The principal component however dates to the Early Classic. Debris from this phase cover about 1900 m^2 with a few marked buildups. Local and imported tradewares were recovered. The principal diagnostic from the site was Thin Orange. Classification: Early Classic Isolated Residence. Other Occupations: Late Formative Delgado Phase Isolated Residence.

RAS-222

NATURAL SETTING: The site is situated in the southern valley along the 1025 meter contour. The site has access to the Acacia Grasslands and Barranca Alluvium vegetation zones. The topographic zone is Flat Plains. The site is situated on the gently rolling slope overlooking the Rio Amatzinac. The Rio Amatzinac and Nexapa merge just above the site.

MODERN UTILIZATION: The site is located approximately one kilometer northwest of Tlallayo. The upland valley floor is cultivated during the summer rainy season. Maize and beans are the principal crops grown. The fields are oxen plowed.

ARCHAEOLOGICAL REMAINS: The site is first occupied during the Early Classic. Debris were mapped over a 1.5 hectare area. One low house mound was located which had been badly plowed down. Erosion is light to moderate across the site. The site increased in size to just under 3.5 hectares during the Late Classic. The site appears to have been abandoned at the end of the Classic. Classification: Early Classic Hamlet, Late Classic Hamlet. Other Occupations: None.

RAS-223

NATURAL SETTING: The site is located in the southeastern corner of the valley along the 1025 meter contour interval. The site lies just above the Rio Amatzinac about 100 meters to the east. The eastern edge of the site begins to slope gently into the barranca channel. The site's vegetation zones include the Acacia Grassland of the upland valley in addition to the Barranca Alluvium of the Amatzinac. The topographic zone is Flat Plains.

MODERN UTILIZATION: The upland valley floor is planted during the rainy season. Maize was the crop grown during the preceding year. The ground was oxen plowed.

ARCHAEOLOGICAL REMAINS: This site is a light ceramic scatter over a 4 hectare area. Materials are densest around a small mound located at the northern end of the site. The collections indicate that the site was first occupied during the Early Classic. A trace of Early Postclassic material was also found. Classification: Early Classic Hamlet. Other Occupations: Early Postclassic Isolated Residence.

RAS-224

NATURAL SETTING: This site is located in the southern Acacia Grassland vegetation zone along the 1025 meter contour interval. The

topographic zone is Irregular Plains with slight relief. An impermanent drainage is located 370 meters to the west. The closest permanent water source is the Rio Amatzinac more than 1.5 kilometers to the east.

MODERN UTILIZATION: Rainfall agriculture is practiced during the summer. Maize is the only crop grown and the fields are prepared with oxen. The site is located 500 meters southwest of the Axochiapan railroad station.

ARCHAEOLOGICAL REMAINS: This site was first occupied during the Early Classic and is not abandoned until the end of the Classic. Surface debris are lightly scattered over an area of 2200 m^2. A full range of domestic materials were recovered in the surface collections, indicating permanent habitation in this area. No structures were located. Classification: Early Classic Isolated Residence, Late Classic Isolated Residence. Other Occupations: None.

RAS-225

NATURAL SETTING: This site is located in a wide meander loop of the Rio Amatzinac in the southern valley. The site's elevation is 1000 meters and the topographic zone is classified as Flat Plains. The site has access to both the Acacia Grassland and Barranca Alluvium vegetation zones. Soil was over 2 meters thick and sandy in spots.

MODERN UTILIZATION: A good portion of the site area is terraced. The whole area is irrigated with water drawn from the Amatzinac. Crops under cultivation when the site was visited in April included maize, beans, squash, tomatoes, and sugar cane. The area was oxen plowed. The site is located northwest of the modern town of Chimalcatlan.

ARCHAEOLOGICAL REMAINS: This site appears to have been continually occupied from the start of the Middle Formative through to the end of the Late Postclassic. Terminal Formative material is lightly distributed over a little more than a hectare. Early and Late Classic material was distributed over about 5 hectares. Late Postclassic materials across the site and terrace building have destroyed most of the early in situ deposits. Collections taken from fill in several of the mounds indicate that they are Postclassic in date. A number of the mounds are constructed on the edges of the terraces indicating a prehispanic origin for these constructions. Classification: Terminal Formative Hamlet, Early Classic Small Village, Late Classic Small Village. Other Occupations: Middle Formative Cantera Phase Hamlet, Late Formative Delgado Phase Small Village, Early Postclassic Hamlet, Late Postclassic Large Village.

RAS-226

NATURAL SETTING: This site is located in the southern valley Acacia Grassland along the 1025 meter contour interval. The topographic zone is Irregular Plains, slight relief. An impermanent drainage lies 85 meters to the west. The closest permanent water source is the Rio Amatzinac 635 meters to the east.

MODERN UTILIZATION: The site lies northwest of the town of Chimalcatlan. The area is irrigated and maize, beans, and squash were under cultivation when the site was visited. The field was prepared for planting using oxen.

ARCHAEOLOGICAL REMAINS: There is a light distribution of Classic materials over the site. No structures were located. There was some amount of lateral displacement as a result of water movement. Classification: Classic Isolated Residence. Other Occupations: None.

RAS-227

NATURAL SETTING: This site is located in the southern Acacia Grassland vegetation zone along the 1025 meter contour interval below RAS-226. The topographic zone is Open Low Hills. An impermanent drainage lies 145 meters to the west while the Rio Amatzinac is 600 meters to the east.

MODERN UTILIZATION: This area is irrigated. Maize was the only crop being cultivated when the site was encountered. Field preparation was with oxen. The site is located northwest of Chimalcatlan.

ARCHAEOLOGICAL REMAINS: This is a single component site dating to the Early Classic. Domestic refuse across the site area suggests permanent habitation across a 2800 m^2 area. Surface rubble was negligible. Classification: Early Classic Isolated Residence. Other Occupations: None.

RAS-228

NATURAL SETTING: This site is located in the southern valley in the Open Low Hill topographic zone along the 1000 meter contour interval. The vegetation zone is Acacia Grassland. An impermanent drainage is located 330 meters to the west while the Rio Amatzinac lies 500 meters to the southeast. The site lies on the edge of the valley uplands bordering on the RAS-225 flood plain.

MODERN UTILIZATION: Rainfall cultivation of maize in the summer is the principle use for this area. The fields are plowed with oxen. The site lies roughly 500 meters northwest of Chimalcatlan.

ARCHAEOLOGICAL REMAINS: A light scatter of Early Classic material was recovered from our surface collections at this site. No association with particular areas of the site could be made. Classification: Early Classic Isolated Residence. Other Occupations: None.

RAS-230

NATURAL SETTING: This site is located in the northern Pithecolobium Woodland vegetation zone along the 1400 meter contour interval. The topographic zone is Flat Plains. The closest impermanent drainage is 350 meters to the west while the closest permanent water source, the Rio Frio-Tepalcingo is over one kilometer to the west.

MODERN UTILIZATION: The mound and associated sherd scatter lies within the northern roadside barrio of Jonacatepec. A thorough study of the size of the site could not be made as contemporary refuse has covered the whole area.

ARCHAEOLOGICAL REMAINS: The only visible item was a solitary mound and associated ceramics eroding out the sides. Collections indicate that the mound was likely constructed during the Late Classic. Site size is calculated on the basis of visible refuse and the site class is an estimate based on the presence of monumental architecture. Classification: Late Classic Hamlet. Other Occupation: None.

RAS-232

NATURAL SETTING: This site is located in the southern valley along the 1175 meter contour interval. The site has access to the Acacia Grassland and the Barranca Alluvium vegetation zones. The site is located within the Flat Plains topographic zone. The Rio Frio-Tepalcingo borders the site on the west. The nearest impermanent drainage is 1.6 kilometers to the east. The soil appears shallow and does not exceed 1 meter in depth.

MODERN UTILIZATION: Rainfall cultivation of maize, beans, and squash is practiced. Soil preparation is with oxen.

ARCHAEOLOGICAL REMAINS: A light distribution of Classic material is found across the site. Total site area is 3900 m^2. Rubble concentrations suggest the presence of earlier residence structures. Classification: Classic Isolated Residence. Other Occupations: Middle Formative Cantera Phase Isolated Residence.

RAS-234

NATURAL SETTING: The site is located in the southern valley along the 1225 meter contour. The site has access to the Acacia Grassland and Barranca Alluvium vegetation zone. The topographic zone is Flat Plains. The closest permanent water source is the Rio Frio-Tepalcingo which borders the site along its eastern edge.

MODERN UTILIZATION: The site lies south of the railroad where it intersects the Zacualpan-Axochiapan highway. The area is cultivated in the summer rainy season. Fields are prepared using oxen. The principle crops during the preceding year were maize and beans.

ARCHAEOLOGICAL REMAINS: There is a light scatter of Late Classic materials over a 2200 m^2 area. Rubble is light but permanent habitation is indicated by the presence of small amounts of fire cracked rock and some construction material. The site continued to be occupied into the Early Postclassic. Classification: Late Classic Isolated Residence. Other Occupations: Early Postclassic Isolated Residence.

RAS-243

NATURAL SETTING: This site is located at the southeastern corner of Cerro Gordo de Tenango alongside the Rio Amatzinac. The site

has access to all of the Pithecolobium, Cerro, and Acacia vegetation zones. The topographic zone is classified as Low mountains and the site elevation is 1250 meters.

MODERN UTILIZATION: The area had not been cultivated for some time. Old field boundaries were visible however.

ARCHAEOLOGICAL REMAINS: Twenty three mounds were noted during the survey. This site appears to have been permanently occupied from the Middle Formative through until the end of the Postclassic. Terminal Formative debris are lightly scattered over a 10 hectare area. Early and Late Classic materials are scattered over smaller areas but are tightly clustered. Some Classic material was also recovered from the small terraces which rise up the slopes of Cerro Gordo. Indications are that the classic occupation was tightly clustered around the mounds. Erosion is light and habitation construction rubble is very thick across the extent of the site. A good sized Middle Formative occupation was located on the northern edge of the site. Because of the large quantity of Postclassic material at this site the edges of the Classic occupation might extend further out than we have been able to identify with our present surface collections. Classification: Terminal Formative Small Village, Early Classic Small Village, Late Classic Small Village. Other Occupations: Middle Formative Barranca Phase Hamlet, Middle Formative Cantera Phase Hamlet, Late Formative Delgado Phase Hamlet, Early Postclassic Small Village, Late Postclassic Large Village.

RAS-264

NATURAL SETTING: This site is located in the southern valley along an impermanent drainage. The closest permanent drainage is the Rio Frio-Tepalcingo 600 meters to the west. The vegetation zone is still the Pithecolobium Woodland although it is thinning into Acacia Grassland at this point. The sites along the 1300 meter contour interval and the topographic zone is Flat Plains.

MODERN UTILIZATION: Maize and beans are grown during the summer rainy season. The fields are prepared for planting using oxen. The site is located directly alongside the Zacualpan-Axochiapan highway east of Atotonilco.

ARCHAEOLOGICAL REMAINS: Six platform mounds were mapped during the reconnaissance which appear to date to the Late Formative. Terminal Formative occupation debris are restricted to just under one hectare. The site appears largely abandoned by this time. The site is not reoccupied until the Late Postclassic. Classification: Terminal Formative Isolated Residence. Other Occupations: Late Formative Delgado Phase Hamlet, Late Postclassic Isolated Residence.

RAS-266

NATURAL SETTING: The site is located on the hill slopes above the springs at the Atotonilco Balneario. The vegetation zone is Acacia Grassland. Site elevation is 1300 meters while the topographic zone is Hills. The Rio Frio lies 1.2 kilometers to the east.

MODERN UTILIZATION: The upper slopes and terraces are fallow overlooking the modern village of Atotonilco and are only used for occasional grazing and cutting firewood.

ARCHAEOLOGICAL REMAINS: A light trace of Classic material is found across the lower slopes and terraces of the Atotonilco hill. Approximate site area would be just a little over one hectare. Mounds at the site appear to date to the Late Postclassic occupation. Classification: Classic Isolated Residence. Other Occupations: Middle Formative Barranca Phase Isolated Residence, Middle Formative Cantera Phase Hamlet, Late Postclassic Regional Center.

RAS-270

NATURAL SETTING: This site is located along the 1200 meter contour interval in the southern valley. The vegetation zone is the Acacia Grassland and the topographic zone is classified as Flat Plains. The site is located adjacent to a small impermanent drainage. The closest permanent water source is the Rio Frio-Tepalcingo more than 1.5 kilometers to the east.

MODERN UTILIZATION: The area is irrigated and corn, beans, and squash were under cultivation at the time of the survey. The site is located southeast of Atotonilco. The fields are prepared for planting using oxen.

ARCHAEOLOGICAL REMAINS: The site is first occupied during the Late Classic. Domestic debris and light construction rubble are spread over a 7100 m^2 area. The water movement does not appear to have moved the surface debris out of its original context. Classification: Late Classic Hamlet. Other Occupations: Late Postclassic Isolated Residence.

RAS-273

NATURAL SETTING: This site is located between the 1175 and 1200 meter contour interval along an impermanent drainage. The vegetation zone is Acacia Grassland and the topographic zone is Flat Plains. The nearest permanent water source is the Rio Frio over one kilometer to the east.

MODERN UTILIZATION: The area is cultivated during the rainy season. Maize, beans, and squash are planted using teams of oxen. The site is due north of the town of Tepalcingo.

ARCHAEOLOGICAL REMAINS: Classic materials are lightly distributed over a very large area and suggests a dispersed settlement pattern. Classic refuse is spread over a 12 hectare area. Small buildups of material throughout the area indicated individual residence structures. Two platform mounds were located during the survey which may date to the Late Classic. Classification: Late Classic Small Village. Other Occupations: Late Postclassic Small Village.

RAS-274

NATURAL SETTING: This site is located in the southern Acacia Grassland vegetation zone along the 1200 meter contour interval. The topographic zone is Flat Plains. An impermanent drainage lies

150 meters to the east while the closest permanent water source is nearly 4 kilometers away.

MODERN UTILIZATION: The area is cultivated only during the rainy season. Maize was the crop grown during the previous year. The area was cultivated using teams of oxen.

ARCHAEOLOGICAL REMAINS: The site appears occupied at the very end of the Terminal Formative when a few wedge rim basins appear at the site. The bulk of the refuse places the site well within the Late Classic. One mound construction was noted with two small platforms in each of two corners. Rubble was light to moderate across the site and associated with cermaic concentrations. Classification: Terminal Formative Isolated Residence, Late Classic Isolated Residence. Other Occupations: None.

RAS-279

NATURAL SETTING: This site is located along the 1150 meter contour interval in the southern Acacia Grassland vegetation zone. It is situated at the base of Cerro Escobar west of the modern town of Tepalcingo. The topographic zone in which the site lies is classified as Flat Plains. An impermanent barranca passes the site on the south. The closest permanent water source is the Rio Frio-Tepalcingo 2.6 kilometers to the east.

MODERN UTILIZATION: The area is planted during the rainy season. Field preparation during the preceding year was with oxen. Maize was the only crop grown.

ARCHAEOLOGICAL REMAINS: Early and Late Classic materials are distributed across the surface of the site. Light rubble concentrations indicate earlier residence structures. A light scatter of Late Postclassic material is also found. Classification: Early Classic Hamlet, Late Classic Isolated Residence. Other Occupations: Late Postclassic Hamlet.

RAS-285

NATURAL SETTING: This site is located in the northern portion of the valley along the 1500 meter contour interval. Available vegetation zones include Pithecolobium Woodland and Barranca Alluvium. The site is located above but alongside the Rio Amatzinac. The Barranca de las Escaleras lies 200 meters to the east.

MODERN UTILIZATION: The area is cultivated during the rainy season. Maize was grown during the preceding year. Fields were prepared using oxen. The site is located due east of the town of Huazulco.

ARCHAEOLOGICAL REMAINS: There is a light scatter of Terminal Formative wedge rim basins and ollas across slightly more than one hectare. Rubble is light to moderate over the area. This is a single component site. Classification: Terminal Formative Isolated Residence. Other Occupations: None.

RAS-288

NATURAL SETTING: This site is located in the northern Pithecolobium Woodland vegetation zone. It is situated along the 1500 meter

contour interval 600 meters west of the Rio Frio-Tepalcingo. The topographic zone is classified as Flat Plains. An impermanent barranca passes the site 430 meters to the west.

MODERN UTILIZATION: The area is irrigated and oxen plowed. The crop under cultivation at the time of the survey was peanuts. The site is located due west of the modern town of Huazulco.

ARCHAEOLOGICAL REMAINS: There is a light trace of Terminal Formative material lightly distributed over a 6000 m^2 area, principally in the form of wedge rim ollas and basins. The Early Classic occupation covers 8300 m^2. Surface rubble is light because most of the fields have been cleared of rocks to make cultivation easier. Classification: Terminal Formative Isolated Residence, Early Classic Isolated Residence. Other Occupations: None.

RAS-291

NATURAL SETTING: This site is located in the northern Pithecolobium Woodland 500 meters east of the Rio Frio-Tepalcingo. The site elevation is 1500 meters and the topographic zone is Flat Plains. An impermanent drainage flows past the site 100 meters to the west.

MODERN UTILIZATION: The area is irrigated and peanuts are grown the year round. The field is prepared for planting with oxen. The site is located northwest of the town of Huazulco.

ARCHAEOLOGICAL REMAINS: A light trace of Terminal Formative occupation is distributed over a 7500 m^2 area. Construction rubble suggests permanent occupation throughout the area. No platform structures were found at this site. Erosion was minimal. Classification: Terminal Formative Isolated Residence. Other Occupations: None.

RAS-293

NATURAL SETTING: This site is located in the northern Pithecolobium Woodland vegetation zone 450 meters from the Rio Frio-Tepalcingo. The site elevation is 1500 meters and the topographic zone is Flat Plains. The site is situated between two impermanent drainages. The closest is 85 meters to the east.

MODERN UTILIZATION: The site is irrigated and maize was growing at the time of survey. The field is plowed using oxen. The site is located northwest of the town of Huazulco.

ARCHAEOLOGICAL REMAINS: A trace of Late Classic material was collected at this site. Site boundaries are estimated at 2400 m^2. No architecture was noted and the surface concentrations of rubble were low. There was little evidence for permanent habitation. Classification: Late Classic Isolated Residence. Other Occupations: None.

RAS-295

NATURAL SETTING: This site is located in the northern Pithecolobium Woodland 200 meters from the Rio Frio-Tepalcingo. The site elevation is 1500 meters and the topographic zone is Flat Plains. An impermanent drainage passes the site 150 meters to the west.

MODERN UTILIZATION: The whole site is irrigated and peanuts were growing at the time of the survey, so it had been plowed. The site is located west of the town of Huazulco.

ARCHAEOLOGICAL REMAINS: A trace of Terminal Formative and Classic materials were distributed across the site. There are no build-ups of construction debris that would indicate permanent residence. There has been lateral movement of material due to water action. Classification: Terminal Formative Isolated Residence, Classic Isolated Residence. Other Occupations: Late Formative Delgado Phase Isolated Residence, Late Postclassic Isolated Residence.

RAS-296

NATURAL SETTING: This site is located in the northern Pithecolobium Woodland along the 1500 meter contour interval. The topographic zone is Flat Plains. The site is located on an impermanent drainage with a permanent water source about 200 meters to the west.

MODERN UTILIZATION: The entire area is irrigated and planted in corn and peanuts. The area was prepared for planting with oxen. The site lies northwest of Huazulco and due west of RAS-291.

ARCHAEOLOGICAL REMAINS: This site was occupied for the first time during the Classic period. Debris are distributed over a 4100 m^2 area. The owner of the plot reports having dug up several burials from this area. There is little residential construction debris on the surface. Classification: Early Classic Isolated Residence, Late Classic Isolated Residence. Other Occupations: None.

RAS-303

NATURAL SETTING: This site is located in the northern Pithecolobium Woodland 170 meters from the Rio Frio-Tepalcingo. The site elevation is 1475 meters and the topographic zone is Flat Plains. The site also has access to the Acacia Grassland vegetation zone.

MODERN UTILIZATION: The whole site area is irrigated and planted in corn, beans, and squash. The area was prepared for planting using oxen. The site is located due west of Huazulco.

ARCHAEOLOGICAL REMAINS: There is a trace of Terminal Formative material over a 900 m^2 area. There is no solid evidence for permanent residence other than the presence of large storage wedge rim ollas. Classification: Terminal Formative Isolated Residence. Other Occupations: None.

RAS-305

NATURAL SETTING: This site is located in the northern valley Acacia Grassland vegetation zone. The site elevation is 1450 meters and the topographic zone is Flat Plains. The site is located adjacent to the large impermanent called the Barranca de los Arcos.

MODERN UTILIZATION: The site is located due east of the town of Temoac. The area is planted in sorghum and corn during the rainy season. The area is tractor plowed.

ARCHAEOLOGICAL REMAINS: A light trace of Classic material was distributed over a 6100 m^2 area. The materials were badly eroded but apparently still in situ. There was no clear association with any structures. Classification; Classic Isolated Residence. Other Occupations: Late Postclassic Hamlet.

RAS-310

NATURAL SETTING: This site is located in the northwestern corner of the survey zone along the 1300 meter contour interval. The vegetation zone is Acacia Grassland and the topographic zone is Flat Plains. The site is located alongside the Barranca de los Arcos.

MODERN UTILIZATION: The site area is today irrigated. Corn, beans, squash and tomatoes were growing when the site was located. The fields were prepared for planting using oxen. The site is located adjacent and west of the town of Tlayecac.

ARCHAEOLOGICAL REMAINS: The site is predominately Late Postclassic. Nevertheless a light trace of Classic materials were recovered in our surface collections. All indications for permanent residence at this site are indirect. Classification: Classic Isolated Residence. Other Occupations: Early Postclassic Hamlet, Late Postclassic Regional Center.

RAS-311

NATURAL SETTING: This site is located in the northwestern corner of the survey area along the 1400 meter contour interval. The vegetation zone is the Acacia Grassland while the topographic zone is Flat Plains. The site is 140 meters west of an impermanent drainage.

MODERN UTILIZATION: The area is planted in corn and beans during the rainy season. The area is planted using oxen. The site is due east of Tlayecac along the road to Izucar de Matamoros.

ARCHAEOLOGICAL REMAINS: This is an Early Classic site. Surface refuse is distributed over 1.5 hectares. Concentrations are heaviest around the single mound at the center of the site. There is sparse evidence for habitation here. The site was briefly reoccupied during the Late Postclassic. Classification: Early Classic Hamlet. Other Occupations: Late Postclassic Isolated Residence.

RAS-314

NATURAL SETTING: The site is located in the northern Pithecolobium Woodland along the 1400 meter contour interval. The topographic zone is Flat Plains. The site lies further than two kilometers from any permanent water source.

MODERN UTILIZATION: The site was fallow when visited and was being used for grazing. Field boundaries indicate that it had been farmed at one time. The site is located west of the Hacienda de Monte Falco on the access road leading to the village of Chalcatzingo.

ARCHAEOLOGICAL REMAINS: A light scatter of Classic materials are distributed over an area under 3000 m^2. No permanent structures could be associated with the Classic materials. Classification: Classic Isolated Residence. Other Occupations: Early Postclassic Isolated Residence.

RAS-315

NATURAL SETTING: This site is located in the northern valley along the 1350 meter contour interval. Vegetation surrounding the site includes plants from the Pithecolobium, Barranca, and Cerro zones. The topographic zone is Irregular Plains with slight relief. The closest source for water would be an impermanent drainage 315 meters to the south.

MODERN UTILIZATION: The site was fallow when visited and had not been cultivated in the recognizable past. The site lies due east of Jonacatepec.

ARCHAEOLOGICAL REMAINS: Classic material is distributed over slightly more than two hectares. Most of the classic material was located on the small hilltop and on the slopes to the east. Classification: Classic Hamlet. Other Occupations: None.

RAS-319

NATURAL SETTING: The site is located in the northwest corner of the survey area. The site has access to both the Acacia Grassland and Barranca Alluvium vegetation zones. The site elevation is 1400 meters and the topographic zone is Flat Plains. An impermanent drainage borders the site on the north.

MODERN UTILIZATION: The area is cultivated during the summer rainy season. Maize was planted during the previous season. The area was cultivated using oxen. The site is located southeast of Tlayecac.

ARCHAEOLOGICAL REMAINS: Early and Late Classic material is distributed over a 5700 m^2 area. Three platform mounds were located and mapped. Surface densities of both ceramic and construction materials were high. Site area may be underestimated since the site seems to lack the amount of residential debris usually associated with platform mounds of the sort located here. Classification: Early Classic Isolated Residence, Late Classic Isolated Residence. Other Occupations: Early Postclassic Isolated Residence.

RAS-321

NATURAL SETTING: This site is located in the Open Low Hills southwest of Tepalcingo. The site elevation is 1350 meters and the vegetation zone is Border Slopes. The closest permanent water source is a spring 100 meters from the site.

MODERN UTILIZATION: Most of the area is used for grazing. Prehispanic terraces are used for rainfall agriculture. Maize and beans are grown in the area. Cultivation is with oxen.

ARCHAEOLOGICAL REMAINS: Although the site lies outside the survey zone it was visited with the hope of getting a rough idea about the nature of the large sites back in the hills. Early and Late Classic materials are widely distributed over the site area. Some of the mounds at this site probably date to the Classic. It would take several additional days at the site to get an idea as to the real nature of site occupation. Site classification here should be viewed as an estimate until the time that future work can be conducted. Classification: Early Classic Small Village, Late Classic Large Village. Other Occupations: Early Postclassic Small Village, Late Postclassic Large Village.

RAS-328

NATURAL SETTING: The site is located in the northern valley along the 1375 meter contour interval. Vegetation zones at the site include the Pithecolobium Woodland and Barranca Alluvium types. The topographic zone is Flat Plains. The Rio Amatzinac is the closest permanent water source located 350 meters to the east.

MODERN UTILIZATION: Maize, beans, squash and peanuts are cultivated during the rainy season. The field is plowed using oxen. The site lies southeast of the modern village of Chalcatzingo and was used to test the effects of seasonal rainfall and field preparation on the amount of recordable surface debris (Hirth 1978c).

ARCHAEOLOGICAL REMAINS: Middle and Late Formative materials are lightly scattered over the area. Early Classic materials are lightly scattered over a 7500 m^2 area. Construction debris are light. Classification: Early Classic Hamlet. Other Occupations: Middle Formative Barranca Phase Isolated Residence, Middle Formative Cantera Phase Hamlet, Late Formative Delgado Phase Isolated Residence, Late Postclassic Isolated Residence.

RAS-330

NATURAL SETTING: This site is located along the northern and western flanks of Cerro Delgado and the northern side of Cerro Chalcatzingo. The area around the base of these hills supports an interesting mix of Pithecolobium, Cerro, and Barranca vegetation zones. Spring seapage on the north edge of the site have created a small permanent creek which flows to the east emptying into the Rio Amatzinac 300 meters away along the site's eastern edge. The fields alongside this creek are water saturated suggesting an earlier marsh-like ecozone. The site elevation is 1400 meters. The upper areas of the site would be classified within the High Hill topographic zone while the areas north of the creek would be Flat Plains.

MODERN UTILIZATION: The entire site surface is cultivated during the rainy season. The creek margins are also used for grazing. Corn, beans, squash, peanuts, and chile are all grown in the area. Field preparation is with oxen. The entire upper portion of the site is divided up into large gently sloping terraces. These are Middle Formative in date. The site lies south, southeast of the modern town of Chalcatzingo.

ARCHAEOLOGICAL REMAINS: This site is continuously occupied from the Early Formative onward. The site reached large proportions during the Middle Formative when all of the known reliefs and the Plaza Central platform mound were constructed. The site begins diminishing in size after 500 B. C. and continues to decrease up through the Terminal Formative when we find a light occupation over approximately 7 hectares. Two platform mounds and a ballcourt are constructed during the Classic and the site appears to have functioned in a subsidiary way to RAS-14. The site expands slightly during the Late Classic with surface debris covering just over 10 hectares. Most Classic structures have been destroyed through constant plowing over the site. Erosion across the upper portions of the site is severe and the site may be smaller than distributions of lateral surface debris may indicate. Other Occupations: Early Formative Amate Phase Small Village, Middle Formative Barranca Phase Large Village, Middle Formative Cantera Phase Regional Center, Late Formative Delgado Phase Small Village, Early Postclassic Hamlet, Late Postclassic Small Village.

RAS-332

NATURAL SETTING: This site is located in the Pithecolobium Woodland zone along the 1400 meter contour interval. The topograhic zone is Flat Plains. The site is 200 meters from a permanent spring and 190 meters from the Rio Frio-Tepalcingo.

MODERN UTILIZATION: The site is cultivated during the rainy season. Corn and beans were grown during the previous season. The field was prepared for planting using oxen. The site is located south of Amayuca.

ARCHAEOLOGICAL REMAINS: Classic material is scattered over a 2 hectare area. Residential structures could not be located. Surface rubble was light to moderate. Classification: Late Classic Hamlet. Other Occupations: See RAS-20

TABLE XI

Site Locations by Longitude and Latitude
Rio Amatzinac Valley, Morelos, Mexico

Site Number	Latitude	Longitude	Site Number	Latitude	Longitude
1	18°40'33.40"	98°45'41.75"	59	18°43'33.40"	98°47'33.40"
5	18°41'51.77"	98°46'8.35"	62	18°44'25.05"	98°47'20.04"
14	18°41'16.70"	98°47'56.78"	63	18°42'51.77"	98°48'18.37"
20	18°42'41.75"	98°48'8.35"	65	18°44'31.73"	98°48'51.77"
22	18°41'46.76"	98°48'43.72"	68	18°45'38.41"	98°46'18.37"
25	18°42'30.06"	98°51'8.35"	69	18°45'58.45"	98°46'26.72"
30	18°40'41.75"	98°48'45.09"	71	18°46'5.01"	98°46'13.36"
32	18°42'46.76"	98°47'38.41"	72	18°46'48.43"	98°46'1.67"
34	18°42'41.75"	98°47'45.09"	75	18°46'30.06"	98°46'15.03"
45	18°43'11.69"	98°46'48.43"	76	18°45'16.70"	98°45'56.78"
46	18°43'46.76"	98°46'23.38"	78	18°35'0.00"	98°45'8.35"
47	18°44'3.34"	98°46'31.73"	79	18°35'45.00"	98°45'51.77"
48	18°43'25.05"	98°46'16.70"	80	18°34'21.71"	98°46'5.01"
50	18°44'21.71"	98°45'48.43"	82	18°34'13.36"	98°45'55.11"
51	18°44'46.76"	98°46'0.00"	83	18°34'28.39"	98°45'48.43"
52	18°44'38.41"	98°45'48.43"	84	18°36'11.69"	98°48'33.40"
53	18°44'25.05"	98°45'18.43"	88	18°35'11.69"	98°46'50.10"
54	18°42'33.40"	98°46'35.07"	89	18°34'58.45"	98°48'21.71"
55	18°43'1.67"	98°47'35.07"	90	18°34'13.36"	98°46'38.41"
57	18°43'45.09"	98°47'28.39"	93	18°34'18.37"	98°48'10.02"
58	18°43'25.05"	98°47'28.39"	94	18°33'41.75"	98°48'16.70"

Site Number	Latitude	Longitude
95	18°37'10.02"	98°46'23.52"
100	18°37'15.03"	98°46'3.34"
102	18°37'38.41"	98°46'18.37"
105	18°42'31.73"	98°46'48.43"
107	18°41'35.07"	98°47'8.35"
110	18°36'10.02"	98°43'11.69"
111	18°37'33.40"	98°43'13.36"
112	18°32'33.40"	98°50'13.36"
114	18°31'31.73"	98°48'20.04"
118	18°31'28.39"	98°48'43.42"
119	18°32'5.01"	98°48'55.11"
121	18°32'38.41"	98°49'46.76"
137	18°33'58.45"	98°46'8.35"
139	18°31'33.40"	98°45'13.36"
141	18°32'36.74"	98°45'15.03"
142	18°32'33.40"	98°44'35.07"
143	18°32'40.08"	98°44'48.43"
145	18°31'13.36"	98°47'45.09"
146	18°31'31.73"	98°47'41.75"
151	18°32'33.40"	98°47'50.10"
152	18°32'18.37"	98°47'31.73"
154	18°33'10.02"	98°48'5.01"
158	18°33'8.35"	98°47'23.38"
159	18°33'13.36"	98°47'25.05"
160	18°32'50.10"	98°46'33.40"
162	18°31'53.44"	98°46'23.38"

Site Number	Latitude	Longtitude
163	18°31'33.40"	98°46'28.39"
165	18°31'35.07"	98°43'43.42"
166	18°31'30.06"	98°43'46.76"
167	18°31'30.06"	98°43'36.74"
170	18°31'30.06"	98°44'55.03"
171	18°32'13.36"	98°43'55.11"
172	18°32'0.00"	98°43'15.03"
175	18°32'41.75"	98°42'40.08"
176	18°31'48.43"	98°42'21.71"
177	18°32'26.72"	98°42'40.08"
178	18°31'21.71"	98°42'38.41"
179	18°32'58.45"	98°43'3.34"
180	18°34'18.37"	98°44'30.06"
181	18°30'53.44"	98°48'0.00"
182	18°31'1.67"	98°48'1.67"
183	18°30'56.78"	98°41'3.34"
185	18°30'48.43"	98°41'20.04"
193	18°29'5.01"	98°47'33.40"
195	18°30'30.06"	98°46'0.00"
196	18°33'3.34"	98°42'8.35"
197	18°33'0.00"	98°41'55.11"
200	18°32'58.90"	98°42'23.38"
201	18°31'58.45"	98°42'8.35"
202	18°33'15.03"	98°42'23.38"
203	18°33'0.00"	98°43'55.11"
204	18°33'58.45"	98°44'10.02"

Site Number	Latitude	Longitude
207	18°33'53.44"	98°44'15.03"
210	18°30'0.00"	98°43'51.77"
211	18°30'5.01"	98°44'50.10"
213	18°30'8.36"	98°43'51.77"
214	18°31'5.01"	98°44'15.03"
215	18°30'59.20"	98°44'13.36"
216	18°30'56.78"	98°44'30.06"
217	18°30'30.06"	98°44'18.37"
218	18°30'8.35"	98°44'0.00"
219	18°30'40.08"	98°43'31.73"
220	18°30'25.05"	98°43'35.07"
221	18°30'56.78"	98°43'25.05"
222	18°31'5.01"	98°42'36.74"
223	18°29'48.50"	98°42'35.00"
224	18°30'0.00"	98°43'40.08"
225	18°29'36.50"	98°42'10.00"
226	18°29'41.00"	98°42'31.10"
227	18°29'34.50"	98°42'21.00"
228	18°29'30.00"	98°42'16.10"
230	18°41'33.40"	98°48'8.35"
232	18°37'38.41"	98°49'36.74"
234	18°37'58.45"	98°49'35.97"
243	18°38'33.40"	98°45'15.03"
264	18°39'31.73"	98°48'41.75"
266	18°39'6.68"	98°49'43.42"
270	18°38'1.67"	98°50'33.40"
273	18°37'50.10"	98°50'53.44"
274	18°38'15.03"	98°51'30.06"
279	18°36'16.70"	98°51'36.74"
285	18°45'8.40"	98°46'8.40"
288	18°45'21.71"	98°46'55.11"
291	18°45'45.09"	98°46'55.11"
293	18°45'23.38"	98°46'58.45"
295	18°45'38.41"	98°47'0.00"
296	18°45'46.76"	98°46'58.45"
303	18°45'18.37"	98°47'23.38"
305	18°46'13.36"	98°49'16.70"
310	18°45'41.75"	98°53'11.69"
311	18°45'11.69"	98°51'30.06"
314	18°41'38.41'	98°47'40.08"
315	18°40'33.40"	98°47'21.71"
319	18°44'56.78"	98°51'41.75"
321	18°35'0.00"	98°53'25.05"
328	18°41'5.01"	98°46'16.70"
330	18°40'41.75"	98°46'10.02"
332	18°42'45.00"	98°48'0.00"

TABLE XII

Structures (TF, EC, LC, Unphased Classic)

Site Number	North-South	East-West	Altitude	Probable Phase	Classification
14	35	35	5.00m	Classic	Ceremonial
	35	35	4.00m	Classic	Ceremonial
	20	25	4.00m	Classic	Ceremonial
	25	35	2.00m	Classic	Ceremonial
	32	31	4.00m	Classic	Ceremonial
	18	15	1.00m	Classic	Ceremonial
50	24	23	4.00m	Terminal Formative	Ceremonial
	24	23	3.50m	Terminal Formative	Ceremonial
	21	41	4.00m	Terminal Formative	Whole Compound Ceremonial
	58	76	1.00m	Terminal Formative	Whole Compound Ceremonial
	17	14	3.00m	Terminal Formative	Whole Compound Ceremonial
52	12	10	.60m	Terminal Formative	Residence
57	4	4	1.00m	Classic	Residence
58	30	40	2.00m	LF/TF	Ceremonial
	29	30	1.50m	Lf/TF	Ceremonial

Site Number	North-South	East-West	Altitude	Probable Phase	Classification
78					
Southern Group	65	55	8.50m	Classic	Ceremonial
	25	50	3.00m	Classic	Ceremonial
	35	48	4.50m	Classic	Ceremonial
	78	25	2.50m	Classic	Ceremonial
	40	35	4.50m	Classic	Ceremonial
	25	20	.50m	Classic	Ceremonial
Central Group	90	70	1.00m	Classic	Base Platform
	30	35	3.00m	Classic	Ceremonial
	45	25	1.75m	Classic	Ceremonial
	15	15	1.00m	Classic	Ceremonial
	35	45	4.50m	Classic	Ceremonial
	25	23	.75m	Classic	Ceremonial
	43	30	3.00m	Classic	Ceremonial
Other Mounds	40	50	2.50m	Classic	Ceremonial
	25	35	1.50m	Classic	Ceremonial
	35	28	3.00m	Classic	Ceremonial
	38	50	3.50m	Classic	Ceremonial
	40	23	2.50m	Classic	Ceremonial
	42	23	2.00m	Classic	Ceremonial
	50	40	3.00m	Classic	Ceremonial
	23	23	1.50m	Classic	Ceremonial
	53	65	5.00m	Classic	Ceremonial
	40	28	1.25m	Classic	Ceremonial

Site Number	North-South	East-West	Altitude	Probable Phase	Classification
78	25	25	1.00m	Classic	Ceremonial
	35	33	3.50m	Classic	Ceremonial
	30	28	2.50m	Classic	Ceremonial
	21	30	3.50m	Classic	Ceremonial
	31	29	1.00m	Classic	Ceremonial
	56	24	2.75m	Classic	Ceremonial
	47	33	2.00m	Classic	Ceremonial
	70	65	5.50m	Classic	Ceremonial
	12	47	1.00m	Classic	Ceremonial
	15	15	.75m	Classic	Ceremonial
	33	58	5.00m	Classic	Ceremonial
	52	75	1.00m	Classic	Ceremonial
	37	43	2.25m	Classic	Ceremonial
	45	38	1.50	Classic	Ceremonial
84	19	15	1.50m	TF-Classic	Ceremonial
	24	30	2.00m	TF-Classic	Ceremonial
	11	18	2.50m	TF-Classic	Ceremonial
	22	11	2.00m	TF-Classic	Ceremonial
	8	20	1.00m	TF-Classic	Residential
	27	15	1.75m	TF-Classic	Ceremonial
	10	10	.40m	TF-Classic	Residential
	8	6	.50m	TF-Classic	Residential
	6	5	.30m	TF-Classic	Residential

Site Number	North-South	East-West	Altitude	Probable Phase	Classification
84	22	16	2.00m	TF-Classic	Ceremonial
	20	20	.75m	TF-Classic	Ceremonial
	15	20	.40m	TF-Classic	Residential
	24	14	1.50m	TF-Classic	Ceremonial
89	3.0	2.0	1.00m	Terminal Formative	Residential
	2	3	.80m	Terminal Formative	Residential
	3	2.5	1.00m	Terminal Formative	Residential
	3.5	3.5	.50m	Terminal Formative	Residential
	2.5	3.0	2.00m	Terminal Formative	Residential
	3.0	3.0	1.00m	Terminal Formative	Residential
90	10.0	10.0	.50m	Classic	Ceremonial/Residential
	10.0	12.0	1.00m	Classic	Ceremonial/Residential
95	16.0	30.0	2.00m	LF/TF	Ceremonial
	6.0	6.0	.30m	LF/TF	Ceremonial/Residential
	6.0	8.0	1.00m	LF/TF	Ceremonial/Residential
	17.0	10.0	1.50m	LF/TF	Ceremonial/Residential
	8.0	8.0	.20m	LF/TF	Ceremonial/Residential
102	10.0	10.0	.50m	Classic	Residential
121	3.0	3.0	.30m	LF/Classic	Residential
	3.0	3.5	.40m	LF/Classic	Residential
	3.5	3.0	.35m	LF/Classic	Residential
	4.0	3.0	.30m	LF/Classic	Residential
	3.0	4.25	.50m	LF/Classic	Residential

Site Number	North-South	East-West	Altitude	Probable Phase	Classification
121	3.0	3.5	1.00m	LF/Classic	Residential
	3.0	3.0	1.00m	LF/Classic	Residential
141	8.0	12.0	.50m	Classic	Ceremonial/Residential
	5.0	6.0	.40m	Classic	Ceremonial/Residential
151	11.0	15.0	.35m	Classic	Ceremonial/Residential
166	4.5	8.0	1.50m	Classic	Residential
	10.0	16.0	2.00m	Classic	Ceremonial
172	14.0	22.0	3.00m	Classic	Ceremonial
	17.0	8.0	1.50m	Classic	Ceremonial
	5.0	16.0	1.50m	Classic	Ceremonial
	20.0	10.0	2.7m	Classic	Ceremonial
	24.0	30.0	3.00m	Classic	Ceremonial
	20.0	20.0	2.00m	Classic	Ceremonial
179	8.0	12.0	1.50m	Classic	Ceremonial/Residential
	6.0	10.0	1.50m	Classic	Ceremonial/Residential
183	15.0	15.0	2.20m	TF/EC	Ceremonial
	2.0	2.0	.35m	TF/EC	Ceremonial
196	15.0	10.0	1.00m	Classic	Ceremonial
	16.0	8.0	.60m	Classic	Ceremonial

Site Number	North-South	East-West	Altitude	Probable Phase	Classification
220	27.0	22.0	3.0m	Classic	Ceremonial
	16.0	12.0	1.55m	Classic	Ceremonial/Residential
	8.0	8.0	.40m	Classic	Ceremonial/Residential
	12.0	12.0	.30m	Classic	Ceremonial/Residential
	5.0	9.0	.30m	Classic	Ceremonial/Residential
223	18.0	25.0	2.00m	Early Classic	Ceremonial/Residential
230	10.0	20.0	2.00m	Late Classic	Ceremonial
232	17.0	10.0	.90m	MF/Classic	Ceremonial/Residential
243	15.0	12.0	1.0m	Classic/Postclassic	Ceremonial
	10.0	10.0	.5m	Classic/Postclassic	Ceremonial
	10.0	10.0	.5m	Classic/Postclassic	Ceremonial
	20.0	20.0	1.0m	Classic/Postclassic	Ceremonial
	10.0	10.0	1.5m	Classic/Postclassic	Ceremonial
	10.0	18.0	1.5m	Classic/Postclassic	Ceremonial
	5.0	15.0	1.0m	Classic/Postclassic	Ceremonial
	32.0	30.0	3.0m	Classic/Postclassic	Ceremonial
	14.0	10.0	.5m	Classic/Postclassic	Ceremonial
	30.0	27.0	2.5m	Classic/Postclassic	Ceremonial
	27.0	45.0	4.0m	Classic/Postclassic	Ceremonial
	37.0	42.0	.5m	Classic/Postclassic	Ceremonial
	35.0	27.0	1.5m	Classic/Postclassic	Ceremonial
	20.0	14.0	1.5m	Classic/Postclassic	Ceremonial
	23.0	16.0	1.0m	Classic/Postclassic	Ceremonial

Site Number	North-South	East-West	Altitude	Probable Phase	Classification
243	10.0	15.0	.6m	Classic/Postclassic	Ceremonial
	50.0	40.0	4.0m	Classic/Postclassic	Ceremonial
	36.0	44.0	4.0m	Classic/Postclassic	Ceremonial
	65.0	27.0	1.0m	Classic/Postclassic	Ceremonial
	48.0	20.0	2.5m	Classic/Postclassic	Ceremonial
	8.0	10.0	.5m	Classic/Postclassic	Residential
	6.0	8.0	.3m	Classic/Postclassic	Residential
	5.0	4.0	.2m	Classic/Postclassic	Residential
264	8.0	12.0	1.50m	LF/TF	Ceremonial/Residential
	14.0	12.0	3.00m	LF/TF	Ceremonial/Residential
	10.0	6.0	.50m	LF/TF	Ceremonial/Residential
	9.0	7.0	.60m	LF/TF	Ceremonial/Residential
	11.0	5.0	.30m	LF/TF	Ceremonial/Residential
	10.0	8.0	.40m	LF/TF	Ceremonial/Residential
311	10.0	10.0	1.75m	Early Classic	Ceremonial/Residential
	3.0	4.0	.35m	Early Classic	Ceremonial/Residential
319	5.0	3.0	.60m	Classic	Ceremonial/Residential
	30.0	10.0	2.00m	Classic	Ceremonial/Residential
	5.0	3.0	.60m	Classic	Ceremonial/Residential
330	35.0	35.0	9.4m	Classic	Ceremonial "Monticulo B"
	24.0	24.0	1.7m	Classic	Ceremonial "Monticulo B"
	12.3	41.5m	2.0m	Classic	Ceremonial/Ballcourt
	12.0	41.5	2.0m	Classic	Ceremonial/Ballcourt Playing Alley 8.0m

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