MATA'S LA CABRAÑA: A JORNADA MOGOLLON PUEBLO ON THE RIO GRANDE OF SOUTH-CENTRAL NEW MEXICO

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With a contribution by
La Mar W. Lindsay

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TABLE OF CONTENTS

Page

FIGURES

Page

Figures, *continued*

Page

TABLES

PREFACE

In October 2021, Mike Foster sent me a copy of a report on La Cabraña, co-authored with Jane Bradley. The report was publication ready and I saw no reason to subject it to further editing, or to delay publication for any other reason. Instead the Maxwell Museum is happy to offer the report with very minor changes.

David A. Phillips, Jr.
Series Editor

ACKNOWLEDGMENTS

The excavations at La Cabraña would not have been possible without the contributions of several individuals. The generous cooperation of the landowner Hilario Mata is greatly appreciated. Mr. Mata and his family, Margarita, Hilario Jr., and Rosa, participated in the excavations and worked as hard day in and day out as the students enrolled in the program. He allowed a period of study of the artifacts and at his request the fine artifacts were returned to his position. Not only did the Matas contribute to the excavation effort, they provided good company for the student field crew that consisted of James Bell, Lisa Calloway, Olympia Caudillo, Bruce DesAutel, Vincent Devine, Mary Ester Johnson, Ann Klein, Carter Lewis, Linda Moody, Clay Palmer, Gary Ploss, Lorna Lee Scarbrough, Frank Smith, and Ben Tice.

A great deal of gratitude is owed to Thomas C. O'Laughlin. Tom recommended the site for excavation and he tracked down Mr. Mata allowing me to seek permission to excavate the site. Tom contributed his knowledge and assistance in numerous ways that facilitated the excavation of the site and subsequent analyses. He provided field equipment as well an array of background literature that supported the writeup of this report. Tom's contributions to the La Cabraña project as well as Jornada Mogollon archaeology in general are substantial and enduring.

A University Faculty Research Grant in the amount of $3,000.00 was awarded by The University of Texas system to support specialized analyses. Essential assistance was rendered by Dr. Arthur Harris (faunal analysis), and Dr. Jerry Hoffer and the late Dr. David LeMone (lithic and mineral identification). The artifacts were cataloged and analyzed by students in an archaeological laboratory class.

The constituent analyses of a sample of sherds and turquoise recovered was completed by Dr. Jerry Hoffer. Jane Bradley served as the assistant field director and teaching assistant for the field school and she participated in various post-field artifact analyses including the analysis of faunal remains recovered. Robert McCord, then of the Department of Geosciences at the University of Arizona, analyzed the fish bone and the late La Mar Lindsay pollen samples. Charlotte Williams conducted the macrobotanical analysis with the support of Dr. Karen Adams, who also provided subsequent assistance during the write-up of this report.

I would like to thank Dr. Arleyn Simon for sharing her knowledge and internet access to a number of resources that provided background for this report. Thanks goes to Lynn Simon for preparing a map used in the report. I would also like to thank Dr. Gary Huckleberry for his geo-archaeological insights to several questions posed to him during the write-up of the report.

A number of individuals contributed suggestions regarding the identification of some of the intrusive sherds recovered, as well as other assistance. These include Arleyn Simon, John Beal, Myles Miller, Patrick Lyons, Karl Laumbach, Regge Wiseman, Dennis Gilpin, Kelley Hays-Gilpin, David Hill, Chris North, John Roney, David Phillips, Jeffery Ferguson, Judith Habicht-Mauche, Alexander Kurota, Franklin Hayward, William Deaver, Thatcher Rogers, and Sunday Eiselt. To them, thanks for their time and insights.

I would also like to thank Dr. Karl Laumbach for commenting on La Cabraña manuscript and thanks also to Chris North of PaleoWest for use of their copy editor Kris Stelter, her editorial suggestions are appreciated. Finally, I would like to thank Dr. David Phillips and the Maxwell Museum of Anthropology at The University of New Mexico for their interest in the La Cabraña manuscript.

Michael S. Foster
October 2021

CHAPTER 1
INTRODUCTION

The archaeological site of La Cabraña (LA 1671) is a fourteenth century Jornada Mogollon pueblo on private land in south-central New Mexico. The site was investigated during the summer of 1981 as an archaeological field school by The University of Texas at El Paso (UTEP). On the west bank of the Rio Grande, in Doña Ana County, New Mexico, the site is just north-northwest of El Paso, Texas (Figures 1 and 2).

Thomas O'Laughlin, then of the Centennial Museum at UTEP, recommended the site for excavation. O'Laughlin tracked down the landowner, Mr. Hilario Mata, and we were able to gain permission to excavate the site. The field school lasted six weeks. Herbert W. Yeo (n.d.) first recorded the site in 1920 and revisited the site several times. Yeo indicated the name La Cabraña originated from the fact that goat herders once occupied the locality. He recorded three rooms with walls six inches thick, and during different visits to the site in 1931 he collected a piece of turquoise and shell beads. Yeo identified a variety of ceramic types, including El Paso Brown, El Paso Polychrome, Chupadero Black-on-white, Mimbres Black-on-white, Mimbres Polished red with black interior, Chihuahuan Polychrome, Middle Gila Polychrome, Coarse red ware (incised, coiled, and indented rubbed), and modern Mexican wares. Based on these ceramic types, he suggested an occupation of the site from as early as A.D. 1050 to circa 1350; or the possibility of two separate occupations, one around A.D. 1100 and another one around A.D. 1350. Yeo also noted the presence of several looters' pits.

Prior to the excavations at La Cabraña, investigations of El Paso phase pueblos were somewhat limited. Since then, investigations of El Paso phase sites and components have significantly increased our understanding of the phase. Much of this work, beginning in the late 1970s and early 1980s, was completed as part of compliance projects in support of Section 106 of the National Historic Preservation Act (NHPA) of 1966, and much of that work has occurred on the military reservations of the area. Several sites have also been investigated as part of volunteer efforts by members of local and regional archaeological societies, most notably the El Paso Archaeological Society and the Texas Archaeological Society.

Research Themes

The primary motivation for undertaking the excavations at La Cabraña was the training of students in archaeological field techniques. In addition, La Cabraña was easily accessible and relatively close to UTEP. Nevertheless, O'Laughlin believed it held worthy research potential and its excavation offered the opportunity to expand the then extant knowledge of the El Paso phase. Upon excavation, the partial remains of what is believed to be a nine- to ten-room pueblo was exposed, resulting in the recovery of a variety of material culture and faunal and archaeobotanical remains. Additionally, the excavation of an apparent trash filled barrow pit (midden) adjacent to the roomblock yielded a variety of environmental remains and material culture.

Although a significant portion of this report is descriptive and comparative, the following research themes are posed to explore and understand the nature of the occupation of La Cabraña, prehistoric adaption to and utilization of the southern Mesilla Bolson, and the late El Paso phase in general.

Research Theme 1: Site Structure

- What is the overall organizational structure of the settlement at La Cabraña?
- How does the spatial organization of La Cabraña compare to other El Paso phase pueblos?
- Is there evidence of discrete residential zones and activity areas?

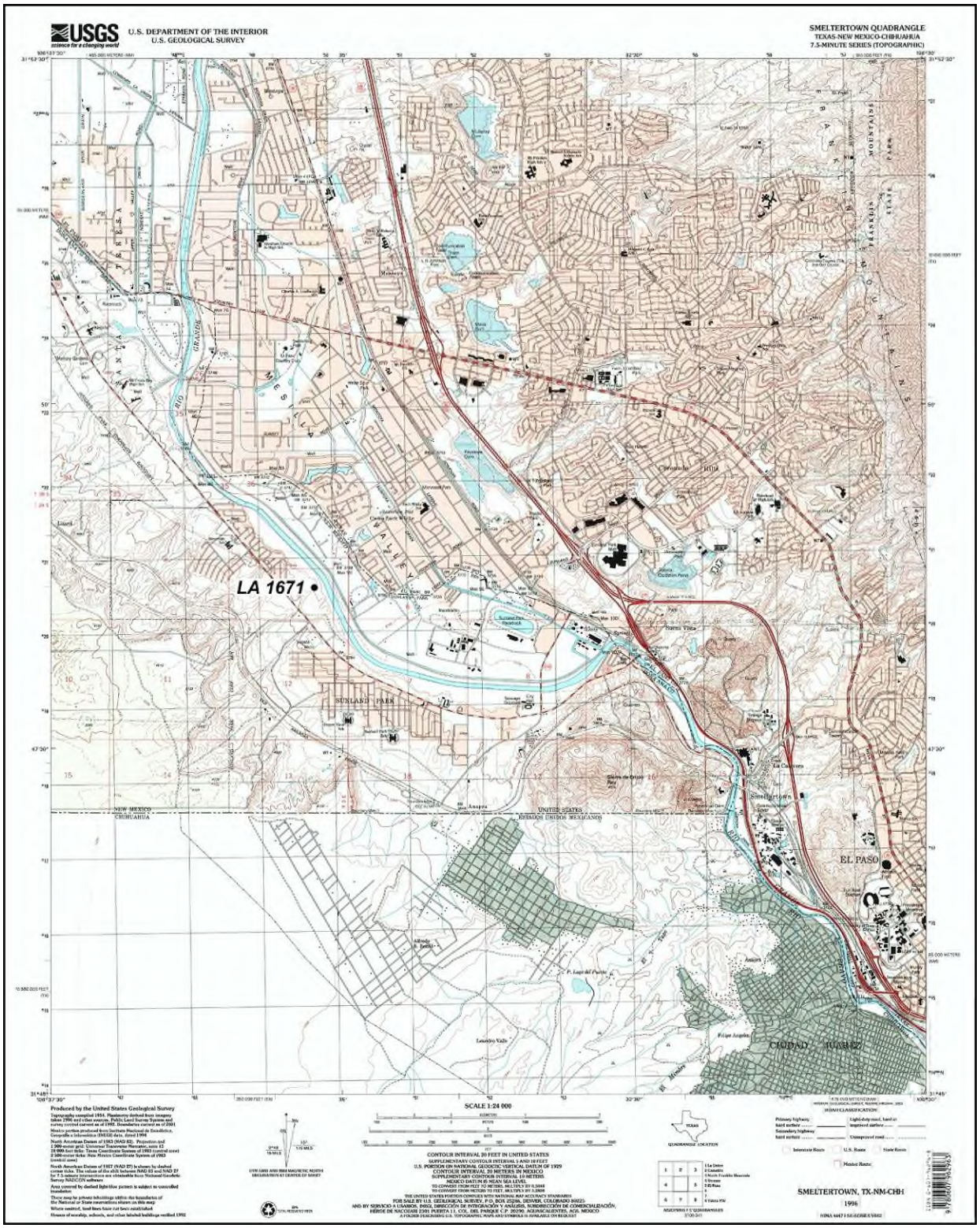

Figure 1. Map showing the location of La Cabraña (LA 1671) on the USGS 7.5' Smeltertown quadrangle.

Figure 2. Modern setting of La Cabraña (LA 1671) (Google Earth image date 3/3/2019).

Research Theme 2: Architecture, Room Function, Population Size, and Social Organization

- What are the architectural characteristics of La Cabraña and how do these compare to other El Paso phase pueblo sites?
- Are all the identified rooms habitation rooms; do any appear to have served as special use, communal, or non-habitation rooms; is there any evidence of extramural activity areas?
- Is it possible to estimate the size of the communal group that occupied La Cabraña?
- How was the group that occupied the site socially organized; is a single household represented or are multiple households represented?

Research Theme 3: Chronology

- When was the site built and occupied and what was the occupational duration of the site?
- Is there any evidence of multiple temporal components at the site?

Research Theme 4: Diet, Subsistence, and Biotic Resource Procurement and Utilization

- What floral and faunal resources were exploited and processed at the site?
- How extensively did agriculture contribute to the overall subsistence base of the settlement?
- What resource zones were exploited?
- Is there evidence to indicate seasonal exploitation of non-domesticated foodstuffs?

Research Theme 5: Abiotic Resource Procurement and Utilization

- What types of local and nonlocal raw lithic and mineral materials are present at the site?
- From where were the raw lithic and mineral resources obtained; what resource zones were exploited?
- Is there any patterning in the use of a particular lithic type?

Research Theme 6: Regional Exchange and Interaction

- What types of local and nonlocal raw materials and finished artifacts–utilitarian tools, shell and stone jewelry, ceramic vessels, ritual objects–are present at the site?
- To what extent are these resources indicative of regional interaction linking La Cabraña to surrounding resource and production areas?
- What type of exchange was practiced? Was it direct exchange, down-the-line exchange, or some other mechanism? What can be said of the organizational structure and scale of the exchange network represented?

The research themes posed will be addressed in the chapters of this volume and in the concluding discussion. Chapter 2 describes the environmental and presents a referential prehistoric context for La Cabraña. Chapter 3 describes the excavation methods, the architectural remains, and the associated intramural and extramural features. Chapter 4 describes the material cultural recovered and in Chapter 5 the dietary remains and subsistence patterns are discussed. Chapter 6 presents a discussion that addresses the research themes posed and any ancillary issues and questions generated by this study.

CHAPTER 2
NATURAL AND CULTURAL SETTING

The project area is within the northern portion of the Chihuahuan Desert in south-central New Mexico within the boundary of the prehistoric Jornada branch of the Mogollon culture of southeast New Mexico, west Texas, and northern Chihuahua, Mexico.

Natural Setting

The Chihuahuan Desert is the largest of three creosote bush dominated deserts in North America, encompassing much of central northern Mexico, portions of west Texas, south-central and southwestern New Mexico, and reaching into southeast Arizona (Brown 1994; Schmidt 1979; Shreve 1942). The site itself is on the west bank of the Rio Grande at an elevation of 3,760 feet (ft) (1,146 meters [m]) above mean sea level (amsl). It is on the first terrace above the Rio Grande floodplain, less than 1 m above and 50 m west of the river (Figure 3).

Geology

La Cabraña is in the southern Mesilla Bolson within the Mexican Highland Section of the Basin and Range Physiographic Province (e.g., Baldridge 2004; Lovejoy 1980) (Figure 4). This region is typified by a series of north-south trending, isolated mountain ranges separated by broad, alluvium-filled valleys or basins that are continuously filling with sediments derived from the erosion of the interspersed mountains. O'Laughlin (1980:6–22) provides a useful summary of the area's natural history and setting.

Figure 3. Aerial view of La Cabraña in 1981, relative to the channelized Rio Grande (photograph courtesy of Jay Bradley).

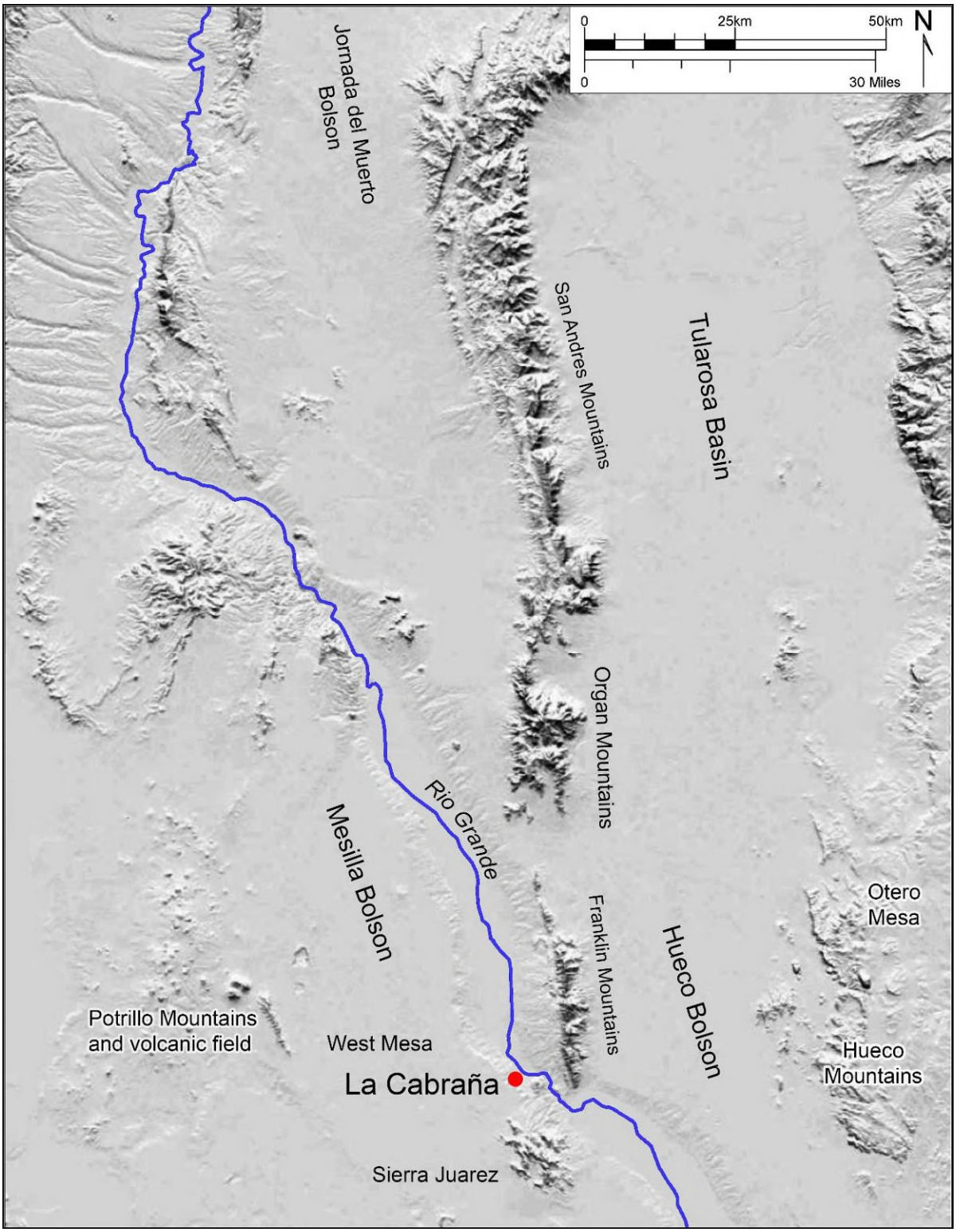

Figure 4. Physiographic setting of La Cabraña (map courtesy of Lynn Simon).

The site is in the southern portion of the nearly level Mesilla surface (Hawley and Kottlowski 1969). O'Laughlin (1980) notes that at the western edge of the Rio Grande floodplain, the basin sediments are eroded into rounded ridges that slope gradually eastward from the La Mesa surface towards the river and

that much of this western slope is covered by eolian sands that are derived from the La Mesa surface as southerly and westerly winds blow across the area. In some places, the La Mesa surface ends abruptly, giving the appearance of an escarpment (O'Laughlin 1980). There, Cenozoic sedimentary deposits of the Santa Fe formation are exposed and from the Rio Grande the La Mesa surface appears as a mesa. This break from the floodplain is approximately 1.5 kilometers (km) west of La Cabraña.

To the east, the Franklin Mountains dominate the landscape. Exposed in these mountains are rocks of the Precambrian, Paleozoic, Cretaceous, and Tertiary periods, mostly sandstone, limestone, quartzite, and rhyolite with granite and andesite intrusions (LeMone and Lovejoy 1976; McAnulty 1967; O'Laughlin 1980). O'Laughlin further notes that these materials are represented in the alluvial deposits that have formed along the lower flanks of the mountains, although the distribution of these and other materials varies from the west side of the mountains to the east side. On the west side of the mountains, the alluvium is dominated by limestone although rhyolite is also abundant near the current project area. Cherts are also present but not abundant. Quartzite, granite, dolomite, shale, and sandstone also occur, but in small quantities. Small obsidian nodules (Apache tears) are also found in the river deposits of the area (e.g., Dolan et al. 2017). On the west side of the Rio Grande, for the most part, basin sediments are covered by eolian sands and are only exposed in drainages (O'Laughlin 1980:10). Most of the aforementioned material types are commonly represented in the flaked and ground stone assemblages found at prehistoric sites in the area, and limestone, rhyolite, and quartzite are commonly represented in the fire-altered rock scatters and roasting features present (O'Laughlin 1980:10).

Soils

La Cabraña is on a narrow strip of land between the Rio Grande and the La Mesa surface. Soil associations in this area include Pajarito, Bluepoint, Yturbide, Caliza, and deposits of eolian sands derived from the La Mesa surface (Jaco 1971; Maker et al. 1971; O'Laughlin 1980). In the immediate vicinity of the site, the topography is moderate to steeply sloping with rounded ridges and hilltops and shallow drainages. Small amounts of gravelly, calcareous, sandy loams are present on the ridgetops and slopes; these soils are highly permeable and lack water retention. O'Laughlin (1980:10) suggests that because of the topography and soil properties this area holds little farming potential with the possible exception of the drainages where dry farming or rainfall-runoff strategies may have been possible.

The River

The Rio Grande is 1,885 miles (3,033 km) long and it and its major tributaries are the principal external drainages of the Chihuahuan Desert. Other than a few seeps and small springs in the Franklin Mountains, the river is the only perennial water source in the project area. La Cabraña is within the portion of the river referred to today as the Middle Rio Grande River valley (e.g., Di Peso 1982). Di Peso defines the Middle Rio Grande as extending from the Salado River south and eastward to the St. Elena Gorge. At the time of his discussion, Di Paso noted that the Rio Grande River was the second most irrigated river in the world, only the Ganges River of India was more heavily farmed, and that it is the second largest system in the United States behind the Mississippi-Missouri drainage. In the Southwest, it is three times the size of the Gila River and one-third again the size of the Colorado River (Di Peso 1982:23). Di Peso further states the Middle Gila River valley is "the homeland of the Jornada folk" and that the Middle Rio Grande River valley encompasses 497 miles (800 km) or 26 percent of the river's length. This segment of the river valley included 111,000 hectares, or nearly 275,000 acres, of farmland representing 11 percent of the agricultural lands within the river valley (Di Peso 1982:30).

Today, the flow of the river through the project area is controlled as a result of the installation of Elephant Butte Dam in 1916. Prior to its damming, runoff from the Rio Grande, Rio Chama, Sangre de Cristo Mountains, and Jemez basins affected the flow of the river, with peak flows being in the spring with snowmelt (O'Laughlin 1980). Historically, there were often two peak flows, one in the spring (April–

June) tied to snowmelt and one in the summer (July–September) tied to the onset of the monsoon (Landis 2001).

The historical flow of the river prior to damming was also affected by early Spanish and subsequent Euro-American settlement of the Rio Grande River valley, especially after the Civil War. Extensive irrigation in the San Luis Valley of southwestern Colorado in the late 1800s and at the turn of the century led to a significant drop in the amount of water that made it to the Middle Rio Grande River valley; this sometimes even resulted in there being no water available. Even at the time of Spanish Contact, portions of the Upper Rio Grande (today the area north of Elephant Butte Dam) were being heavily irrigated (e.g., Riley 1987, 1995). Coronado's expedition (1540–1542) reports that as much as 20,000 acres of flood plains were being farmed by the Native peoples of central and northern New Mexico. This, coupled with cycles of flooding and drought, made historic irrigation farming in the Middle Rio Grande River valley an arduous and tenuous undertaking (Landis 2001).

Like all untamed rivers, the flow of the Rio Grande unquestionably varied annually and from season to season. Historic records indicate that in the late 1800s and early 1900s, there were massive annual flows that exceed 1,000,000-acre feet and in 1905, exceeded 2,000,000-acre feet. Between 1894 and 1896, annual flows of less than 100,000-acre feet were recorded and periods of no flows were recorded in 1879, 1891, 1894, 1896, 1899, and 1902, (Baldwin 1939; Horgan 1984; Landis 2001; O'Laughlin 1980). Furthermore, the Mesilla Valley above El Paso was a broad flood plain that was nearly 8 miles wide in some places and the course of the river was affected by flood episodes that likely causing the river to migrate back and forth across the flood plain (Landis 2001; O'Laughlin1980). The 1919 USGS topographic map (Canutillo quadrangle) of the area indicates the riverbed at the point of La Cabraña was 3.4 km (2.1 mi) wide. Although, it may be safe to assume the river was in proximity to the site during its occupation, it is also possible that it could have been as much as 3 km away, and perhaps a change in the course of the river or an extended period of low or no flow was associated with the abandonment of the pueblo. The uncertainties of river water availability and changes in its course would have influenced prehistoric settlement, land-use, and farming strategies in the area (O'Laughlin 1980:12).

In addition to the river and seeps and springs in the nearby Franklin Mountains, other sources of water would have included runoff in local drainages and washes. Wells (e.g., Scarborough 1988) may have been dug on terraces adjacent to the river or in the riverbed itself if the water table was sufficiently high. La Cabraña is near an andesitic dike that extends east-west across the valley and under the riverbed. It is one of ten andesitic outcrops in or adjacent to the project area and it is referred to as the River Outcrop (e.g., Garcia 2019). Because of its porphyritic texture, it is not commonly used for flaked tools, but it is it an excellent source of material for ground stone. The water table north of the dike is somewhat higher than that south of the dike, and during times of no flow, wells may have been dug for both domestic water and pot irrigation.

Climate

The inhabitants of La Cabraña would have lived in a climate regime much like that of today. The present climatic patterns for the area were established about 8,000 B.P. (O'Laughlin 1980:14; Van Devender and Spaulding 1979; Van Devender and Toolin 1982). The area is semiarid mesothermal with hot days, cool nights, and low relative humidity. Half the annual precipitation occurs in a three-month period from July into September when thunderstorms produce large amounts of moisture in relatively short periods. The average annual precipitation (1870–1970) was 210 millimeters (mm), with a monthly low that averaged less than 10 mm in April to more than 40 mm in July. Historically, the highest recorded annual rainfall was 465 mm (18.3 in) in 1884 and the low was 56 mm (2.2 in). The highest recorded single day rainfall event reached 165 mm (6.5 in) in July of 1881. During the winter months, precipitation is gentle and the rainfall penetrates the ground rather than running off as it does during the summer thunderstorms. Snowfall is infrequent, but usually occurs once or twice a year.

Relative humidity varies from morning to afternoon. Most months (January, July–December), the relative humidity in the morning averages 61 to 65 percent. In February, this average begins to drop through April before the average begins to rise. The February mean is 55 percent and the lowest occurs in April when it reaches 39 percent. In May, the average relative humidity begins to rebound with the averages for May and June being 41 percent and 46 percent respectively. The afternoon monthly relative humidity increases to averages that are 25 to 30 percent below those in the mornings as the days warm. The January and July through December afternoon averages range from a low of 29 percent to a high of 38 percent. During February through June, the average afternoon relative humidity drops from 21 percent to 17 percent in April and May before starting to climb back in June.

Summer temperatures can and often do exceed 100° Fahrenheit (F), while winter nights can drop well below the freezing mark. On average, there are 237 consecutive frost-free days in the area. The highest temperatures usually occur in June before the onset of the summer rains; June daytime temperatures average just over 95° F while those of January, the coldest month, average 56° F. The highest temperature recorded in El Paso was 114° F in 1994, and the lowest was -8° F in 1962. Additionally, the difference between daytime and nighttime temperatures can vary as much as 25° F or more.

In the spring, particularly during March and April, the area is subjected to high winds. The resulting dust storms can be relentless, lasting for several days. The highest winds recorded, 84 mph, occurred in March 1977, and again in 2010.

Summarizing, the area's climate, because of temperature and rainfall patterns, is one of marked seasonal differences. Despite a long growing season, plant and animal productivity is tied to the spatial and temporal variability of local and regional rainfall patterns and temperatures. Furthermore, in addition to these variables, geomorphology and topography also influence local ecological variability, which can vary significantly over relatively short distances (O'Laughlin 1980:12).

Vegetation

Vegetation on and adjacent to the site is dominated by four-wing salt bush (*Atriplex* sp.), which accounts for approximately 90 percent of the vegetation. This is followed by mesquite (approximately 5% of the vegetation), and then in lesser numbers a variety of weedy plants including seepweed (*Suaeda suffrutescens*), jackass-clover (*Wislizenia refracta*), *Trianthema* sp. (a member of the ice plant family that includes varieties of horse purslane and pigweed), and various grasses. Salt cedar (*Tamarix pentandra*), an introduced invasive species, borders the site along the river.

Environmental Zones

Following O'Laughlin (1980:14–19) we have divided the study area into six environmental zones (Figure 5); these are based on land forms, substrate, and the distribution of plant species. These are not distinct ecological communities, but rather they function to assess the variability in the natural environment within which the humans living at La Cabraña operated. It is assumed that a general continuity exists between the prehistoric environment and the modern one. A drying trend in the middle Holocene probably resulted in establishment of a variety of desert vegetation. Minor changes in precipitation caused changes in the number of mesophytic plants; however, these changes probably were very subtle. Therefore, we assume that the distribution of plant species in the area today approximates that of prehistoric times, discounting impacts such as overgrazing, construction, plowing, and introduction of European species. It is of note that the pollen data (see Chapter 5) from La Cabraña suggest a much higher ratio of grasses prehistorically.

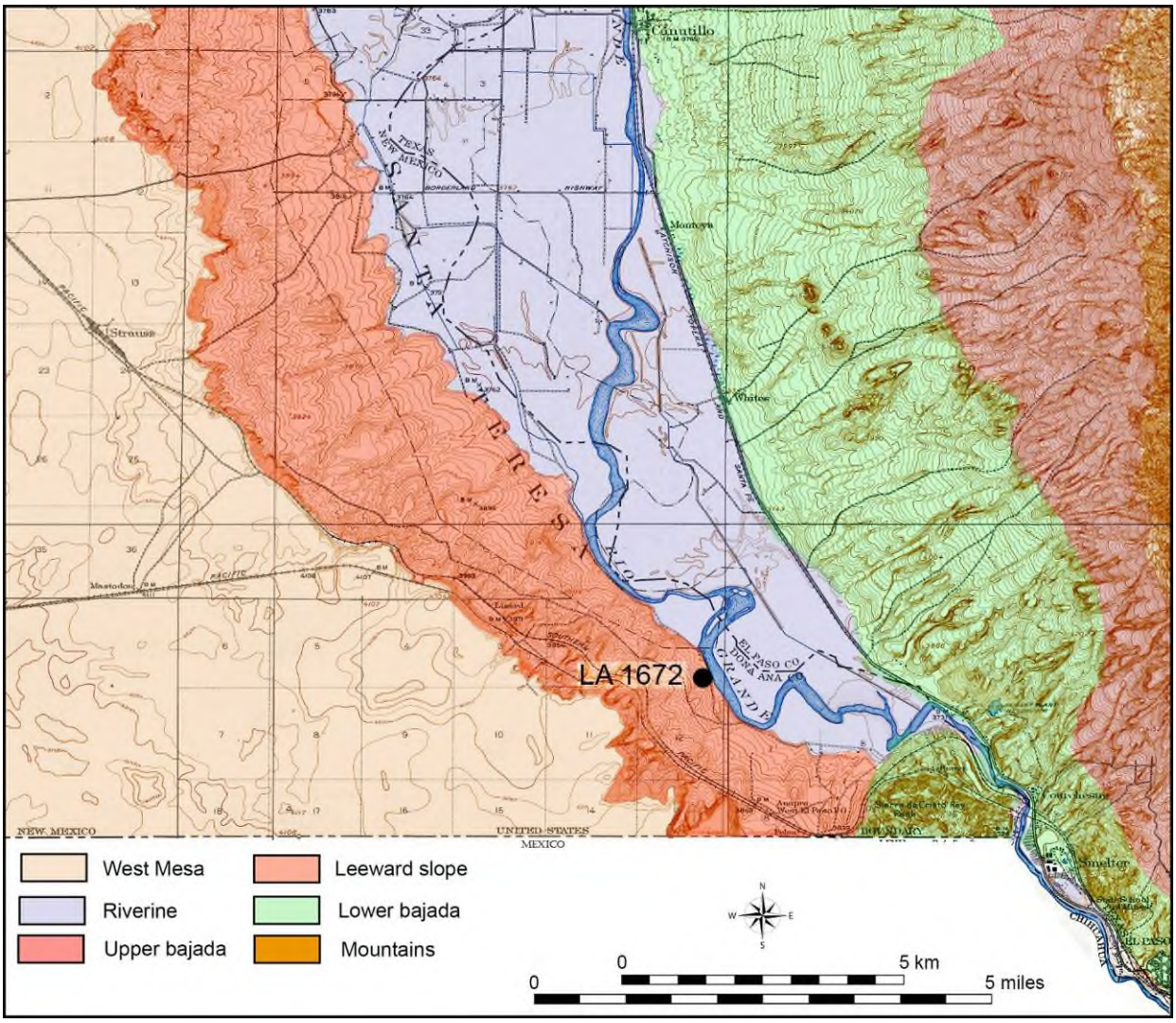

Figure 5. Map showing the six resource zones defined for the La Cabraña project area (base map Canutillo, N. Mex–Tex 1919, reprinted 1946, U.S. Department of the Interior, Geological Survey).

Human use of these environmental zones and the resources distributed within them will be discussed in detail in later chapters. The following descriptions of the environmental zones draw from O'Laughlin (1980) and they are discussed in order of their proximity to the site.

Leeward Slope Zone

The Leeward Slope Zone is between the Riverine and West Mesa Zones. La Cabraña is at its eastern edge, adjacent to the Riverine Zone. The soils are eolian sands derived from the West Mesa and deposited by prevailing west winds. The ridges and slopes of this zone are cut by shallow drainages and its surface is subject to erosion and dune formation. Gravelly soils are present on some terrace remnants, ridgetops, and alluvial fans. Plants associated with these soils include creosote bush (*Larrea tridentata*), broom snakeweed (*Xanthocephalum sarothrae*), and some honey mesquite (*Prosopis glandulosa*). Deeper soils and dune areas have mesquite, fourwing saltbush (*Atriplex canescens*), broom dalea (Dalea scoparia), joint fir (*Ephedra* sp.), and soaptree yucca (*Yucca elata*) growing on them. Grasses in the area, likely more abundant in the past, are sparse and their abundance varies by soil type. Most grasses are dropseed types (*Sporobolus* spp.) with some black grama (*Bouteloua eriopoda*) on shallow and gravelly soils.

Riverine Zone

The Riverine Zone consists of the river, its borders, and adjacent floodplains. As previously discussed, this zone was subject to periodic flooding and drought, and it is likely that swampy areas were present. Historically, this has changed because of the construction of Elephant Butte Dam and canal irrigation.

The distribution and nature of the vegetation in this zone has been greatly altered because of the historical and modern impacts (Campbell and Dick-Peddie 1964; O'Laughlin 1980:18). Although cottonwood (*Populus fremontii*) is found along the river's edge, stands of salt cedar have replaced much of the natural vegetation. Further away from the river, various plants can be found, including tornillo (*Prosopis pubescens*), mesquite, wolfberry (*Lycium pallidum*), fourwing saltbush, and seepweed. O'Laughlin (1980:18) points out that the interior of the valley probably was open, alkaline, and covered with saltgrass (*Distichlis stricta*) and scattered cottonwoods. Additionally, willows (*Salix gooddingii* and *S. exigua*), seepwillows *(Baccharis glutinosa*), cattails (*Typha latifolia*), and reeds (*Phragmites communis*) could be found along the river's path and in swampy areas. Elsewhere are scatterings of amaranth (*Amaranthus* spp.), goosefoot (*Chenopodium* spp.), purslane (*Portulaca oleracea*), and dock (*Rumex* sp.).

West Mesa Zone

The West Mesa Zone is the upland plain forming the western boundary of the study area. This is an extensive zone that begins as an escarpment at its eastern edge. It is dominated by sandy soils that have formed coppice dunes around clusters of mesquite or other plants, such as fourwing saltbush and soaptree yucca. Interdunal areas are usually bare and playas can be occasionally found. Soaptree yucca and fourwing saltbush are more abundant around the playas, which often have summer annuals associated with them. Dropseed and black grama are the most typical of grasses, which were more extensive on the West Mesa in the 1800s (O'Laughlin 1980:19; York and Dick-Peddie 1969).

Lower Bajada Zone

The Lower Bajada Zone is immediately east of the Riverine Zone on the western alluvial edges of the Franklin Mountains. The soils are generally thicker and less gravelly than those of the higher elevations in the area. Portions of this zone are dissected by deep arroyos, which has resulted in some terracing. The surfaces of this area are covered by creosote bush and ocotillo (*Fouquieria splendens*). Range ratany (*Krameria parvifolia*) and grasses such as threeawn (*Aristida* sp.), fluffgrass (*Tridens pulchellus*), bush muhly (*Muhlenbergia porteri*), sand dropseed (*Sporobolus cryptandrus*), and mesa dropseed (*Sporobolus flexuosus*) are less common. Black grama was probably dominant in the past (York and Dick-Peddie 1969).

New dunes can be found in some areas. Mesquite, soaptree yucca, and broom dalea are common in these areas, as is evidence of prehistoric use (O'Laughlin 1980:17). A variety of plants inhabit the arroyos and include desert willow (*Chilopsis linearis*), little-leaf sumac (*Rhus microphylla*), Apache plume (*Fallugia paradoxa*), brickell bush (*Brickellia laciniata*), mesquite, whitethorn (*Acacia constricta*), fourwing saltbush, mariola (*Parthenium incanum*), and poreleaf (*Porophyllum scoparium*). Datil (*Yucca baccata* and *Y. torreyi* [banana yucca, Spanish bayonet, Spanish dagger]), prickly pear (*Opuntia* sp.), and tornillo can be found scattered in different locations throughout the zone.

Upper Bajada Zone

The Upper Bajada Zone is on the higher, western alluvial slopes of the Franklin Mountains. The slope is moderate, and the limestone soils vary from gravelly to rocky. The zone is dominated by creosote bush, lechuguilla (*Agave lechuguilla*), and ocotillo. A variety of other plants are common, including prickly pear, datil, and sotol (*Dasylirion wheeleri*). Vegetation in the arroyos is much the same as in lower Bajada Zone arroyos. Grasses are not common today, but prehistorically the area was probably vegetated by grasses, mixed desert shrubs, and succulents (O'Laughlin 1980:17).

The Mountain Zone

The Mountain Zone is the area above 1,460 m amsl in the Franklin Mountains. It is a rockland area with steep slopes and some large canyons. The dryer areas are sparsely vegetated with desert plants such as lechuguilla, prickly pear, cacti, ocotillo, sotol, and creosote bush. In some of the protected areas, vegetation is much denser and includes wait-a-minute (*Mimosa biuncifera*), desert willow, hackberry (*Celtis reticulata*), algerita (*Berberis trifoliata*), beargrass (*Nolina texana*), a few oaks (*Quercus* spp.), and an occasional juniper (*Juniperus* spp.). In lower canyons, the vegetation is like that of the arroyos of the Bajada zones. There is little grass in this zone, possibly due to overgrazing, which led to increased erosion and the intrusion of desert species such as sotol and lechuguilla. Varieties of grasses may have included black grama, bush muhly, and sideoats grama (*Bouteloua curtipendula*). In general, most of the vegetation in this zone is like that of the Bajada zones except for oak and juniper (O'Laughlin 1980:16).

Modern Fauna

Mammals commonly recorded in the area include various rodents, such as the kangaroo rat (*Dipodomys* spp.), ground and rock squirrels (*Spermophilus* spp.), pocket mice (*Perognathus* spp.), and white-throated woodrat (*Neotoma albigula*); carnivores, such as coyote (*Canis latrans*) and striped skunk (*Mephitis mephitis*); the desert cottontail (*Sylvilagus audubonii*) and black-tailed jackrabbit (*Lepus californicus*); and larger mammals, such as mule deer (*Odocoileus hemionus*) and pronghorn (*Antilocapra americana*) have been recorded in the past (Findley et al. 1975: O'Laughlin 1980:20). For a more comprehensive list of mammalian fauna that exist in the vicinity today, see Harris (1976:213–228).

Various herpetofauna species, snakes, frogs, toads, and lizards, are also present today (Worthington 1976:205–213). Spiny soft-shell turtles (*Trionyx spiniferus*), the pond slider (*Trachemys scripta*), and painted turtle (*Chrysemys picta*) are found along the river.

Fish species in the Rio Grande today are different from those in the past. The establishment of farming and crop irrigation in the river valley, water control devices, and an influx of people to the region has altered the species distribution of fishes substantially in the last 100 years. Fishes common to the Rio Grande today include catfish (Ictaluridae), carp (Cyprinidae, an introduced species), and some bass (Centrarchidae) (Sublette et al. 1990). The presence or absence of these fishes today varies with fluctuations in the river level and changes induced by water control facilities upstream.

Various small songbirds, a variety of migratory waterfowl, and game birds are present in the area. Mallards, pintail, and teal may be present during certain seasons (O'Laughlin 1980:22).

Cultural Setting

The Jornada Mogollon region has a long history of human use. The earliest remains date to the end of the Pleistocene, and Native American populations were living in the region when the Spanish first entered the area. The following brief summary of Jornada Mogollon prehistory is presented to provide both temporal and cultural contexts for the discussion that follows (Kirkpatrick 2010; Miller and Kenmotsu 2004; O'Laughlin and Martin 1993; Railey and Holmes 2002:17–78).

Paleoindian Period

The earliest occupants of the Jornada Mogollon region are associated with the Paleoindian period (9,000–6,000 B.C.). Few remains associated with these early people have been identified in the region. Their presence is most often documented by the discovery of isolated projectile points (finely made lanceolate points, some with flutes) that distinguish these people from later times. Paleoindians are generally thought to have lived in small bands and were primarily hunters of Late Pleistocene megafauna (mammoth, bison) and consumed plants they collected. The earliest Paleoindians are identified as the Clovis tradition. Clovis

points and sites are few in the general area. Subsequent Paleoindian traditions include the Folsom and Plano traditions; remains of these groups are more common and increase respectively (O'Laughlin and Martin 1993:17–19).

Archaic Period

The Archaic period in the region is generally dated between 6,000 B.C. and A.D. 200. During this time, there was a shift from subsistence economies focused on hunting to diversified subsistence economies based on a mix of hunting small game and intensive use of wild plants. About 4,000–2,000 years ago, an environment much like today's was established. This was initiated with a prolonged drying period, an increase in winter precipitation, and intensification of the summer monsoon season that certainly impacted settlement and subsistence patterns (Carmichael 1986; Van Devender and Spaulding 1979).

Despite the documentation of a well-established Archaic period occupation of the region–primarily through surface finds–excavations of Archaic period sites have been limited. This has made it difficult to document in detail the cultural and subsistence changes that occurred over this long period, and extant excavation and chronometric data are often conflicting.

Archaic populations in the region peaked during the late Archaic period. It is during this time that cultigens are introduced into the area. Radiocarbon dates indicate corn was introduced between 1,665–1,225 B.C. (Carmichael 1982; Upham et al. 1986). Squash and beans were in use by the end of the late Archaic period (MacNeish and Beckett 1987). However, it does not appear that cultigens played a major part in the overall diet of late Archaic peoples.

For the most part, Archaic period sites are identified based on the presence of distinctive projectile point types and the presence of slab metates and handstones. Until recently, archaeologists have viewed the Archaic tradition in the central Jornada region as being within the Cochise tradition of the desert Southwest (e.g., Haury 1936; Sayles and Antevs 1941). More recent research by Richard MacNeish and his associates (MacNeish 1993; MacNeish and Beckett 1987) has resulted in the definition of a more localized Archaic sequence that they designated the Chihuahuan Archaic. Further, they have divided the traditional Early, Middle, and Late Archaic periods into four phases; the Gardner Springs (6000–4300 B.C.), Keystone (4300–2600 B.C.), Fresnal (2600–900 B.C.), and Hueco (900 B.C.–A.D. 200) phases (Railey and Holmes 2002:18–26).

Formative Period

The Formative or Ceramic period of the area has been defined as the Jornada branch of the Mogollon culture (Lehmer 1948); it is divided into three phases. Study of the Jornada Mogollon languished for decades until the inception of cultural resource management and enforcement of Section 106 of NHPA. Numerous large-scale surveys and excavations in both the Hueco and Mesilla Bolsons resulted in the proliferation of new data that resulted in challenges to existing paradigms and basic units of analysis. As a result, new questions and problems arose, many of which are still topics of current research. It is of note that Miller (2005) has completed an extensive reevaluation and refinement of the dating of the Jornada Mogollon Ceramic period sequence. Thus, the dates for the Formative period phases that are summarized below follow Miller.

Mesilla Phase

The Mesilla phase is defined by the appearance and use of ceramic technology, the introduction of the bow and arrow, and the appearance of deep pithouses. Other than the appearance of these traits, in many ways the early Mesilla phase represents a continuum of the late Archaic period lifeway. The diagnostic ceramic type associated with this phase is El Paso Brown, which can be identified by distinctive rim forms. Despite the introduction of pithouses, both round and rectangular, Mesilla phase populations appear to have remained mobile, moving seasonally (e.g., Hard 1983; Mauldin et al. 1998; O'Laughlin 1980; Whalen

1981a, 1994). By the end of the Mesilla phase, villages became larger and populations less mobile as settled village life set in with the adoption of agriculture as the primary source of food. Late in the Mesilla phase there is evidence of interregional interaction with the appearance of some Mimbres wares, although their presence seems limited. It is likely that Mesilla phase villages consisted of nuclear or extended families and there is no evidence of any significant social differentiation within groups (e.g., Whalen 1981b). Miller (2005:74, Figure 8) indicates the Mesilla phase is best divided in two. Although still in question, he places the beginning of the Early Mesilla phase sometime between A.D. 100 and 400; the Late Mesilla phase is dated A.D. 650–1000.

Doña Ana Phase

The Doña Ana phase is the least understood of the three Jornada Formative period's phases. As initially defined (Lehmer 1948), it is seen as a transitional phase between the Mesilla phase and the subsequent El Paso phase. Miller (2005:74) notes, it encompasses "two periods of major and distinct transitions in settlement pattern, architecture, subsistence economies, and technology." Thus, he has divided the period into the Early Doña Ana phase (A.D. 1000–1150) and the Late Doña Ana phase (A.D. 1150–1275/1300). Both residential sites and campsites make up the phase's settlement system. Ceramics associated with this phase include El Paso Brown, El Paso Bichrome, and an early version of El Paso Polychrome. Some deep pithouses with unplastered floors and some floor features have been identified as have some shallow pit rooms with some above ground adobe walled structures. The latter are non-contiguous but are often arranged in a linear fashion and can be seen as a precursor to El Paso phase pueblo architecture. There is some evidence to suggest an increase in social and religious complexity. Some rooms that are larger than the average room size at a site are suggested to be some type of communal room. Social groups probably continued to be kin based nuclear families or extended families. There is a continued dependence upon agriculture for the bulk of the food supply, although hunting and gathering continued to supplement the diet (O'Laughlin and Martin 1993:30–34).

El Paso Phase

The El Paso phase is the last Jornada Formative period phase. Miller (2005:74) places its beginning date sometime between A.D. 1275 and 1300, with an end at A.D. 1450. The phase is marked by the presence of adobe-walled pueblos, a late variety of El Paso Polychrome, and a variety of intrusive ceramics (Chihuahuan, Salado, and Mogollon types) (Lehmer 1948). El Paso phase architecture, once thought to be exclusively above ground adobe-walled pueblos, also includes pit structures (probable field houses). Most of El Paso phase adobe-walled pueblos are small with rooms arranged in a linear fashion. Nevertheless, large pueblo sites with enclosed plazas are known and have been investigated. For a recent summary of Jornada Mogollon pueblo settlements see Miller et al. (2009).

As noted, the ceramic assemblage of the El Paso phase is distinguished by the presence of a late variety of El Paso Polychrome. In general, there is an elaboration of El Paso phase material culture. Not only are intrusive ceramics common, so are a variety of non-local exotic items such as marine shell, turquoise, and obsidian. Clearly, El Paso phase peoples were participating in regional exchange networks. Additionally, variation in site and room size has been interpreted as evidence of social differentiation within and between El Paso phase groups. There is also evidence of increased ceremonialism and socio-religious integration. This elaboration of material cultural and society has often been argued to be tied to the fluorescence of the Casa Grades culture to the south in Chihuahua (e.g., O'Laughlin and Martin 1993:36).

A sedentary lifeway appears to be normal for El Paso phase peoples. Villages are common and the subsistence base is dominated by several varieties of corn, beans, squash, and bottle gourd (e.g., Foster and Bradley 1984; Foster et al. 1981). Nevertheless, the role of wild plant foods remains important. Mesquite, datil, acorns, cheno-ams, and cacti, to name a few, contributed to the diet. Hunting of small to medium mammals also continued (O'Laughlin and Martin 1993:36).

As noted above, the Formative period in the region ends with the collapse of the El Paso phase sometime around A.D. 1450. The area appears to have been abandoned by pueblo dwelling, agricultural peoples. It is not known for sure whether the collapse was due to climatic shifts that overwhelmed agriculturalists living at the edge of success anyway, or whether the collapse was tied to events in the Casas Grandes area and the decline of the Casas Grandes regional system, or both. There is little evidence of an occupation of the area after the collapse of the El Paso phase other than along the rivers (O'Laughlin and Martin 1993:38).

Protohistoric and Early Historic Period

Early Spanish accounts document the presence of semi-nomadic horticultural groups in the El Paso area. In 1598, Oñate encountered a group that became known as Mansos on the Rio Grande just below El Paso. Subsequent chronicling in the 1600s indicates the Mansos exhibited a highly flexible settlement and subsistence systems that made them well adapted to the region. In general, this seemed true for all groups of Native Americans (e.g., Rayados, Pataros, Rayas, Patarabueyes, Jumanos, Mansos, and Sumas) living on the Rio Grande in the vicinity of El Paso, southward to La Junta (e.g., Camilli et al. 1988:3-37–3-39; Kelley 1986).

It is generally argued that protohistoric and early historic period archaeology in the bolsons and plains away from the rivers is difficult to identify and interpret because these areas were most likely used solely for hunting and gathering. Thus, this later archaeology is difficult to distinguish from the remains of earlier hunter-gatherers.

Chapter 3
ARCHITECTURE AND FEATURES

Excavations at La Cabaña focused on exposing the pueblo roomblock (Figure 6). Because of the limitations of time, little effort was expended investigating extramural features or spaces. A single extramural pit, a borrow pit trash midden was excavated; a second was identified but not investigated. A single 2 × 2 m test unit was excavated at the southeast corner of Room 4 in an effort to expose the abutted wall and perhaps corner and wall of the area designated Room 2. Because of the site's proximity to the Rio Grande, the area had undoubtedly been flooded and scoured multiple times post abandonment. In fact, portions of the walls of many of the rooms had been completely or nearly completely eroded. Some floors and floor features had only been preserved because they had been excavated below the surrounding ground surface when the pueblo was constructed. In addition to erosion, the site had suffered from bioturbation, overgrowth by a variety of vegetation, and various historic and modern uses.

Excavation Methods

The initial step was to establish a site datum that was then used to setup north-south (oriented magnetic north) and east-west baselines that were used to lay out a 2 × 2 m grid over the site for the collection of surface artifacts. Upon completion of the surface collection brooms, shovels, and trowels were used to remove the overburden (mostly loose eolian fine sand) and expose the walls of the pueblo. At this point the grid system was abandoned and the individual rooms became the focus of the excavations with artifact and sample provenience information collected by room.

Room fill was primarily a mix of eolian and alluvial (sheet wash) deposits with some lamination of deposits. Rooms were divided into quarters and excavated accordingly. Room fill was screened with 1/4-inch screen. Floor contact artifacts were collected separately from those recovered from the fill as were artifacts from sub-floor contexts. Recovered artifacts and environmental remains were sorted in the field and bagged by material type with the appropriate provenience information. Floor contact artifacts were point provenienced by triangulation from room corners and their location recorded on individual room maps. All excavated artifacts were removed at the end of each day to prevent their loss during the night when no security was present at the site. Floatation and pollen samples were collected from floor contexts and from the hearths. The trash midden excavated east of the roomblock was treated as a separate excavation unit.

The La Cabraña Pueblo Architecture

The La Cabraña roomblock consisted of ten rooms in a linear double row of five rooms each. The long axis of the roomblock was oriented east-west. It was previously reported that the pueblo consisted of nine rooms because of the extremely poor preservation in the area designated Room 2 and the apparent atypical location of its hearth in the southwest quadrant of the area. It was suggested that the Room 2 area may have been the remnant of an extramural surface, perhaps a ramada; this possibility is discussed further below.

Little remained of the walls, which ranged from 20–60 cm below the surface of the ground (cmbs), and the floors of the pueblo. Most of the rooms were relatively small, while the two easternmost rooms, Rooms 1 and 2, were larger. Narrow footer trenches, 15–20 cm wide, were dug into the ground and adobe poured in to form foundations for the puddled coursed adobe walls that were 12–34 cm wide. No evidence of doorways was found, although what may have been a stone entry step was along the interior of the south wall of Room 4.

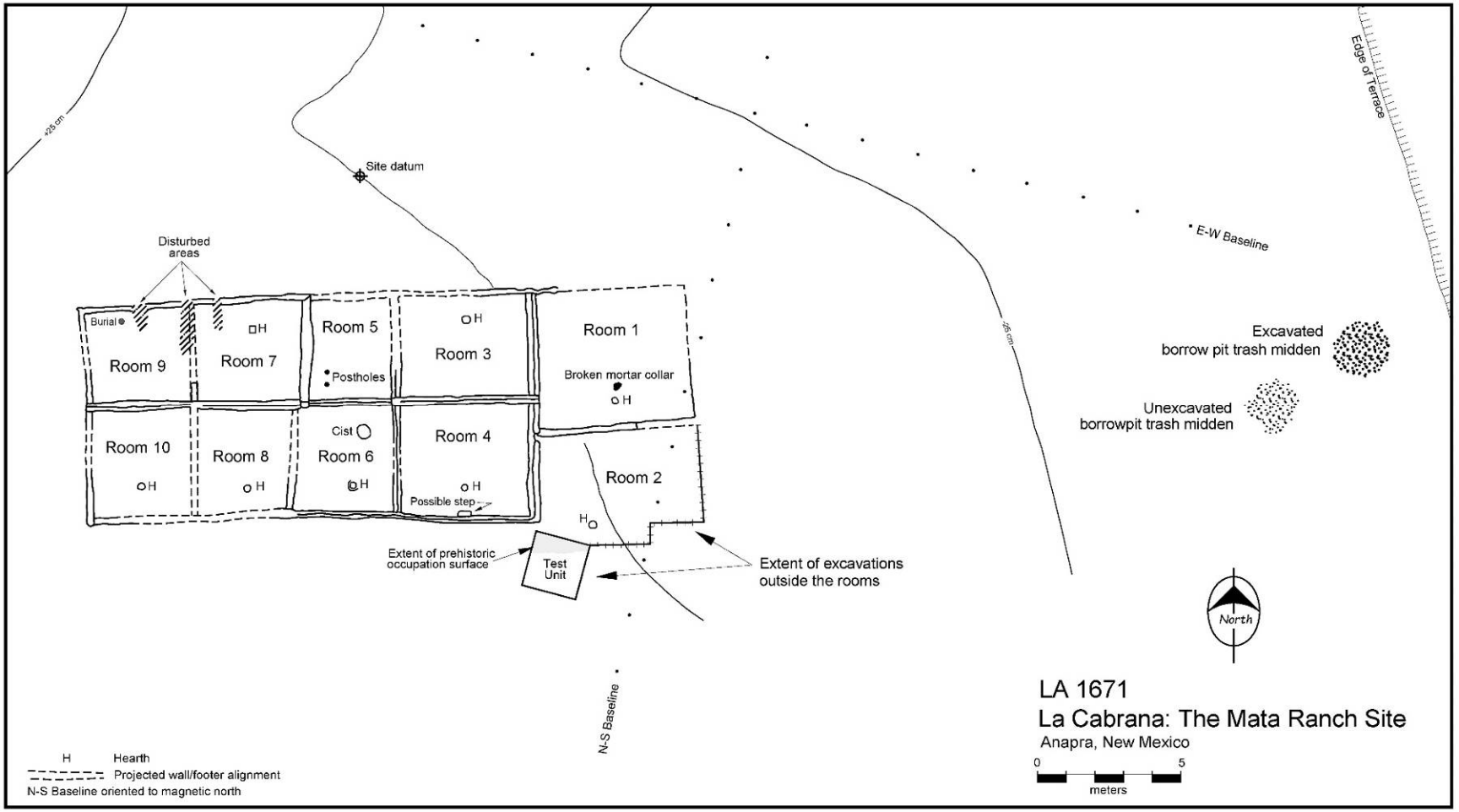

Figure 6. Site map of La Cabraña showing architectural and non-architectural features excavated and limits of excavations.

Burned roofing materials were present in the floor fill and on the floor of rooms. The roofs were constructed of wooden beams overlain with mesquite and tornillo limbs covered with grass and reeds. It is likely the roofs were plastered, as pieces of burned daub with stick and reed impressions were recovered. No evidence for interior roof support posts was identified.

Interior floor features consisted primarily of hearths. Six of the rooms had hearths located centrally along a room's north or south wall, about a meter off of the wall in a position to suggest the hearth was adjacent to the room's entry. Among the north row of rooms, the exception to this was Room 1, where the hearth was located off the south wall rather than the expected location off the north wall. Most of the hearths were small circular features that ranged from 22–27 cm in diameter; several were collared. One exception was the rectangular collared hearth in Room 7. In addition to the hearths, a subfloor cist was excavated in Room 6. The feature appears to have functioned as a cache in that it contained layered artifacts throughout. The only other floor features were some possible depressions/cists and a pair of small holes in Room 5. These holes had been filled and sealed and did not appear to have been roof supports. Evidence indicated that some of the floors were compacted earth, others were plastered, and some were only plastered in the area of the hearths.

Room Descriptions

Room 1

Room 1 was the northeastern most room. Most of the northern and eastern walls were destroyed (Figure 7). The room appears to have been the largest of two larger rooms at the east end of the pueblo.

Interior Dimensions: North wall: incomplete (stub extended 83 cm from the northwest corner; length projected 5.4 m)
South wall: 5.54 m
East wall: incomplete (interior edge of the wall extends 95 cm from the southeast corner of the room)
West wall: 4.72 m

Roof: Burned roof fall was present on the floor along the western wall in the southwest quadrant of the room and along the junction of the west and north walls. It extended out approximately 20 to 30 cm from the wall and consisted of pieces of charcoal, beam fragments, other burned organic matter, and burned adobe chunks presumed to represent a plastered roof. The material suggested the roof was constructed of narrow beams of wood approximately 8 to 12 or more cm in diameter that were covered with small branches and grass. No evidence of roof support posts was found and no floor features that might represent prehistoric postholes were identified.

Walls: The walls of Room 1 were poorly preserved, with the west wall being the only intact remnant. A portion of the south and east foundation trenches could be distinguished due to a change in color from the floor; these were 8 to 9 cm wide. The west wall abutted the east wall of Room 3 and that of a portion of Room 4; it averaged about 27 cm wide. The north and most of the eastern walls were destroyed. Approximately half of the southern wall was present, it ranged from 21 to 27 cm wide. A patch of burned caliche plaster was found near the bottom of the southern wall near the southwest corner of the room.

One interesting architectural trait is that the exterior southwest corner, at the junction of the west and south wall, was noticeably rounded. The significance of this is unknown.

Entry: No entry was identified; however, based on the location of the hearth, it is likely the entry was centrally located in the south wall.

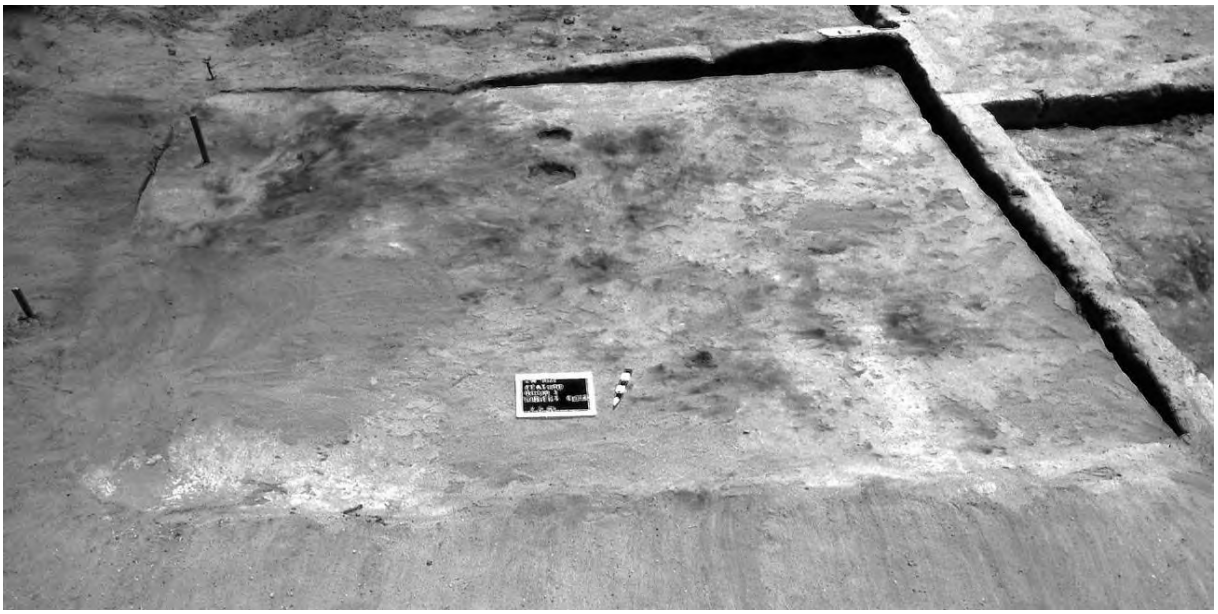

Figure 7. View of Room 1 upon completion of excavations, facing south-southeast.

Fill and Stratigraphy: The fill of Room 1 ranged from 20 to 45 cm with the deepest deposits in the southwest quarter of the room. The area was covered with a tan-orange deposit of eolian sand that covered a 20- to 40- cm-thick stratum of compacted light tan eolian sand contained charcoal and extended to the floor. Scatter through this layer were areas of dark gray, charcoal-laden sand that contained burned pieces of roof beams, grass matting, lithic debris, and sherds. A probable posthole of historic or modern origin was evident at the surface; it extended into the floor just to the north of the room's hearth.

Sherds of El Paso Polychrome, Gila Polychrome, Tucson Polychrome, Seco Corrugated, several sherds of probable Chihuahuan types, and a possible polishing stone were recovered from the fill.

Floor Area: 24.8 m^2

Floor: The floor was poorly preserved. Most of the east half of the floor had been eroded. An area around the hearth exhibited a thin layer of residual caliche plastering. The floor appears to have been of compacted clay, of which patches occurred in the western half of the room, particularly adjacent to the western wall. In some areas, the light tan substrate on which the floor was laid was exposed. Burning from roof fall was evident in the southeast quarter of the room with additional patches of burned floor in the western half of the room.

Hearth: One adobe-lined hearth (Figure 8) was centrally located, 80 cm north of the room's south wall. It was 26 cm in diameter, irregularly circular, 10 cm deep, and had a slight basin bottom. It appeared to have been lined with a thin layer of adobe, much of which had been burned or flaked off.

Other Floor and Subfloor Features: None observed.

Floor and Subfloor Assemblages: A small but varied assemblage of floor contact artifacts was recovered, but no subfloor artifacts were recovered. El Paso Polychrome, Gila Polychrome, Heshotauthla Polychrome, Maverick Mountain Polychrome, Tucson Polychrome, Seco Corrugated, Ramos Polychrome, and Ramos Black sherds were recovered from the floor. A necklace consisting of 17 *Olivella*

Figure 8. View of exposed hearth in Room 1.

shell beads (of which seven were burned), a turquoise pendant, and a flake of turquoise were also recovered. Ground stone included two smoothing stones, three mono fragments, and two metate fragments, one of which was of vesicular basalt. Flaked stone artifacts included flakes, two hammerstones, and a core fragment. Other lithic artifacts included a small stone concretion in the form of a small bowl (pinch-pot-like) and some possible burned mica. Two clusters of sherds that appeared to be remnants of possible pot breaks or large sherds left on the floor were also present. Assorted other items included bird bone, a fish otolith (fish ear bone), and pieces of limonite and hematite.

Of note was a cluster of broken and burned rock just to the north of the hearth (Figure 9). When reassembled, it appeared as if it might be the top of a stone mortar, although it could have been made to serve as a special collar for the hearth (Figure 10). The origin of the burning observed is unclear. It is possible that the burning occurred when the roof burned. However, the burning appears substantial and it likely was the result of it being used as a collar for the hearth; it would have made an excellent pot support for cooking or heating water.

Figure 9. Broken and burned possible hearth collar on the floor near the hearth in Room 1.

Figure 10. Reassembled possible hearth collar, Room 1 at La Cabraña.

Discussion: Room 1 was larger than Rooms 3 through 10. It could not be readily compared to Room 2, as Room 2 was poorly defined. One larger than average room in small El Paso phase pueblos is common and

is often considered a likely communal or ceremonial room (e.g., Marshall 1973; Miller 2009a:357–361). It is of further note that Room 1 is mostly aligned with the northern row of rooms; however, its hearth was adjacent to the south wall rather than the north wall. It is possible this room was built and used before Room 2 was constructed and used. Once Room 2 had been built it would have seemingly cut off any doorway that would have acted to vent the hearth in Room 1. Alternatively, Room 1 may have been an interior room that could only have been accessed through Room 2. The roofs at La Cabraña do not appear to have been structurally sufficient to hold the weight of people entering a room via a rooftop entry.

In his review of a draft of this document, Karl Laumbach (personal communication 2021 citing Creel and Anyon 2003:74; Table 1) offered an interesting observation regarding the length/width ratio of communal rooms of the region. Creel and Anyon observed that most of the Mimbres oval (early) and rectangular (later) communal rooms had a length/width ration of 1:1 or 1:2. Laumbach stated a possible communal room at the Montoya Site (LA 88891) exhibited a similar ratio. Interestingly, Room 1 at La Cabraña has a projected length/width ratio of 1:17. Creel and Anyon suggest a long-lived construction convention for communal rooms within the Mimbres tradition, and it is of interest that this may be reflected elsewhere in the general region. Although beyond the scope of this discussion, the possibility of such a convention within the Jornada Mogollon tradition warrants further consideration.

The artifact assemblage recovered from Room 1 was not particularly informative regarding any specialized room function. The only items of note recovered from the room were the necklace and possible stone hearth collar.

Room 2

Room 2 was at the southeast corner of the roomblock, south of Room 1 (Figure 11). It was badly disturbed with no east or south wall being identified. The room was larger, perhaps with a floor size similar to that of Room 1. The southern and eastern boundaries of the presumed floor were defined by the extent of the charcoal-stained soil. An attempt was made to identify the south and east walls by stripping the areas adjacent to the stained floor area below floor level, but no wall or footer remnants were identified. Additionally, a 2 × 2 m test unit (see Figure 6) was excavated in an area where the southwest corner of the room was anticipated. This was done to identify a corner or wall alignment, however, only a small area of charcoal stain thought to represent the prehistoric occupational surface was exposed.

Interior Dimensions: North wall: incomplete, it extends approximately 5.4 m from west wall, as Room 1 south wall
South wall: undetermined
East wall: undetermined
West wall: undetermined, approximately 2.8 m

Roof: Some burned roof fall (charcoal, reed fragments) was present on the floor, but it was scattered. The material present provided little information regarding the nature of roof construction in Room 2. No evidence of roof support posts was found and no floor features that might represent postholes were identified.

Walls: The eastern and southern walls were not preserved, and no evidence of foundation trenches was found. The northern wall remnant (the southern wall of Room 1) ranged from 21 to 27 cm wide. The west wall, abutting the east wall of Room 4, did not extend all the way to the northern wall, leaving a small niche-like feature at the corner of the two walls. Nothing was present within this feature and its function, if any, is unknown. The wall here ranged in width from 19 to 26 cm wide.

Figure 11. View of Room 2, facing south.

Entry: An entry was not identified. If the hearth was near the entry, then the entry would have been in the southwest quarter of the room, rather than centrally located adjacent the room's southern wall.

Fill and Stratigraphy: The fill of Room 2 ranged from 15 to 30 cm in depth, with the deepest deposits in the northwest quarter of the room. The area was covered with a tan-orange deposit of eolian sand that covered a 10 to 30 cm thick stratum of compacted light tan eolian sand and charcoal that extended to the floor. Areas of dark gray, charcoal-laden sand containing burned pieces of roof beams and grass matting were scattered throughout this layer, It also contained a scattering of lithic debris, including two small secondary obsidian flakes from small nodules, quartzite and rhyolite angular fragments, several small chert flakes, and sherds. A small spheroid rhyolite hammerstone was recovered from the room's overburden and a cuboid quartzite hammerstone was recovered from the room's fill. Among the sherds recovered from the fill were El Paso Polychrome, Chupadero Black-on-white, Gila Polychrome, Seco Corrugated, Ramos Black, and Playas Red Incised. One of the El Paso Polychrome sherds was half of a sherd disk.

Floor Area: Uncertain (projected 20.3 m^2).

Floor: The floor was poorly preserved; it was eolian sand stained by charcoal and compacted from use. The area surrounding the hearth exhibited residual caliche plastering that was gray from use; no evidence of replastering was apparent. The color of the floor ranged from a light tan-gray to a medium dark tan-gray. A burned, charcoal-stained area in the western half of the room was of historical or modern origin.

Hearth: One adobe-lined hearth (Figure 12) was present in the southwest quadrant of the room. It was 27 cm in diameter and 9 cm deep, slightly basin-shaped in cross section, and exhibited a slight collar. The feature was slightly raised above floor level.

Figure 12. View of exposed hearth in Room 2.

Other Floor and Subfloor Features: A slight depression, 18 cm in diameter and 3.6 cm deep, was 17 cm southwest of the hearth. The function of this feature is unclear, perhaps it served as a pot rest. No other floor or subfloor features were identified.

Floor and Subfloor Assemblages: The remnants of two pot breaks (the bottom portions of two vessels) were found on the floor along the room's north wall (Figure 13). No identifiable sherds were recovered from the floor. A scattering of lithic debris, a hammerstone, and a carved gypsum pendant were present.

Figure 13. Remnants of probable pot breaks on the floor of Room 2.

Discussion: Room 2 was poorly preserved, lacking any evident interior features other than the hearth and the adjacent depression. As noted, one curious architectural feature was found in the northwest corner of the room. A small niche-like feature was formed when the west wall was not extended to join the north wall of the room. This appeared deliberated, but the purpose or reason for this is unknown.

Initially, Room 2 was suggested to be an open, extramural work surface–such as a ramada. This was based on the atypical location of the hearth, which was not centrally located along a south or north wall, and the fact that no remnants of either the east or south walls were located. However, such features are not often reported as part of the roomblock in the Jornada Mogollon area. In general, few excavations

have systematically investigated extramural areas. One exception is Firecracker Pueblo, where areas outside the El Paso phase pueblo roomblock were extensively investigated and no specific exterior work or activity surfaces were identified (O'Laughlin 2001a). However, O'Laughlin (2001b) reports the presence of exterior postholes at Casa Blanca Pueblo and similar exterior postholes and areas identified as exterior work areas have been reported at Madera Quemada Pueblo (Miller and Graves 2009a). Such areas could have been used for food processing and preparation or an array of other domestic activities during the summer when the interior of room would have been hot.

Also of note are the locations of the hearths in both Rooms 1 and 2. The Room 1 hearth is located centrally off the south wall of Room 1, presumably off the entryway as is considered typical for Jornada Mogollon pueblo rooms. Doorways are assumed to have facilitated ventilation for the hearth; however, with the construction of Room 2, if indeed a room, the ventilating function of the Room 1 doorway would have been impeded. If a ramada or other open work area, the door in the south wall of Room 1 would have allowed for ventilation while the hearth in the southwest corner of Room 2 would not have required ventilation.

It is also possible that Room 2 is a second large communal room at La Cabraña. The question, or questions, then become: did it replace Room 1, or was it built to serve a second lineage or social unit at the pueblo? At this point, the function of the area identified as Room 2 remains unclear, although it is likely the poorly preserved remnant of a room.

Room 3

Room 3 was a well-defined rectangular domestic room in the north row of rooms (Figure 14). Much of the northwest quarter of the floor had been destroyed and three historic or modern postholes were evident at the surface in the northeast quarter of the room, only one of which extended into the floor near the center of the room. Two trough metates were recovered from the room. Other than Room 1, Room 3 was the largest in the north row of rooms.

Interior Dimensions: North wall: 4.35 m
South wall: 4.53 m
East wall: 3.5 m
West wall: 3.3 m

Roof: Roof fall, consisting of charcoal of beam fragments and other botanical materials, was present on portions of the floor, It, however, provided little information regarding the nature of roof construction in Room 3. No evidence of roof support posts was found.

Walls: The adobe walls of Room 3 were built on adobe footers. The north wall was 13 cm thick, the south wall 32 cm thick, the west wall 21 cm thick, and the east wall 27 cm thick. The footer for the west wall was 26 cm wide, making it wider than the wall at that point. Remnants of wall plaster remained at the base of the southern wall (Figure15). The south, west, and east walls were double wide, as they served adjacent rooms.

Entry: No entry was identified. If the hearth was near the entry, then the entry would have been centrally located in the room's northern wall.

Fill and Stratigraphy: The area of the room was covered with an unconsolidated eolian sand that had been disturbed during the modern era. Fill within the room ranged from 18 to 46 cm deep. It was capped with a layer of compacted clay that varied in thickness from 3 to 6 cm. This covered a 15- to 40-cm-thick layer of relatively soft, red, eolian sand that extended to the floor. Burned roof fall was present at the bottom of this layer in the central and southwest portions of the room.

Figure 14. View of Room 3 upon completion of excavations, facing south.

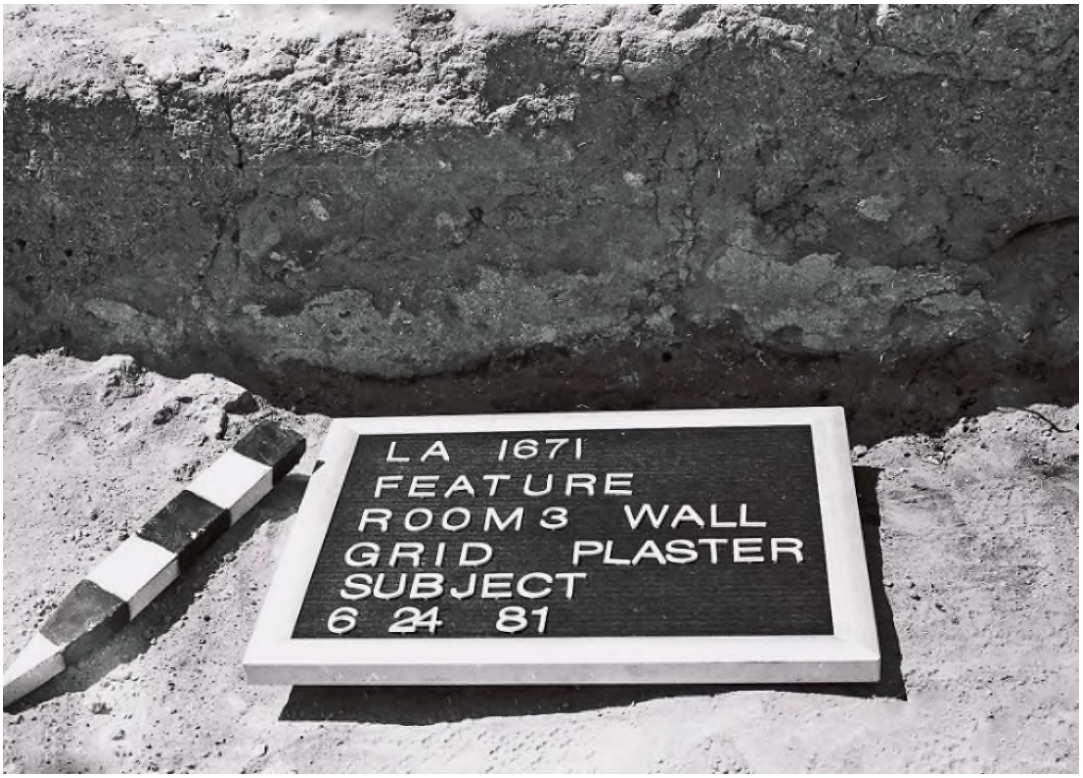

Figure 15. Remnants of plaster at the foot of the south wall of Room 3.

Identifiable sherds recovered from the fill consisted of El Paso Polychrome, Chupadero Black-on-white, Gila Polychrome, Seco Corrugated, and Ramos Black. A piece of shell, a polishing stone, and lithic debitage were also recovered.

Floor Area: 15.3 m^2

Floor: Much of the northwest quarter of the floor was disturbed. The remaining area was covered with patches of a thin caliche plaster stained gray from charcoal. The floor along the southern wall was tan colored and burning from roof fall was evident in the south-central and southwest portions of the floor.

Hearth: One adobe-lined hearth, 23 cm in diameter and 9 cm deep, was centrally located, 80 cm south of the room's north wall (Figure 16). It was basin shaped in cross section, no collar was evident, no plaster extended from the hearth onto the adjacent floor, and it was filled with gray ash. At the northern edge of the hearth a concavity was present that intruded into the hearth destroying its northern edge and part of the basin. The origin of this disturbance is unknown, but it appears to have been done prehistorically. It is unclear whether it functioned as an ash pit or it was done to facilitate the functioning of the hearth. This concavity gave the hearth a bean-shaped appearance; it measured 23 × 32 cm. Burning was evident with reddish-brown discoloration of the feature's edge and charcoal staining.

Figure 16. View of exposed hearth in Room 3.

Other Floor and Subfloor Features: One pit, a possible cist, was 1 m east of the hearth; it was 18 cm in diameter and 17 cm deep. Its outline was visible on the floor and its fill was devoid of artifacts. No other floor or subfloor features were identified.

Floor and Subfloor Assemblages: Two complete trough metates, one near the center of the room and the other near the southeast corner of the room, were recovered (Figure 17). Both were made from small boulders or slabs of andesite; the trough on one was less well defined than on the other. Additionally, two small side-notched projectile points, a complete mano, mano fragments, a possible metate fragment, a lithic core, two hammerstones, an *Olivella* shell bead, and lithic debris were recovered from the floor. Identified ceramic types consisted of El Paso Polychrome and Seco Corrugated.

Figure 17. Trough metates recovered from Room 3 (FS 829:1 and FS 830:1).

Discussion: Room 3 is notable for the presence of the two complete metates, a complete mano, and several mano fragments. The presence of these is suggestive of a specialized food processing room; however, nothing in the macrobotanical or pollen record for the room indicates the processing of a particular foodstuff. The cist, based on size, may have been a short-term storage facility for corn, mesquite, or tornillo beans. However, supportive pollen data (see Chapter 5) for the processing of maize and tree legumes in the room is generally lacking. Grass pollen was the most abundant pollen represented and it is possible that grasses were processed there, although the pollen was likely from the roofing materials. A core, lithic debris, sherds, and a portion of a pot break were present, all of which suggest a variety of domestic activities occurred in the room.

Room 4

Room 4 was a nearly square, domestic room in the southern tier of rooms, south of Room 3 and adjacent to Room 2 (Figure 18). Burning was evident over a considerable portion of the floor. A historic or modern posthole was present at the surface of the room's fill, but it did not extend to the floor.

Interior Dimensions: North wall: 4.5 m
South wall: 4.5 m
East wall: 3.8 m
West wall: 3.7 m

Roof: Wood and grass charcoal were present in the room fill and, on the floor, particularly in the room's southwest corner and hearth area. However, little information regarding the nature of roof construction for Room 4 could be gleaned from the remains present. No evidence of roof support posts or postholes was identified.

Walls: The walls were made from puddled coursed adobe; a section approximately 80 cm long had been gouged out of the middle of the west wall. The north wall ranged from 24 to 32 cm wide, the south wall 19 to 24 cm wide, the east wall 35 to 45 cm wide, and the west wall 23 to 27 cm wide. Remnant walls ranged from 25 to 50 cm in height. Some possible remnants of plaster were present on in interiors of both the north and west walls, adjacent to the northwest corner of the room.

Entry: None identified. The location of the hearth and presence of a presumed entry step partially embedded in the southern wall of Room 4 (Figure 19) suggests the entry was in the wall above the step.

Figure 18. View of Room 4 upon completion of excavations, facing north.

Figure 19. View of probable entry step in the southern wall of Room 4, facing south.

Fill and Stratigraphy: Room 4 was covered with an unconsolidated eolian sand that had been disturbed during modern times. The room walls were partially exposed through the overburden. Within the room, 25 to 50 cm of compacted fill consisting of tan to reddish tan sand containing varying amounts of charcoal from roof fall covered parts of the floor. A piece of burned daub with impressions of reeds was recovered.

Artifacts were numerous and include ceramics and flaked and ground stone. Identified ceramic consisted of El Paso Polychrome, Chupadero Black-on-white, Gila Polychrome, Tucson Polychrome, Seco Corrugated, and Ramos Polychrome. A burned quartzite cobble, two cores, a small bowl-like concretion, a possible palette with red coloring (ocher), two *Olivella* shell beads, a piece of turquoise, a projectile point fragment, a piece of malachite, and faunal bone were recovered along with some limonite.

Floor Area: 17.3 m^2

Floor: The floor was a compacted surface of eolian sand with no evidence of plastering. Varying degrees of burning were evident on all portions of the floor except an area in the center of the room; it was particularly extensive in the southeast quarter of the room.

Hearth: One adobe-lined hearth (Figure 20) was centrally located, 98 cm north of the room's south wall; it was not well preserved. The hearth was slightly ovoid, 23 cm in diameter, 8-cm-deep, and basin shaped in cross section. The edges of the hearth were missing and the southern rim exhibited extensive burning that appeared to be the result of the burning and collapse of the roof. Roof fall and adobe melt were welded to the floor adjacent to the southern edge of the hearth. The northern half of the hearth's rim and the adjacent floor appeared to have been scraped away exposing the tan sand subfloor stratum.

Other Floor and Subfloor Features: One feature of note was the probable slab-stone entry step in the southern wall of Room 4. This assumption is based on its central location in the wall in front of the hearth. It was roughly rectangular, 17 × 29 × 3.6 cm, and had a naturally formed notch in the left corner set against the wall (see Figure 19). No other floor or subfloor features were identified.

Floor and Subfloor Assemblages: Floor contact artifacts included El Paso Polychrome, Gila Polychrome, and conjoinable Seco Corrugated sherds (Figure 21), flaked stone, metate and mano fragments, a possible hammerstone, a small pestle found near the hearth, and some hematite. No subfloor artifacts were recovered.

Discussion: Room 4 was not a well-preserved domestic room. The floor exhibited widespread burning and no subfloor pits were identified. The array of artifacts indicates a variety of household activities occurred within the room. The presence of a pestle, red pigment on a possible palette, and pieces of mineral pigment may indicate pottery or body decoration.

Room 5

Room 5 was between Rooms 3 and 7 in the northern row of rooms, and had been damaged historically (Figure 22) by the placement of a guy-wire anchor for an adjacent utility pole, a square post remnant near the center of the room, and a post hole or pit that extended below floor level. Most of the northeast quadrant of the floor was missing as were the northern and much of the eastern walls. After the floor was exposed, the northern half of the room was excavated in two arbitrary levels, one 15 cm below the floor and one to 30 cm below the floor, to determine if any subfloor features or cultural remains were preserved.

Interior Dimensions: North wall: 2.89 m
South wall: 2.87 m
East wall: 3.65 m
West wall: 3.50 m

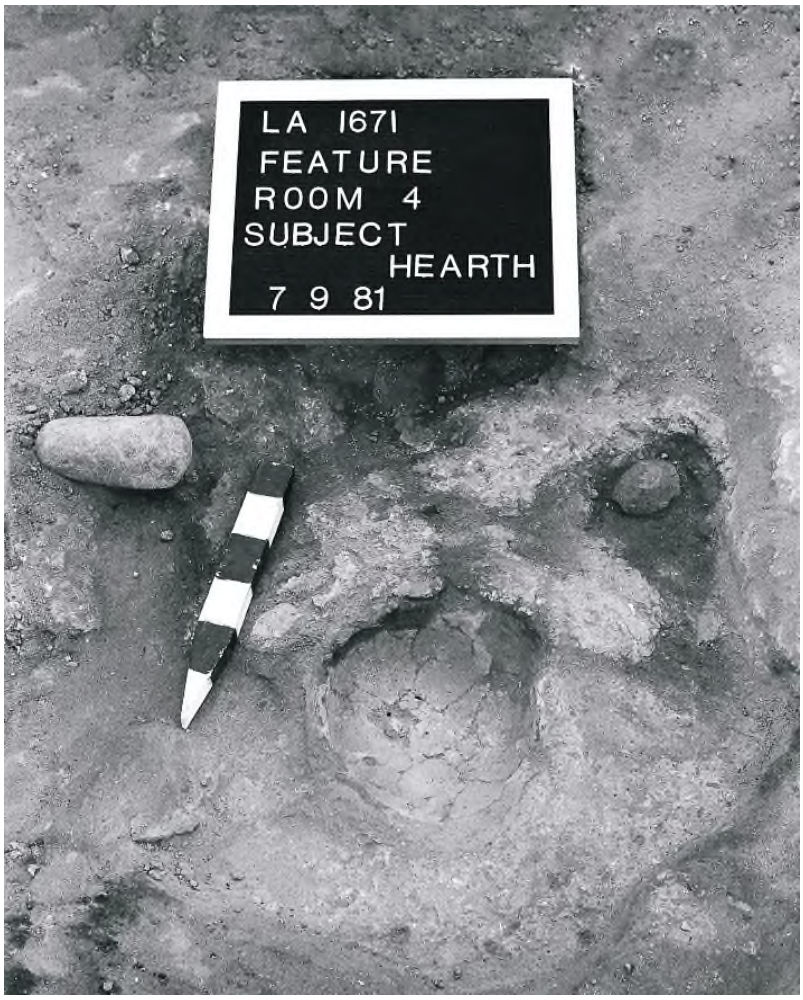

Figure 20. View of exposed hearth in Room 4.

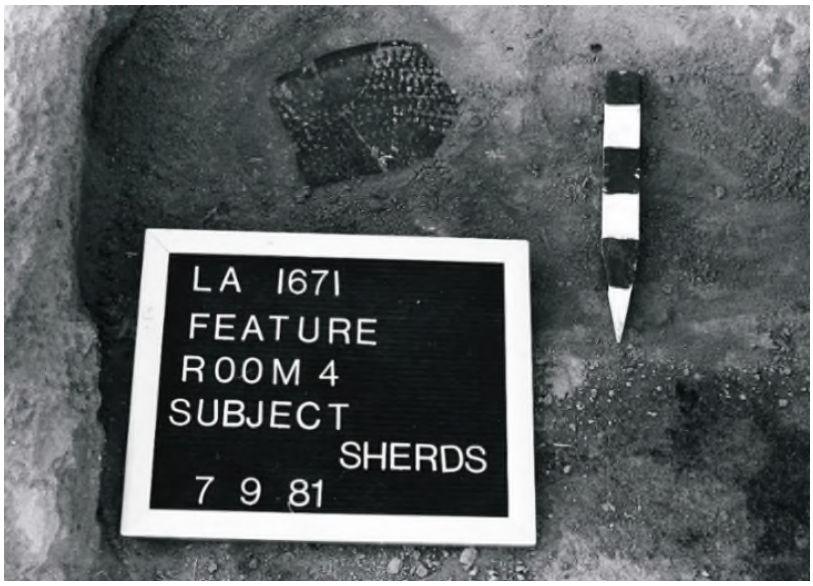

Figure 21. A portion of a Seco Corrugated pot break on the floor of Room 4.

Figure 22. View of Room 5 upon completion of excavations, facing south (two postholes post holes are visible near the upper right hand [southwest] corner of the room).

Roof: Roof fall was abundant in the southwest quadrant of the room. Pieces of charcoal indicate the roof was constructed of small beams covered with branches and grass that were covered with adobe. The presence of charred tornillo beans within the roof fall indicates tornillo supplied some of the construction material.

Walls: The north wall was destroyed. The room's remaining wall segments were puddled coursed adobe. The south wall was 26.2 cm wide, the east wall 30.5 cm, and the west wall 33 cm. Wall height above floor level ranged from 7 to 11 cm. No evidence of plastering was noted.

Entry: Undetermined, but likely in the north wall.

Fill and Stratigraphy: The area of the room was covered with an unconsolidated eolian sand that had been disturbed during modern times. The excavation of the overburden produced ceramics and lithics that included some cherts, a small agate secondary flake, and a piece of obsidian. Room fill was semi-compacted to unconsolidated eolian sand with scattered charcoal and some charcoal staining; it was 7- to 15-cm-thick and overlaid the floor.

Artifacts were not abundant in the fill and consisted of a scattering of sherds and lithics, including burned pieces of sandstone, several quartzite interior flakes, two fragments of obsidian pebbles with flake scars, a thick flake fragment of a poor-quality jasper, and a flake of porous cream-colored lithic material that appeared to be some type of fossilized wood. An oblong, gray quartzite cobble with unifacial retouch along one edge may have been an expediently made chopper. A small triangular projectile point made from gray obsidian was also recovered as was a complete mano. Identified ceramic types consisted of El Paso Polychrome, Chupadero Black-on-white, Gila Polychrome, Prieto Polychrome, Seco Corrugated, Ramos Polychrome, Ramos Black, and Playas Red. Two conjoinable El Paso Polychrome sherds with ground edges that appeared to be part of a sherd scoop were also recovered.

Floor Area: 9.5 m^2

Floor: Where remaining, the floor was well-compacted eolian sand that exhibited varying degrees of charcoal staining. No evidence of plastering was noted.

Hearth: Undetermined/destroyed.

Other Floor and Subfloor Features: Two small probable postholes were identified in the southwestern quadrant of the room. These were slightly oblong with maximum diameters of 8 cm, filled with sand, and plastered over. They were 42 cm apart and their function is unclear. It is possible they represent abandoned roof support posts (although seemingly too small for such) or perhaps a weaving loom or some kind of rack. No other floor or subfloor features were identified.

Floor and Subfloor Assemblages: Floor artifacts consisted of a vesicular basalt mano fragment, several other mano fragments, some sherds, a core, a hammerstone, a polishing stone, a chopper, some bone of uncertain origin, and an *Olivella* shell. Gila Polychrome was the only identifiable ceramic type recovered from the floor. No subfloor artifacts were recovered.

Discussion: Room 5 had been badly disturbed. It is presumed to have been a domestic room. The fill and floor contact artifacts included sherds, lithics, and ground stone that suggest a variety of domestic activities took place in the room. The area where a hearth would have likely been was disturbed.

Room 6

Room 6 (Figure 23) was in the southern row of rooms between Rooms 4 and 8. It was one of the more interesting rooms excavated. Most notable was the presence of a cist that contained a variety of artifacts layered throughout. Also of note was the present of pieces of ocher and kaolin that were recovered from within the room and from within the cist. Preservation of the walls and floor was marginal.

Interior Dimensions: North wall: 3.26 m
South wall: 3.52 m
East wall: 3.67 m
West wall: 3.55 m

Roof: Roof fall was abundant in the center of the room. Pieces of wood charcoal indicate the roof was constructed of small beams covered with branches and grass that were covered with adobe. Burned tornillo beans and mesquite charcoal were recovered from the floor, indicating both provided sources of material for the roofing.

Walls: The walls, which ranged from 13 to 18 cm, were puddled coursed adobe. The width of the north wall ranged from 24 to 27 cm, the south wall 25 to 28 cm, the east wall 14 to 19 cm, and the west wall 12 to 14 cm. No evidence of plastering of the interior walls was noted.

Entry: Undetermined, but likely in the room's southern wall.

Fill and Stratigraphy: The room walls were partially exposed through an overburden of unconsolidated eolian sand. The sand covered 13 to 18 cm of compacted fill consisting of tan to reddish tan sand that was variously charcoal stained. In the center of the room was a large concentration of burned roof fall (wood, charcoal, and burned grass). Hard accumulations of adobe melt were present along the foot of the north and south walls of the room.

Ceramics, flaked stone, ground stone, a shell bead, a hammerstone, some yellow ochre, and burned and unburned faunal bone were recovered from the room fill. El Paso Polychrome, Chupadero Black-on-white, Gila Polychrome, Heshotauthla Polychrome, Seco Corrugate, Ramos Polychrome, and Ramos Black sherds were also recovered. Lithics included a tan chert flake, a piece of obsidian, two complete manos, and a fragment of a vesicular basalt metate.

Figure 23. View of Room 6 upon completion of excavations, facing north.

Floor Area: 12.3 m^2

Floor: Patches of thin, 3-cm-thick caliche and adobe plaster were evident across the room; these were pink in color, probably as a result of exposure to heat. Large areas of plastering were missing in the southeast and southwest quadrants of the room. The floor of Room 6 was approximately 10 cm lower than that of Room 5 to the north.

Hearths: One adobe-lined hearth was 89 cm slightly east-of-center off the south room wall. It was collared and appeared as a double collared hearth; the broader outer collar was 27 cm in diameter and the smaller inner collar surrounding the hearth pit was 20 cm in diameter (Figure 24). The northeast portion of the outer collar was missing. Only the west quarter of the inner collar remained; it extended 4.5 cm above the surrounding outer collar. In profile the hearth was slightly basin shaped and was 7 cm deep. Evidence of burning was present and the adobe lining was cracked. Three angular pieces of stone, one of which was a fragment of a mano, were present in the fire pit.

Other Floor and Subfloor Features: One subfloor cist containing a cache of artifacts was in the northeast quadrant of Room 6 (see Figure 23). It was 65 cm in diameter, 44.5 cm deep, and was U-shaped in profile. The outline of the cist was visible on the floor and it appeared to have been plastered over.

Floor and Subfloor Assemblages: Room 6 produced a variety of artifacts including sherds, lithic debitage, a mono fragment, and a well-used mano. Two different clusters of sherds appeared to be remnants of pot breaks or perhaps vessels that were left on the floor. Identified ceramic types recovered from the floor consisted of El Paso Polychrome and Chupadero Black-on-white. Also recovered was a squarish shaft smoother. On the shaft smoother was an incised X-shape that looked like an open-ended figure eight.

Figure 24. View of exposed hearth in Room 6.

A small stemmed projectile point was recovered from the southeast quadrant of the floor. A cuboid hammerstone with light battering on one end and three edges was also recovered.

Artifacts within the cist were positioned at different levels throughout its fill (Figure 25). Just below the seal of the cist, at 1 cm below the floor, was a large projectile point (FS 241) that is a Late Archaic period type with a portion of its base missing. At 2 cm below the floor, was a small polishing stone, and at 11 cm below the floor was a small, smooth round stone. One of several pieces of pigment recovered from the cist was a piece of yellow ocher positioned at 22 cm below the floor. Scattered between 20 and 27 cm below the floor were pieces of calcite. At 23.5 cm below the floor was a piece of dark yellow to gold ocher. A round to slightly ovoid flat stone with a groove in one face, a possible sharpening stone or perhaps a palette, was recovered at 25 cm below the floor. Near this were a piece of pinkish kaolin and a piece of white kaolin. A small, roughly rectangular piece of turquoise was found at 30.5 cm below the floor near the bottom of the cist. At the bottom of the cist, at 34.5 cm below the floor, were two small turquoise pendants (FS 298) (possible earrings); both were drilled, and one was resting on its edge. There is no doubt that these items were deliberately dispersed throughout the cist.

The polishing stones, possible palette, and the pigments are suggestive of a potter's tool kit or a tool kit for the decoration of other objects. Some lithic debitage, including an angular piece of limestone, was also recovered from the cist, but it is unclear whether these were deliberately placed in the cist with the other items or whether their presence is fortuitous Among the flaked stone debris was a small, split, and flaked obsidian nodule. It is postulated here that some of the items were related to a specific task or activity associated with one of the room's occupants while others were votive in nature.

Discussion: Room 6, an apparent domestic room, was one of the more interesting rooms excavated at La Cabraña. The hearth was seemingly more massive than the hearths identified in the other rooms, the reason for which is unclear. Fill and floor artifacts were varied and relatively more abundant than those found in the other rooms as well. The subfloor cist and its cache of materials was a unique feature at La Cabraña.

Figure 25. Room 6 cist with cache of artifacts during excavation.

Room 7

Room 7 was in the northern row of rooms, between Rooms 5 and 9 (Figure 26). A large modern pit, 50 cm in diameter, was present in the fill in the center of the room, it did not extend through the room's floor. A historic or modern cut had been made through the north wall near the northwest corner of the room and much of the west wall was missing. Despite the disturbances, Room 7 proved to be the most interesting of the rooms excavated. It had a rectangular hearth and floor contact artifacts included an ornate necklace and two clusters of minerals and stones, many of which had been ground or carved. Upon completion of the excavation of Room 7, two subfloor test units were excavated, one in the northwest corner of the room that measured 0.9 × 1.5 m, and one in the northeast corner of the room that measured 1.15 × 1.30 m. Both were excavated to a depth 50 cm below floor level; no evidence of subfloor cultural deposits or features was observed.

Interior Dimensions: North wall: 3.98 m
South wall: 3.76 m
East wall: 3.46 m
West wall: 3.34 m

Roof: Based on the presence of charred beams and burned twigs, reeds, and grass in the room's fill and on the floor, the roof consisted of beams covered with branches, twigs, and grass covered with adobe plaster.

Figure 26. View of Room 7 upon completion of excavations, facing south.

A relatively large beam remnant was found on the floor in the northwest quadrant of the room. Evidence of burning of the floor was widespread, indicating burning roof fall came into direct contact with the floor or that there was little post-occupational accumulation of fill in the room. No evidence of roof support poles was identified.

Walls: A 27-cm-wide modern era cut had been made through the north wall near the northwest corner of the room; it extended into the room 1.4 m and much of the west wall was missing. The north wall ranged from 13 to 23 cm wide, the south wall was 30 cm wide, the east wall ranged from 33 to 45 cm wide, and the west wall remnant was 30 cm wide. The wall remnants ranged from 15 to 34 cm in height. No plastering of the interior walls was observed.

Entry: Not identified, but the location of the hearth suggests the entry was in the center of the north wall.

Fill and Stratigraphy: The surface of the room was eolian sand that contained few artifacts. Below this was a consolidated eolian sand containing scattered deposits of adobe. This layer ranged from 23 to 33 cm thick and it produced an array of artifacts including El Paso Polychrome, Chupadero Black-on-white, Gila Polychrome, Heshotauthla Polychrome, Tucson Polychrome, Seco Corrugated, and Ramos Black sherds. Flaked and ground stone, a projectile point, a stone bead, a small core, two shaft straighteners, a hammerstone, a polishing stone, a bivalve pendant, an *Olivella* shell, and a turquoise flake were also recovered. Also mixed within this layer was abundant roof fall material, including burned tornillo pods. The bottom of this layer, at floor contact, was less consolidated. It produced a considerable amount of lithic debitage and debris (most of which was quartzite, with some rhyolite and a piece of vesicular basalt). A cobble of light, fine-grained quartzite exhibited multi-directional flake removal and appeared to be a tested cobble or a core.

Floor Area: 12.6 m^2

Floor: The floor of Room 7 was a patchy thin adobe wash on a compacted substrate of sand. The areas around the hearth and in the southwest quadrant of the room were the best preserved. The floor in the northwest quadrant and in the southeast corner was absent. There was a concentration of adobe melt along the floor-wall junction along parts of the north wall.

Hearth: One adobe lined hearth was centrally located, 91 cm south of the room's north wall. It was rectangular with slightly bowed edges; it measured 21-cm-north-south × 17-cm-east-west × 6-cm-deep (Figure 27). The sides of the hearth were straight, and the bottom was slightly basin shaped. Burning within the hearth was evident and the areas surrounding the hearth, particularly the west and north sides, exhibited heavy burning that did not appear to be associated with burning roof fall.

Figure 27. View of exposed hearth in Room 7.

Other Floor and Subfloor Features: None.

Floor and Subfloor Assemblages: Floor contact artifacts were relatively abundant and varied in Room 7. Artifacts included ceramics, a remnant of a possible pot break, angular fragments of stone, lithic debitage, a chert core, a burned bone awl fragment and the tip of another bone awl, ground stone fragments, a basalt mano, yellow ochre, four hammerstones, a metate fragment, bird bones and two larger bones, a shell pendant and bead, and a turquoise flake. The crown of a human child or subadult premolar was also recovered; it was discolored but it did not appear to have been burned. It is possible that its presence was the result of bioturbation or post occupational disturbances. Sherds of El Paso Polychrome, Gila Polychrome, Heshotauthla Polychrome, Tucson Polychrome, Seco Corrugated, and Ramos Polychrome, and a small eccentric projectile point (FS 450:1) were recovered from the floor.

Three concentrations of artifacts are of note. One was a necklace with an incised, rectangular pendant (Figure 28). In addition to the pendant, the necklace was made up of stone beads, a small *Conus* sp. shell tinkler, a small turquoise disk bead, shell disk beads, small *Olivella* shell beads, and one amorphous piece of shell made into a bead. The necklace was in the northwest corner of the southwest quadrant of the room.

The two other artifact clusters, Cluster I and Cluster II, were found on the floor in the southwestern quadrant of the room. The largest group, Cluster I, covered an area approximately 46 cm in diameter. It was a concentration of rocks, fossils, minerals, crystals, crinoids, a piece of malachite, *Olivella* shells, calcite, sherds, and debitage. Many of the stones and fossils had grooves or ground facets. Cluster II

consisted of similar items (Figure 29) covering an area of 20 × 35 cm was found approximately 15 cm to the north of Cluster I.

Discussion: As previously stated, Room 7 was the most interesting room excavated at La Cabraña. Architecturally, the presence of the square hearth appears to be unique among the rooms at the site. Although unique at La Cabraña, square hearths have been reported at other Jornada pueblos, in the context of communal rooms (e.g., Miller 2009a; Miller and Graves 2009b). What is of interest at La Cabraña is the co-occurrence of the square hearth with the unusual artifacts recovered from the room, the elaborate necklace and the two clusters of rocks, fossils, minerals, and malachite. It is unclear whether Room 7 was a domestic room occupied by an individual of status or special standing within the community or perhaps a special use room.

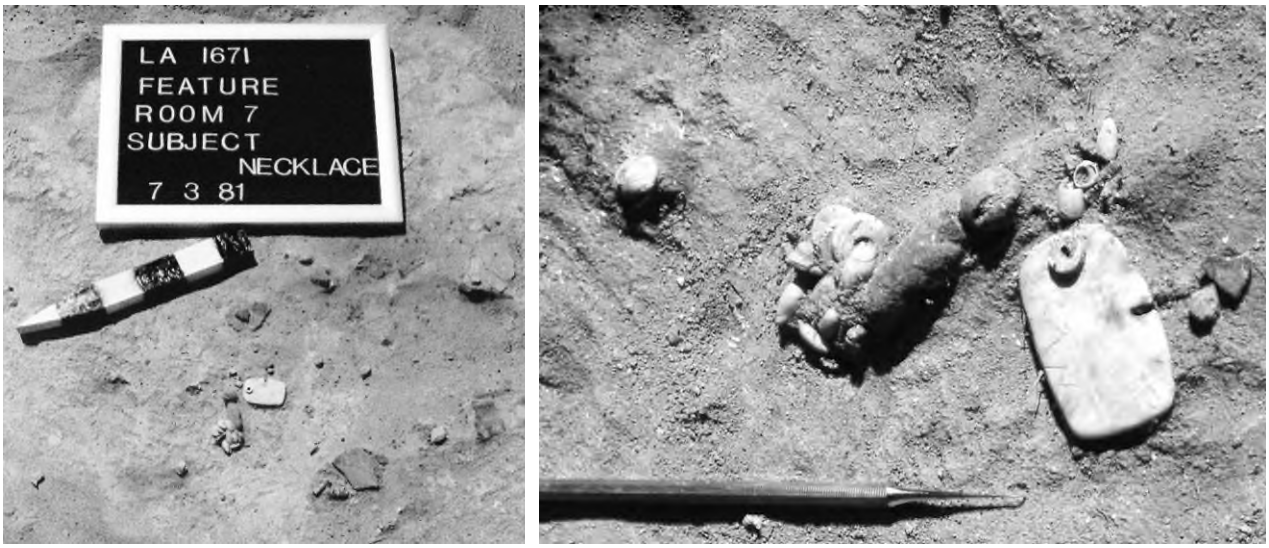

Figure 28. Necklace on the floor of Room 7 and detail of the necklace in situ.

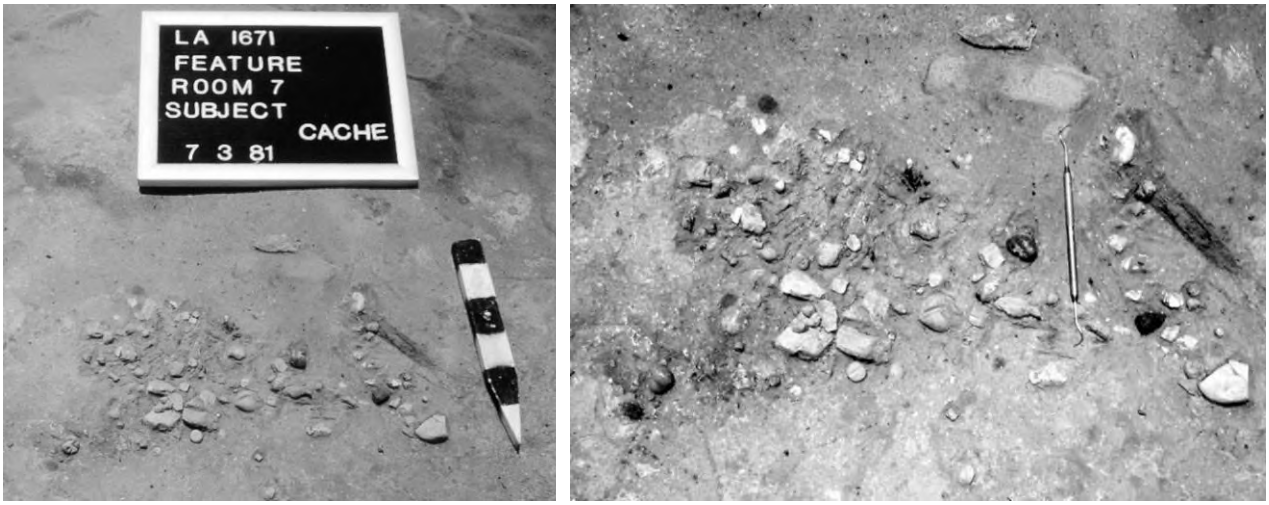

Figure 29. Cluster II of minerals, crystals, and fossils with ground facets and grooves found in Room 7 and detail of the cluster in situ.

Regarding the clusters of minerals and crystals, similar clusters and items have been reported at other Jornada pueblos (e.g., O'Laughlin 1985a; Miller 2009b). Di Peso (1974:2:587–588) identified similar

items at Paquimé in a crushed plainware jar with a green painted, coiled basked lid. He postulated the items were associated with a medicine man or sorcerer.

Room 8

Room 8 (Figure 30) was in the southern row of rooms between Rooms 6 and 10. The room area was overgrown with weeds and mesquite bushes and a modern square post was present near the center of the room. The west wall and most of the east and south walls were absent. It was one of the smaller rooms at the site and was presumed to be a domestic room. Due to time limitations, the room was not fully excavated. Only about three-quarters of the room, the northern and eastern halves and the area surrounding the hearth, were excavated to floor level.

Figure 30. View of Room 8 upon completion of excavations, facing south.

Interior Dimensions: North wall: 3.27 m
South wall: 3.06 m (projected)
East wall: 3.37 m
West wall: 3.68 m (projected)

Roof: The charred beams and burned grass in the room's fill and on the floor indicate the roof consisted of several beams covered with branches, twigs, and grass covered with adobe. Evidence of floor burning was widespread, indicating burning roof fall came into direct contact with the floor. The roof fall in Room 8 appeared to be more informative than that found in the other rooms. The field record suggests that two centrally located larger beams, one oriented north-south and one oriented east-west, crossed at the middle of the room, dividing the roof area into quarters. Smaller beams and branches were then placed diagonally (northeast-southwest or northwest-southeast) from the walls to the intersection of the two larger support beams at the center of the roof (Figure 31). This was done rather than running a series of beams the length or width of the room. These diagonally placed roofing materials were then covered with grasses and

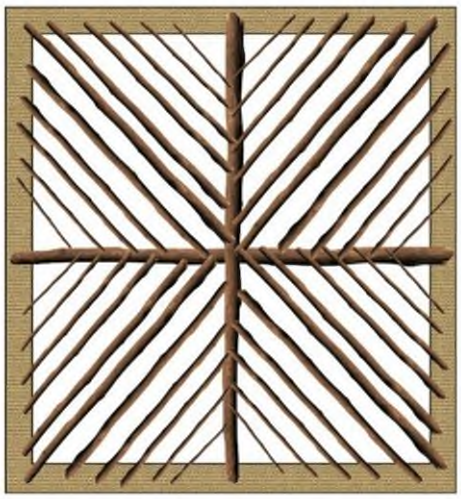

Figure 31. Possible roof beam pattern of Room 8 at La Cabraña.

plastered. Although this appears to be an interesting alternative to the typical roof construction method, it is not clear that the field notes accurately reflect how the roof of Room 8 was constructed. No indication of roof support poles was identified.

Walls: The west wall and much of the south and east walls were missing. The remnant walls were made of puddled coursed adobe, the highest of which in the southeast corner room was 17 cm. The north wall ranged from 28 to 30 cm wide, the south wall 24 to 26 cm, and the east wall 12 to 15 cm. The west wall, including the southwest corner and adjacent portion of the south wall, was destroyed by a modern water pipe. No evidence of plastering was recorded.

Entry: No entry was identified; it is assumed to have been centrally located in the south wall in front of the hearth.

Fill and Stratigraphy: The surface of the room was covered with unconsolidated eolian sand and partially covered with vegetation; the north wall was visible at the surface. The room fill was 16 to 17 cm deep and consisted of semi-consolidated sand that overlaid an adobe hardpan that overlaid a layer of charcoal from burned roof beams and burned grasses. The adobe hardpan and charcoal layer below it represented roof fall, and this covered the floor.

Artifacts recovered from the fill included sherds of El Paso Polychrome, Gila Polychrome, Playas Red Incised, Playas Red, and pieces of lithic debitage. A burned, medium sized, quartzite cobble hammerstone with battering on one edge was recovered from the room's overburden. A smaller quartzite hammerstone exhibiting battering on opposite ends, a burned rhyolite hammerstone with possible battering on one end, a mano (broken in two conjoinable pieces), and two shaft straighteners/abraders were recovered from the room fill.

Floor Area: 11.1 m^2

Floor: The patches of floor that were exposed, primarily in the southern half of the room, were hard packed and there was some indication of a thin adobe-caliche wash plaster. However, preservation was poor.

Hearth: A clay-lined collared hearth was centrally located, 75 cm north of the room's south wall (Figure 32). The collar ranged from 40 to 52 cm in diameter with the interior fire pit being 23 cm in diameter and 9 cm deep; it was slightly basin shaped in profile. Portions of the northern and eastern edges of the collar had been disturbed. Burning was evident within the fire pit and the collar exhibited evidence of burning associated with the use of the feature.

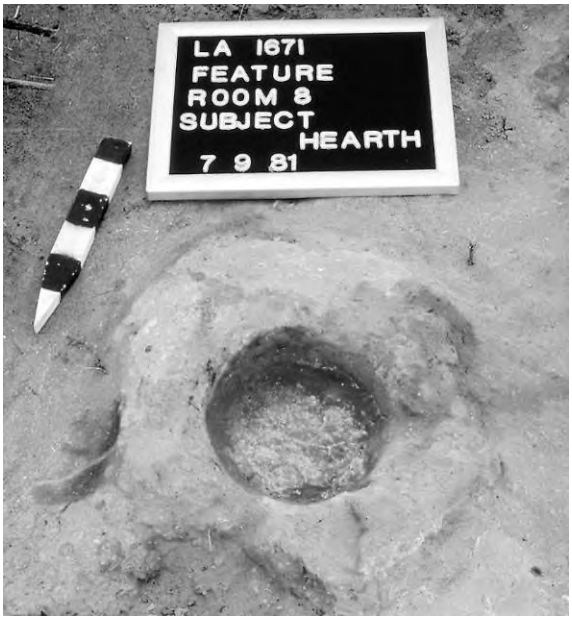

Figure 32. View of exposed hearth in Room 8.

Other Floor and Subfloor Features: No other floor or subfloor features were identified in the areas excavated.

Floor and Subfloor Assemblages: The floor of Room 8 was nearly devoid of ceramics. Other floor artifacts consisted of a shaft straightener/abrader, mano fragments, and several pieces of flaked stone debris. No subfloor artifacts were recovered.

Discussion: Room 8 was a smaller, probable domestic room that yielded few artifacts and little information regarding room function. The most informative aspect of Room 8 was insight into the possible construction of the room's roof as illustrated in Figure 31. The use of such a roof construction pattern would have minimized the need for several long beams that span the length or width of the room.

Room 9

Room 9 (Figure 33) was at the northwest corner of the roomblock. It was poorly preserved; investigation of Room 9 was limited as the project was nearing an end. A water line that ran diagonally north-south through the eastern half of the room; it extended into Room 10. A pit full of sand was in the southeast corner of the room and a small pit filled with small gravel was present along the western wall. A modern trench extended southward about a meter through the center of the room's north wall, it likely destroyed the room's hearth. A second recent trench was evident in the northeast corner of the room, it also cut through the northern wall at the junction of Rooms 7 and 9 and extended approximately 1.9 m down the eastern wall of Room 9. Investigation of Room 9 resulted in the identification of the only human burial identified at La Cabraña.

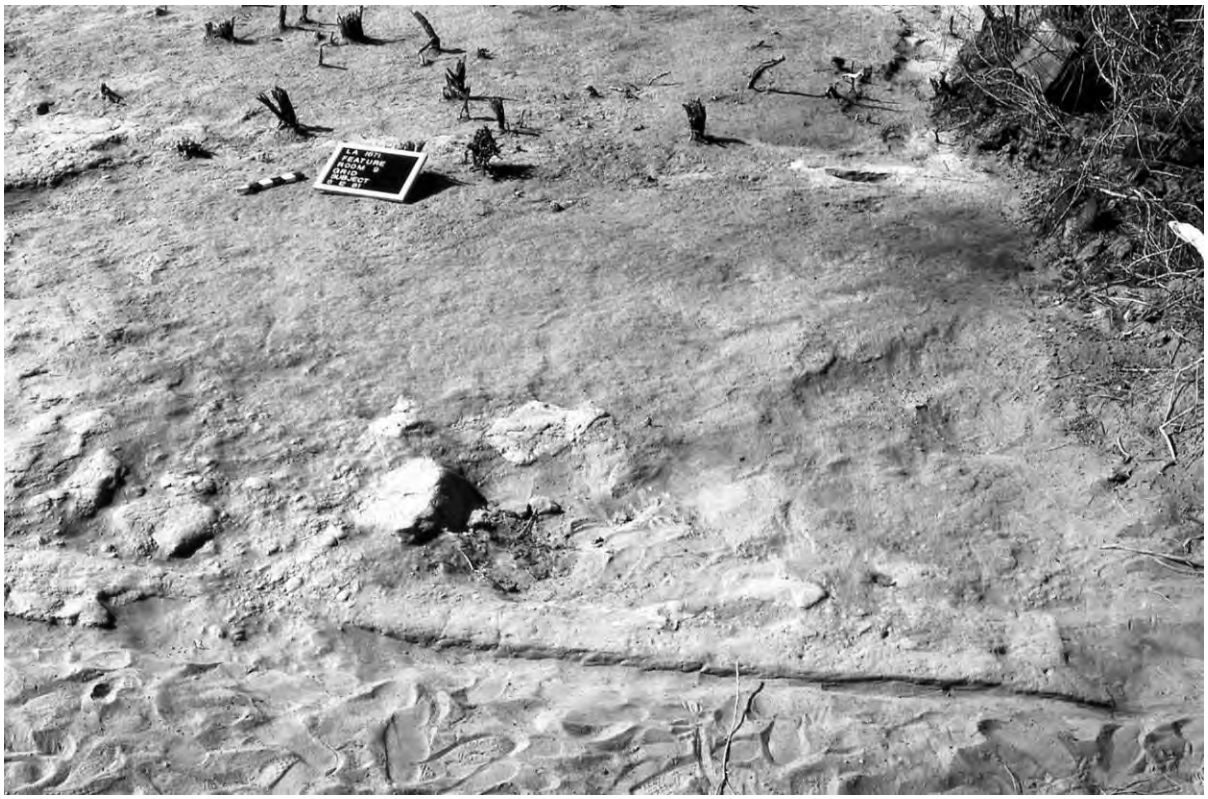

Figure 33. View of Room 9 upon completion of excavation, facing southeast (note the burial pit in the center of the photograph along the north wall).

Interior Dimensions: North wall: 3.7 m
South wall: 3.4 m
East wall: 3.3 m
West wall: 3.1 m

Roof: Undetermined.

Walls: The walls were puddled coursed adobe. Much of the east wall and about a third of the west wall were missing. Wall width ranged from 16 to 23 cm: what remained of the north wall was 16 cm wide, the east wall remnant was 22 cm wide, the west wall was 23 cm wide, and the more complete south wall was 23 cm wide. The height of the remnant walls ranged from 4 to 7 cm. No footer was identified and no plastering was evident.

Entry: No entry was identified, although it was likely through the north wall of the room.

Fill and Stratigraphy: The surface of the room was covered with 10 to 15 cm of hard-packed eolian sand with the southern edge of the room overgrown with scrub mesquite. The overburden contained quantities of historical/modern era debris. Below the overburden was another 7 cm of hard packed fill, below which was a hardpan of adobe melt and in the center of the room eolian sand partially covered a hard-packed floor. Evidence of burning was present along the northern wall and in the southwest quarter of the room. The contiguous areas of hardpan exhibited varying degrees of charcoal staining. The hardpan, burning, and charcoal staining likely were the result of the burning and collapse of the room's roof. An iron utility pipe ran diagonally north-south through the eastern half of the room. Much of the northeast corner of the room, extending westward along the northern wall, was badly disturbed clumps of hardpan.

Identified sherds recovered consisted of El Paso Polychrome, Chupadero Black-on-white sherd, and Seco Corrugated. Some lithic debitage and a possible hammerstone were also recovered.

Floor Area: 11 m^2

Floor: A remnant of a hard-packed, unplastered floor was present in portions of the center and southern part of the room. Charcoal stained eolian sand was patchy across the floor.

Hearth: Destroyed, but likely off the northern wall.

Other Floor and Subfloor Features: Room 9 yielded the only human burial identified at La Cabraña. The bone was poorly preserved and the remains were highly disturbed. The burial was 135 cm from the northwest corner of the room along the north wall and 46 cm south of the north wall. It was in a shallow depression below the floor, although no clear floor surface was identified and no burial pit was evident. The area covered by the burial was 44-cm-northwest-southeast × 49-cm-northeast-southwest. Remains included fragments of the cranium, rib fragments, some cervical vertebrae, long bone fragments, and finger and toe bones. The skull was face down and appeared to be oriented to southeast. Burial position, could not be determined with certainty, although there was a suggestion that the individual may have been buried in a semi-flexed or flexed position. The individual, based on the presence of newly erupted six-year molars that exhibited little if any wear, was estimated to be around six years old. No funerary offerings were present. No other floor or subfloor features were identified.

Floor and Subfloor Assemblages: Ceramics recovered from what parts of the floor that were excavated included El Paso Polychrome. No other artifacts were recovered from the floor of Room 9.

Discussion: Room 9 was badly disturbed, and its investigation was limited and provided little insight into the nature and function of the room. Few artifacts were recovered from the fill and floor. Room 9 did contain a sub-floor burial of a young child and it was the only burial identified during the excavations at La Cabraña. This burial fits the pattern generally typical of Jornada Mogollon pueblo burials—recovered from subfloor pits near the north wall of a room.

Room 10

Room 10 (Figure 34) was a smaller room at the southwest corner of the roomblock. It was badly disturbed, and as with Room 9, not fully excavated because of time limitations. The area was overgrown with scrub mesquite and the effort focused on defining the walls and locating the hearth.

Roof: Undetermined.

Walls: The walls were puddled coursed adobe; the west wall was 19 cm wide and the north wall 14 cm wide. Wall remnants were 9 to 11 cm in height. No footers and no evidence of plastering were identified.

Entry: None identified. It is assumed the entry was in front of the hearth and in the room's southern wall.

Interior Dimensions: North wall: 3.6 m
South wall: 3.9 m
East wall: 3.6 m
West wall: 3.7 m

Figure 34. View of Room 10, facing north.

Fill and Stratigraphy: The surface area of the room was covered with approximately 15 cm of hard-packed eolian sand and overgrown with scrub mesquite and other vegetation. The overburden contained quantities of historic/modern era debris. Below the overburden was another 15 cm of hard packed fill that when removed exposed a hardpan composed of adobe melt and eolian sand that covered the floor. Two iron utility pipes were exposed in this level. One extended diagonally through the southwest portion of the room and the installation of the other had destroyed much of the room's eastern wall.

El Paso Polychrome, Tucson Polychrome, Seco Corrugated, and Ramos Black sherds were among the small ceramic assemblage recovered from the fill. Other artifacts were limited to a few pieces of lithic debitage.

Floor Area: 12.6 m^2

Floor: The room was only partially excavated and the floor was not exposed. It was covered with a hard-packed layer of what appeared to be adobe melt.

Hearth: One adobe-lined hearth, 19 cm in diameter (Figure 35), was identified. The hearth was slightly west-of-center, approximately 1 m north of the room's southern wall. It was slightly basin shaped in profile and 5 cm deep. Much of the upper portion of the hearth was missing, so nothing is known of its junction with the floor. Some heat alteration of the adjacent soil was present along the northern and western edges of the hearth.

Other Floor and Subfloor Features: Undetermined.

Floor and Subfloor Assemblages: The floor was not exposed.

Figure 35. View of the Room 10 hearth, facing east.

Discussion: Because of the extensive disturbance and limited investigation of Room 10, little can be said regarding the nature and function of the room.

Non-Architectural Features

Other than the human burial recovered from Room 9, the only non-architectural feature investigated was a borrow pit turned trash midden east of the roomblock. It was one of two such middens east of the roomblock, near the edge of the terrace above the river's floodplain (see Figure 6). Initially, a 2 × 2 m grid was established over the area of the eastern most feature. Once the loose overburden had been stripped away, the plan was to excavate the feature in arbitrary 15 cm levels. However, its fill was highly compacted and troweling was destroying the macrobotanical and faunal remains present. Additionally, excavations of the feature were not initiated until the very end of the field session and time had become a limiting factor. Thus, it was decided to excavate the fill in bulk, which was then carefully wet screened in the river to facilitate recovery of any materials present. The remains were then allowed to dry before bagging. Once most of the fill was removed, the remaining fill was troweled to expose the sides and bottom of the feature.

The feature, as exposed at the surface, measured 1.78-m-north-south × 1.74-m-east-west (Figures 36 and 37). Portions of the northern and western edges of the pit were slightly undercut by as much as 12 cm. The bottom was uneven, and the deepest parts were below the undercut edge. The depth of the pit ranged from 15 to 53 cmbs; the feature was likely eroded by sheet washing or overbank flooding of the river. It is presumed to have been a borrow pit for adobe to build or maintain the pueblo. An array of artifactual and environmental remains were recovered, including ceramics, lithics, macrobotanical and faunal remains, and marine shell. Approximately 250 sherds were recovered from the midden, most were burned and heavily sooted. The majority were unspecified brownware, most of which were likely body sherds from El Paso Polychrome. Seventeen sherds were painted and clearly identifiable as El Paso Polychrome; five were Chupadero Black-on-white including a neck sherd from a jar; four sherds were Seco Corrugated; and four were small unspecified red ware sherds. The macrobotanical and faunal remains recovered from the midden provided the basis for the subsistence study discussed in Chapter 5.

Figure 36. The excavated borrow pit trash midden at La Cabraña (note the undercut northern and western edges).

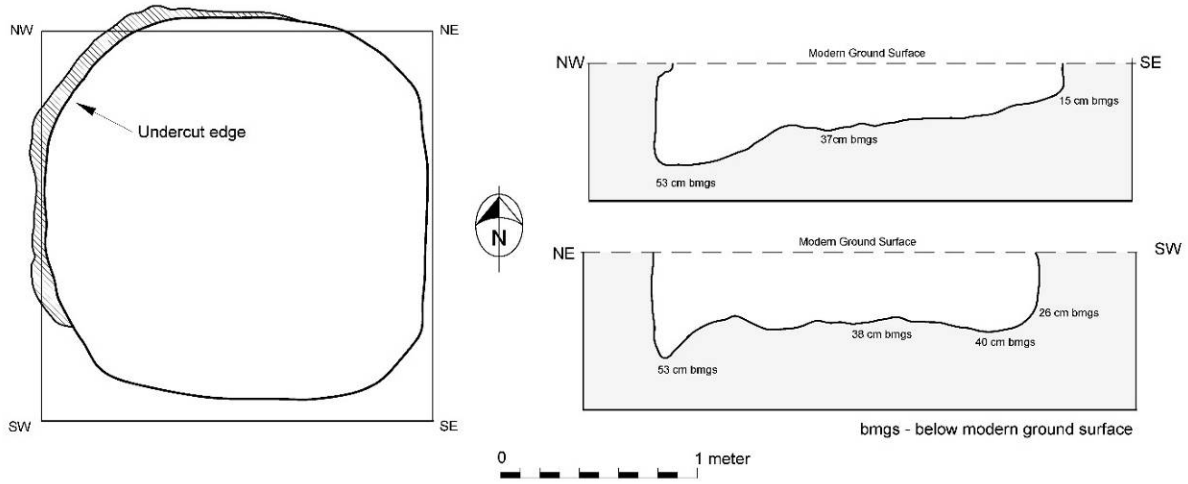

Figure 37. Plan view and cross-sections of the borrow pit trash midden at La Cabraña.

Summary and Discussion

Site Structure

Beyond what has already been discussed above, little can be said regarding site structure. La Cabraña appears typical of El Paso phase linear pueblos; it consists of a linear roomblock, two tiers wide, and oriented east-west (e.g., Marshall 1973; Miller et al. 2009; Railey and Holmes 2002:50). The only extramural feature investigated was a midden east of the roomblock. Although generally limited, excavations in extramural areas associated with El Paso phase pueblo occupations have demonstrated the presence of features such as isolated rooms and rooms abutting the roomblock, activity surfaces, hearths, ash dumps, middens, postholes, and the occasional human burial (e.g., Miller and Graves 2009a;

O'Laughlin 2001a). Investigation of extramural areas at La Cabraña may have revealed the presence of such features.

The features investigated at La Cabraña are thought to be contemporaneous. It is believed the roomblock was built within a relatively short period, although the construction sequence remains undetermined. The excavated midden, based on identifiable ceramics present, appears contemporaneous with the occupation of the roomblock. Again, the lack of excavations in the extramural areas adjacent to the roomblock preclude any conclusions regarding any diachronic changes in the use and organization of extramural features that may have been present.

Architectural Characteristics

The La Cabraña Pueblo appears typical of small, late El Paso phase pueblos. It is a single story of adobe rooms in a linear, double wide configuration of nine to ten rooms. As previously discussed, it was initially posed that the area designated Room 2 was an extramural work area with a hearth, or perhaps a ramada-like feature attached to the pueblo. However, it is more probable that Room 2 was a room with an atypical location for the hearth. In a recent discussion of Jornada pueblo architecture, Miller and Graves (2009b:121) point out that extramural hearths at Jornada pueblos are considerably larger than those found within rooms. The hearth in Room 2, although at the upper end of the size range of the La Cabraña circular hearths (see below), is not significantly larger. This and the lack of postholes or other evidence to suggest a ramada type structure indicates Room 2 was likely a room rather than an extramural activity area.

The eastern portion of the north wall, the eastern wall and the southern wall of Room 2 were not identified; only the western half of the north wall (common with Room 1) and the western wall (common with Room 4) bounded the room. No evidence of footers for the missing wall was identified. There was no evidence of a southwest corner tied to the south east corner of Room 4. The reason for the obliteration of the Room 2 walls, as well as most of the north and east walls of Room 1 is unclear, although various post-occupational processes such as scouring by overbank flooding of the Rio Grande and disturbances resulting from historical or modern use of the site area likely impacted the features.

Construction of the La Cabraña Pueblo was puddled coursed adobe. The composition of the adobe was clay and sand, sometimes with varying amounts of small caliche nodules. The walls, for the most part, appear to have been built on footers that consisted of trenches 15- to 20-cm-wide that were filled with adobe, although because some segments of walls had been destroyed it was not clear if all the walls had been built on footers. Some presence of footers appeared in Rooms 1, 3, 5, 6, and 7.

The extant walls appear to be remnant basal courses of adobe. Some evidence of coursing was noted in the southwest corner of Room 3 and possibly in Rooms 4 and 5. However, preservation was such that it was not possible to determine the height of the courses atop the basal courses. Recently, Miller and Graves (2009b:108) lament the fact that wall preservation at Jornada pueblos is generally so poor that little can be said regarding the height of the adobe courses used to construct the walls. To glean some information, they reviewed photographs of rooms from pueblos were remnants of coursing existed, and based on available data and the photographs, they suggest that the lower one or two courses of adobe walls averaged around 30 cm in height.

Although an effort was made to assess wall junctures and abutments, the poor preservation of the walls at pueblo prevented a detailed reconstruction of its construction sequence. Bradley (1983:45) postulated the rooms did not appear to have been built simultaneously, and noting that rooms in the southwest portion of the roomblock were smaller they were the first built, with the other rooms being added later—Room 1 being the last to be added. Specifically, Bradley (1983) suggested, perhaps the two southwestern rooms were the founding rooms with other rooms being added with construction moving eastward. It can be

argued, considering how the construction of the west wall of Room 1 aligns with the roomblock, that it was the last room added with Room 2 subsequently being added. It is possible the pueblo was constructed from a series of contiguous modular rooms. Nevertheless, questions remain regarding which rooms were built first, which row of rooms was built first, and over what period was the roomblock completed.

It is of note, as illustrated in Figure 6, that many of the pueblo walls appear to be two courses wide. A linear crack was present running down the long axis of most of the walls. This phenomenon is also reported at Madera Quemada Pueblo, where it is explained as double-wide or parallel coursing of the walls (Miller and Graves 2009b:108, Figure 6.6).

Marshall (1973:95) notes that El Paso phase pueblo rooms generally range in size from 5.0 to 80.0 m^2 with rooms most commonly ranging in size from 15 to 30 m^2. Additionally, Marshall notes that single larger rooms, ranging in size from 50 to 80 m^2, are often found and are thought to be communal rooms. However, more recent excavations (e.g., Miller 2009a:335–369; O'Laughlin 2001a:117) indicate a greater range in communal room size with likely examples as small as 25 m^2, as is the case at La Cabraña. The rooms at La Cabraña, including projected floor areas for Rooms 2, 8 and 10, ranged in size from 9.5 to 24.8 m^2 (Figure 38) with a mean of 14.03 m^2 and median of 12.6 m^2 (Figure 39). Like many other El Paso phase pueblos, La Cabraña has at least one room, Room 1, that is noticeably larger than the other rooms. Room 1 is 30 percent larger than the largest domestic room, Room 4, and twice as large at the median room size at La Cabraña. As noted above, such variability in floor area at El Paso phase pueblos is typical (e.g., Marshall 1973:95; Miller 2009b:Table 13.1; O'Laughlin 2001a:117).

Eight hearths were preserved, all but one was circular and several were collared. The seven circular hearths ranged in diameter from 19 to 27 cm, averaging 23 cm in diameter. In depth, they ranged from 5 to 10 cm deep with an average of 8 cm. In profile, most were straight to slightly incurved with a shallow basin bottom. The one exception was the rectangular hearth in Room 7, it was 17 × 21 cm and was 6 cm deep. As discussed above, the Room 7 hearth is unique at La Cabraña, but they are not uncommon in Jornada Mogollon pueblos. Although the La Cabraña hearths were variably preserved, they appear to fall within reported size and depth ranges for hearths found within El Paso phase rooms. Five of the hearths were collared with their collars ranging from slightly perceptible to relatively massive; the collar surrounding the fire pit in Room 8 ranged from 17 to 29 cm wide.

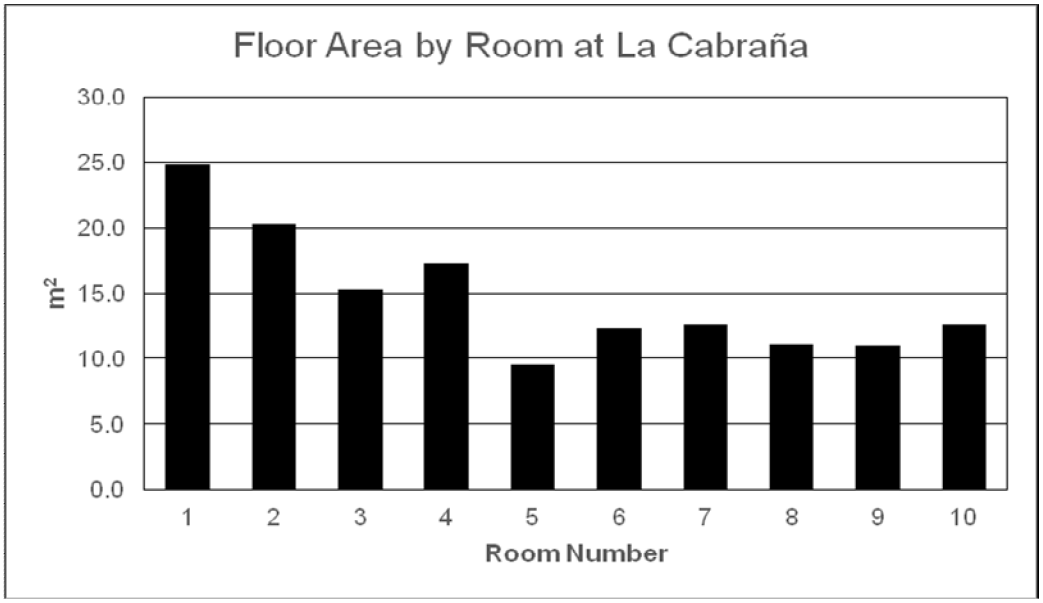

Figure 38. Histogram of floor area by room at La Cabraña (the floor area for Room 2 is estimated).

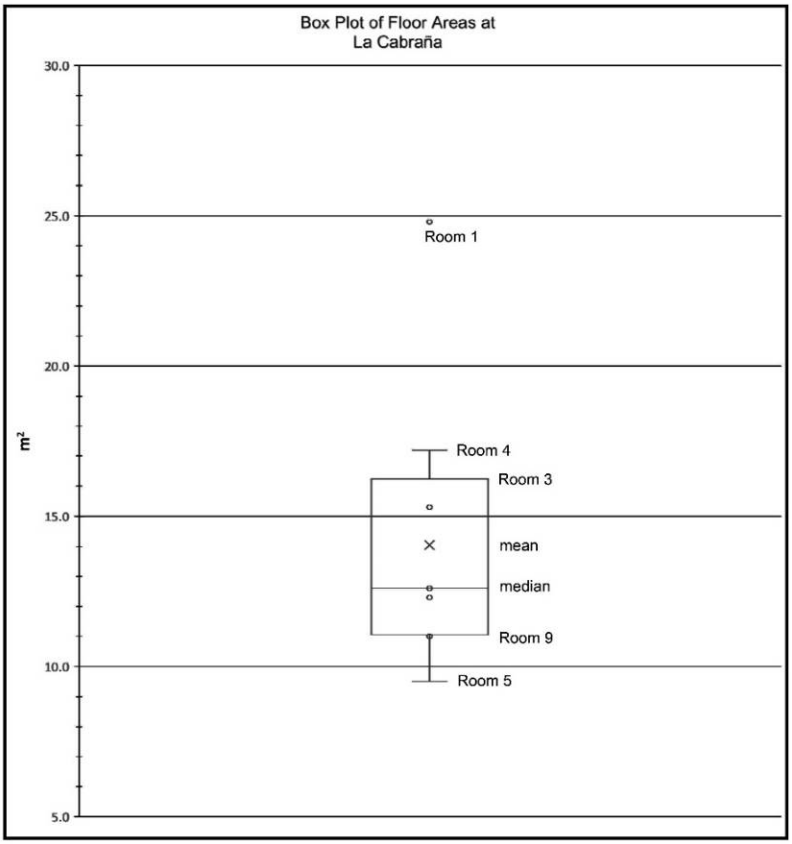

Figure 39. Box plot of floor area for La Cabraña Rooms 1, 3–10 with mean (14.03 m^2) and median (12.6 m^2).

The lack of floor features other than hearths at La Cabraña appears to be typical of riverine sites (Thomas O'Laughlin personal communication 1983). In the intermontane basin areas, rooms often have a variety of subfloor pits of various dimensions. Many of these are found filled with trash and plastered over. Although their original function is unclear, they were probably used for storage (Marshall 1973:105). A shallow pit or cist was found in Room 3 near the room's hearth and may have served as a shot-term storage feature. Two small, slightly oblong holes were identified in the floor of Room 5. No artifacts or offerings were recovered from them and their function remains unclear. It is possible they represent abandoned roof support posts (although seemingly too small), a loom, or possibly a rack of some type. Room 6 produced a deep cist with an array of cached artifacts that appear votive in nature. Other depressions in floors were also noted but their function is unclear. It is of further note that none of the floors, as well as the walls, exhibited extensive plastering or refurbishing. O'Laughlin (personal communication 1983) indicates this too is typical of riverine pueblos.

A single human burial was recovered. Few burials have been recovered from El Paso phase pueblos, especially when compared to neighboring areas. This pattern was noted early in the history of investigations of El Paso phase sites (e.g., Cosgrove and Cosgrove 1965). Since then, the number of El Paso phase burials has not significantly increased. El Paso phase burials are often found in sealed subfloor pits in rooms, although in some cases it appears individuals were placed on the room floors and then plastered over. They are typically in semi-flexed or flexed positions and lack funerary offerings, although they are sometimes found with ceramic vessels or large sherds over their cranium; most are adults. No significant patterning in their orientation has been identified and most are found in proximity to the northern wall of a room.

Miller et al. (2009:47) report that recent compilations of El Paso phase burial data (Lowry 2005; Miller 2004; Morris 1999) identified fewer than 40 burials, half of which came from a single site, the Hot Well site. Considering most excavations of El Paso phase pueblos have focused on rooms and many of the burials found come from rooms, one may question why so few burials have been recovered. O'Laughlin (2001a:126) emphasizes this point—noting that in 1986 when he began excavations at Firecracker Pueblo—on average, one burial had been recovered for every 11 or 12 El Paso phase pueblo rooms excavated. Even when there have been investigation of extramural areas, few burials and no cemeteries have been identified. Again, O'Laughlin (2001a:126) conducted systematic and extensive excavations of extramural areas at Firecracker Pueblo and only a single burial, that of an 18 to 22-year-old female, was recovered. Based on this and some of his earlier work, O'Laughlin (1982, 2001a) offered the supposition that few burials would be recovered from El Paso phase sites and that this reflected "relatively high residential mobility and short-lived communities." That said, O'Laughlin (2001a) and Mauldin (1995) have noted that a dichotomy exists between El Paso phase sites in the uplands of the Sacramento Mountain and those in the lowlands of the Jornada area with nearly 11 times the number of burials per room being recovered from the uplands. For a more comprehensive discussion of El Paso phase burials see Miller et al. (2009:47–48). In summary, despite being that of a child, the La Cabraña burial appears to typical of El Paso phase burials. The remains appeared to have been placed in an undefined subfloor pit in a semi-flexed or flexed position near the north wall of the room, and lacked funerary offerings.

Room Function

Room 1, and possibly Room 2, are larger than the other eight rooms at La Cabraña. As discussed above, a large room (larger than the average habitation room) is typical for most Jornada pueblos (e.g., Marshall 1973; Miller 2009b; Miller and Graves 2009b:99; O'Laughlin 2001a). Room 1 was approximately 24.8 m^2 and Room 2 was estimated to be approximately 20 m^2, while the remaining eight rooms averaged 12.7 m^2 in size. Two such rooms within a small, linear roomblock seems unusual. Other than their sizes, they appeared to lack any architectural or floor features that set them apart from the other rooms, with the possible exception of the potential stone hearth collar found on the floor of Room 1. As discussed, it could have been the top of a stone mortar, although it could have been made specifically for the hearth. Its mouth was well shaped and smoothed and exhibited extensive burning; it is possible that it was used to enhance the ritualistic nature of the room.

The remaining eight rooms are believed to have been domestic rooms. Six of the eight had hearths and the presence or absence of hearths in the remaining two is undetermined as their presumed locations had been badly disturbed. None of the eight retained features to suggest they were storage rooms, and none were sufficiently small to suggest a specialized function other than habitation (e.g., Anyon and LeBlanc 1984:112; O'Laughlin 1999). Nevertheless, the possibility that some of the La Cabraña rooms were dedicated storage facilities cannot be ignored, and if they were primarily habitation rooms, they could have had a secondary function as storage facilities.

Floor contact artifact assemblages were variable in size and content, and several of the rooms were either devoid of floor artifacts or there were few because of modern era disturbances. These assemblages were typically characterized by small numbers of sherds and flaked stone debris; these were not particularly informative regarding room function. Rooms 1, 2, 3, 4, 6, and 7 had what appeared to be pot breaks; the bottoms of corrugated vessels or large unspecified brownware body sherd thought to be indicative of food preparation and storage vessels. Two rooms had floor contact assemblages that provided more specific indications of room function. Room 3 had two metates on or embedded in the floor. These were large, nonportable specimens and their presence suggests that the room was, in part, may have been dedicated to food processing. The other room, Room 7, had two clusters of minerals, fossils, crystals, and a unique necklace on the floor. The suggestion here is that this room was occupied by a person involved in curing or sorcery. The only large subfloor feature identified was in Room 6 where a cist containing pigments and polishing stones possibly associated with ceramic production were among the items, some of which

appear votive, placed in the cist. This may speak more to task specific household activities or beliefs rather than any specialized function of the room.

Population Size

Although it has a long history in archaeological research (e.g., Cook and Heizer 1986; Hill 1970; LeBlanc 1971; Naroll 1963), estimating population size of prehistoric communities is fraught with ambiguities. For a thorough review of estimating population size and its application to a Jornada pueblo, see Miller (2009b:343–346). The following discussion is brief and leans heavily on Miller's study. Excluding Rooms 1 and 2, and assuming the remaining eight rooms are habitation rooms, there was approximately 102 m^2 of covered floor space at La Cabraña. Based on this, the estimated population size for La Cabraña ranges from a low of nine individuals to a high of 25, with an average (using the mean of ranges) of 14 individuals (Table 1).

Table 1. Population Estimates for La Cabraña Pueblo

Model	Constant	Estimated Population Size for Eight Habitation Rooms (Total Floor Area=102 m^2)
Casselberry (1974)	4.0–6.0 m^2 per person	17–25
Cook and Heizer (1986)	2.3 m^2 (first 6), 9.7 m^2 after	14
Naroll (1962)	10.0 m^2 per person	10
LeBlanc (1971)	7.3–11 m^2 per person	9–14

Miller takes his analysis of population size at Madera Quemada Pueblo a step further by employing Adler's (1989) cross-cultural analysis of the relationship of the size of socially integrative facilities and the size of the residential group using such features. As discussed above, the large rooms at Jornada pueblos are generally thought to have functioned as some type of socially integrative structure similar to a kiva or clan house. Miller (2009b:343–346), opted to follow Adler (1989) by referring to such features as a "social integrative facility," pointing out that this terminology is suggested to lessen any predisposed assumptions regarding such a room's function. Plotting the size of Room 1 at La Cabraña against the regression plot generated by Miller (2009:Figure 13.3), which is based on Adler's (1989:37, Table 3) data, the estimated residential size generated for La Cabraña is 18 people.

Miller (2009b:345) also approximated population size at Madera Quemada Pueblo based on the number of households present (e.g., Doelle 2000; Lightfoot 1994). In their respective cross-cultural studies, Doelle estimated five to eight individuals constituted a Salado household in the Tucson Basin while Lightfoot's study, looking across the Southwest as a whole, estimated an average of four to seven individuals. Estimating the number of households at La Cabraña is problematic at best because of the poor preservation of several the rooms and a general lack of information regarding room function. It is assumed here that at least eight of the rooms were likely habitation rooms, and because the rooms were contiguous and arranged in two linear rows of four each (not including the larger Rooms 1 and 2 at the east end of the roomblock), it is postulated that two to four households occupied La Cabraña. This discussion is far from comprehensive or methodologically rigorous and is not intended to generate an exact estimate of the number of people that occupied La Cabraña. It is, nevertheless, not inconsequential to generate population estimate to gain insight into the nature of the occupation of a site. With that said, we postulate that two households, totaling 15 to 20 people, occupied La Cabraña.

Chapter 4
MATERIAL CULTURE

A variety of ceramic, flaked stone, ground stone, marine shell, and mineral artifacts were recovered during the excavations at La Cabraña. As noted previously, the fine and many of the complete artifacts were returned to the landowner. Detailed analyses of various artifact classes were limited and the unavailability of some of the artifacts at the time of this writing prevented further detailed analyses or reanalyzes. The ceramics and flaked stone were subjected to rough sort analyses. Basic morpho-metric attributes were recorded on some of the artifacts and constituent analyses were limited to a small sample of ceramic sherds and several pieces of turquoise.

Ceramics

Ceramic sherds were the most abundant artifact class recovered. No complete vessels were recovered, and most sherds are small—less than 5 cm in maximum dimension. A total of 5,410 sherds were tallied from room fill and floor contexts (Table 2). Sherds were sorted into four categories: El Paso Polychrome, undifferentiated brownware, non-local or intrusive, and unidentified. Generally following Hill (1993), El Paso Polychrome is defined based on the presence of painted decoration. The category of undifferentiated brownwares "is comprised of undecorated or weather body sherds which match brownware descriptions for El Paso Brown and El Paso Bichrome/Polychrome (Hill 1993:115)." As Hill further notes, this category is essentially a "catchall" for the brownware body sherds derived from the El Paso series; being from a late El Paso phase pueblo, it is assumed that this category is comprised predominantly of unpainted body sherds from El Paso Polychrome. No attempt was made to further sort or identify other potential brownware types within this category. Undifferentiated brownwares accounted for 79 percent (*n*=4,295) of the ceramics tallied and El Paso Polychrome for 15 percent (*n*=809), with intrusive types and unidentified sherds accounting for the remaining six percent (*n*=306).

El Paso Polychrome

The assemblage of sherds identified as El Paso Polychrome conformed to established descriptions of the late variety of the type (e.g., Lehmer 1948; Perttula et al. 1995; Stallings 1931; Wiseman 2002). El Paso Polychrome designs were accomplished by the application of a red slip and black paint over a brownware surface, with the brown surface forming the primary part of the design (e.g., Hawley 1936; Stallings 1931). Miller presents a recent and concise definition and summary of "classic" El Paso Polychrome:

> "By A.D. 1250, there is virtually a complete replacement of Plain Brown and Bichrome types, as well as the early/transitional variant of El Paso Polychrome, with Classic El Paso Polychrome. This pattern is unique among Southwestern ceramic technologies, since no plain or corrugated utilitarian wares are produced in combination with the painted El Paso Polychrome ceramics. Instead, El Paso Polychrome is painted only on the upper half to two-thirds of the vessel. The lower portion of the vessel–the area most likely to come into contact with heating fires–was left undecorated. Therefore, El Paso Polychrome served multiple functions as both a utilitarian and non-utilitarian decorated ware.
>
> Classic El Paso Polychrome jar forms include the characteristic everted rim, restricted orifice necked jar, or olla. Bowl forms include hemispherical shapes with somewhat larger orifice diameters and sizes than earlier variants. Some Classic El Paso Polychrome jars measure nearly one meter in height and have orifice diameters of nearly 35 cm, and represent some of the largest vessels ever produced in the Southwest (Perttula et al. 1995:214)."

Table 2. Sherd tallies from fill and floor contexts at La Cabraña.

Region/Ware	Ceramic Type	Fill	Floor	Total Count	Comments
			Room 1		
El Paso Brownware	El Paso Polychrome	30	93	123	Nine rim sherds; slightly to moderately everted. The orifice of one measured 16 cm in diameter, another 22 cm in diameter. One rim from a short-necked jar with a moderately everted rim, 14 cm in diameter. One rim sherd appears to be from a bowl with a slightly inverted rim measuring 17 cm in diameter.
	El Paso undifferentiated brownware	147	477	624	One sherd biconically drilled three rim sherds.
Northern Jornada Whiteware	Chupadero Black-on-white		3	3	Body sherds from jars.
Roosevelt Redware	Gila Polychrome	1	3	4	Bowls.
Zuni-Acoma Glaze Ware	Heshotauthla Black-on red Polychrome	2	1	3	Heshotauthla Black-on red Glaze Polychrome; bowls.
Maverick Mountain Polychrome Ware	Maverick Mountain Polychrome		1	1	Bowl with slightly everted/flaring rim; orifice 28 cm in diameter.
	Tucson Polychrome	1	2	3	
Mogollon Brownware	Seco Corrugated	3	6	9	Most exhibit burning on the exterior indicating their use as cooking vessels.
Casas Grandes Decorated	Ramos Polychrome		1	1	
Casas Grandes Utility Ware	Ramos Black		1	1	
	Undifferentiated Chihuahuan Polychrome	1	1	2	Unpainted body sherds likely from Ramos Polychrome
	Undifferentiated redware		1	1	Possibly Chihuahuan in origin.
	Unidentified brown ware	1		1	Likely Chihuahuan in origin.
	Room 1 Totals	186	590	776	
			Room 2		
El Paso Brownware	El Paso Polychrome	139		139	Two rims. Sixty plus sherds from medium size jar, burned, no rims.
	El Paso undifferentiated brownware	487	23	510	
Northern Jornada Whiteware	Chupadero Black-on-white	2		2	
Roosevelt Redware	Gila Polychrome	2		2	
Mogollon Brownware	Seco Corrugated	5		5	
Casas Grandes Utility Ware	Ramos Black	4		4	
	Casas Grandes Incised	3		3	
	Undifferentiated Chihuahuan Polychrome	1		1	
	Unidentified brownware	3		3	Likely of Chihuahuan origin.
	Unidentified black-on-white	2		2	
	Unidentified brownware	1		1	
	Room 2 Totals	649	23	672	

Table 2. Sherd tallies from fill and floor contexts at La Cabraña (*continued*).

Region/Ware	Ceramic Type	Fill	Floor	Total Count	Comments
			Room 3		
El Paso Brownware	El Paso Polychrome	111	56	167	Nine rims. One small, everted rim from a short-necked jar.
	El Paso undifferentiated brownware	861	154	1,015	Four large, unpainted body sherds.
Northern Jornada Whiteware	Chupadero Black-on-white	1		1	
Roosevelt Redware	Gila Polychrome	3		3	
Mogollon Brownware	Seco Corrugated	35	4	39	Two rims.
Casas Grandes Utility Ware	Ramos Black	3		3	
	Undifferentiated Chihuahuan Polychrome	1		1	Probable Ramos Polychrome.
	Undifferentiated red or black-on-brown	1		1	
	Unidentified brownware	2		2	
	Unidentified black exterior	1		1	
	Unidentified	3		3	Possibly from the bottom of a Chupadero Black-on-white vessel; 6.6 mm thick.
	Room 3 Totals	1,022	214	1,236	
			Room 4		
El Paso Brownware	El Paso Polychrome	119		119	Eleven rims. One rim with orifice of 20 cm in diameter; one 26 cm in diameter
	El Paso undifferentiated brownware	822	22	844	
Northern Jornada Whiteware	Chupadero Black-on-white	17		17	
Roosevelt Redware	Gila Polychrome	3	1	4	
Maverick Mountain Polychrome Ware	Tucson Polychrome	1		1	
Mogollon Brownware	Seco Corrugated	52	3	55	Seven rims. One rim from vessel with a mouth 36 cm in diameter; one 40 cm, and one 38 cm.
Casas Grandes Decorated	Ramos Polychrome	2		2	
	Undifferentiated Chihuahuan	2		2	Probably Ramos Polychrome unpainted body sherds.
	Unidentified	2		2	
	Room 4 Totals	1,020	26	1046	

Table 2. Sherd tallies from fill and floor contexts at La Cabraña (*continued*).

Region/Ware	Ceramic Type	Fill	Floor	Total Count	Comments
			Room 5		
El Paso Brownware	El Paso Polychrome	39		39	Six rim sherds. One rim 24 cm in diameter; bowl rim 25 cm in diameter; one sherd with ground edge.
	El Paso undifferentiated brownware	271	3	274	
Northern Jornada Whiteware	Chupadero Black-on-white	6		6	
Roosevelt Redware	Gila Polychrome	4	1	5	
Maverick Mountain Polychrome Ware	Prieto Polychrome	1		1	Two conjoined shreds.
Mogollon Brownware	Seco Corrugated	1		1	
Casas Grandes Decorated	Ramos Polychrome	2		2	
Casas Grandes Utility Ware	Ramos Black	2		2	
	Playas Red	1		1	
	Undifferentiated Chihuahuan ware	1		1	Probably an unpainted polychrome body sherd.
	Undifferentiated brownware	1		1	Sherd with one edge ground, possibly from a sherd scoop.
	Thick gray utility ware	3		3	
	Room 5 Totals	332	4	336	
			Room 6		
El Paso Brownware	El Paso Polychrome	51	5	56	Floor count includes one El Paso Polychrome sherd recovered from the cist in Room 6. Three rim sherds from the fill; one from a small, short-necked vessel.
	El Paso undifferentiated brownware	139	105	244	Floor count includes 36 El Paso undifferentiated brownware sherds recovered from the cist in Room 6. Multiple sherds from the floor are from a thick, heavy jar; all are burned.
Northern Jornada Whiteware	Chupadero Black-on-white	18	1	19	Sixteen of the sherds appear to be from the same vessel.
Roosevelt Redware	Gila Polychrome	2		2	
Zuni-Acoma Glaze Ware	Heshotauthla Black-on red Polychrome	1		1	
Mogollon Brownware	Seco Corrugated	2		2	
Casas Grandes Decorated	Ramos Polychrome	1		1	
Casas Grandes Utility Ware	Ramos Black	1		1	
	Undifferentiated Chihuahuan Polychrome	4		4	Probable unpainted body sherds from Chihuahuan polychrome.
	Unidentified brownware	1		1	Six sherds from a brownware bowl with fugitive red paint on the interior.
	Room 6 Totals	220	111	331	

Table 2. Sherd tallies from fill and floor contexts at La Cabraña (*continued*).

Region/Ware	Ceramic Type	Fill	Floor	Total Count	Comments
			Room 7		
El Paso Brownware	El Paso Polychrome	46	53	99	Six rim sherds. Partial reconstructed bowl with a slightly inverted rim that is painted red on the edge of the rim and with a horizontal red band below the rim (El Paso Bichrome?); orifice 35 cm in diameter.
	El Paso undifferentiated brownware	164	257	421	Floor count includes 35 El Paso undifferentiated brownware sherds.
Northern Jornada Whiteware	Chupadero Black-on-white	4		4	
Roosevelt Redware	Gila Polychrome	1	1	2	
Zuni-Acoma Glaze Ware	Heshotauthla Black-on red Polychrome	8	3	11	
Maverick Mountain Polychrome Ware	Tucson Polychrome		5	5	
Mogollon Brownware	Seco Corrugated	4	6	10	One straight rim, 36 cm in diameter.
Casas Grandes Decorated	Ramos Polychrome	3	3	6	
	Undifferentiated Chihuahuan Polychrome	1	3	4	
	Unidentified red-on-brown		1	1	Unidentified red-striped-on-brown; possibly a Chihuahuan type.
	Unidentified whiteware	1	1	2	
	Room 7 Totals	232	333	565	
			Room 8		
El Paso Brownware	El Paso Polychrome	23		23	Five rim sherds.
	El Paso undifferentiated brownware	197	1	198	
Roosevelt Redware	Gila Polychrome	2		2	
Casas Grandes Utility Ware	Casas Grandes Incised	3		3	
	Playas Red	3		3	
	Undifferentiated Chihuahuan Polychrome	1		1	Unpainted body sherd of Ramos Polychrome?
	Unidentified brownware	1		1	Possible Chihuahuan type.
	Room 8 Totals	230	1	231	
			Room 9		
El Paso Brownware	El Paso Polychrome	20	16	36	Two rim sherds. One slightly everted rim sherd with a rim diameter of 40 cm. One everted rim sherd with a rim diameter of 10 cm.
	El Paso undifferentiated brownware	96		96	
Northern Jornada Whiteware	Chupadero Black-on-white	1		1	
Mogollon Brownware	Seco Corrugated	1		1	
	Undifferentiated Chihuahuan Polychrome	1		1	Likely unpainted body sherd of Ramos Polychrome.
	Room 9 Totals	119	16	135	

Table 2. Sherd tallies from fill and floor contexts at La Cabraña (*continued*).

Region/Ware	Ceramic Type	Fill	Floor	Total Count	Comments
				Room 10	
El Paso Brownware	El Paso Polychrome	8		8	
	El Paso undifferentiated brownware	69		69	
Maverick Mountain Polychrome Ware	Tucson Polychrome	3		3	
Mogollon Brownware	Seco Corrugated	1		1	
Casas Grandes Utility Ware	Ramos Black	1		1	
	Room 10 Totals	82		82	
Totals		4092	1318	5410	

Miller (Perttula et al. 1995:215–216) goes on to state:

> "Two variants of Classic El Paso Polychrome have recently been identified; they are differentiated on the basis of subtle differences in wall thickness, rim form, and design elements. One variant is characterized by relatively thicker walls, and a slightly outcurved rim with a flat or rounded lip. The second variant tends towards thinner vessel walls, a greater degree of rim eversion and thickening with a rounded lip, and perhaps a slightly higher incidence of curvilinear design elements. While it would be tempting to classify these variants as early and late, analysis of chronometric data has found little differentiation among the two, and other archeological evidence suggests that they may represent slight functional differences associated with different settlement types rather than discrete chronological developments.
>
> Unlike other Southwestern decorated ceramic traditions, painted El Paso brownwares have never developed a reputation for aesthetic achievement in terms of design elements and layout. It is the author's opinion that the complexity of design layouts on Classic El Paso Polychrome vessels has been unappreciated, perhaps due in part to the fact that so few whole vessels are available for study. Further, design layouts are constructed from a limited set of elements, consisting primarily of alternating red and black parallel or interlocking bands, and stepped frets. Circles, combs, and crosses are sometimes present as secondary elements. More recent appraisals have observed that this restricted set of design elements is integrated into an extremely complex and dynamic series of band layouts between the rim and lower framing lines."

The La Cabraña El Paso Polychrome assemblage appears to fit well within the above characterization. Most of the sherds were thin walled with observed thicknesses ranging from 2.8–9.6 mm. Decoration appears to have been confined to the upper half of the exterior of the vessels and rim and mouth of the jars. A total of 58 rim sherds were recovered; most were from necked jars with everted rims that range from slightly to moderately everted (Figures 40 and 41). The edge of one of the everted rims was flattened and several bowl rims with painted rims and interiors were also represented. Two of the rims appear to be from tecomates (seed jars) (Figure 41 b and 41d). In addition, sherds from El Paso Polychrome hemispherical bowls were recovered (Figure 42). No attempt was made to further assess the rims for chronometric purposes (e.g., Seaman and Mills 1988; Whalen 1993). Nevertheless, the rim profiles appear typical of those of late El Paso Polychrome jars, and although not demonstrated, it is suspected that both variants of El Paso Polychrome as described by Miller above were present at La Cabraña.

Decorative elements noted on the La Cabraña El Paso Polychrome sherds also appear to conform to those described above (Figure 43). A partial El Paso Polychrome sherd disk (Figure 44a) was recovered from Room 2 and may be a gaming piece or a blank for a small sherd spindle whorl; it was 4 cm in diameter. What may be part of a sherd scoop (Figure 44b) was recovered from Room 5. The edges on both these specimens were well ground. One burned and heavily sooted unspecified brownware sherd exhibited a biconically drilled mend or suspension hole.

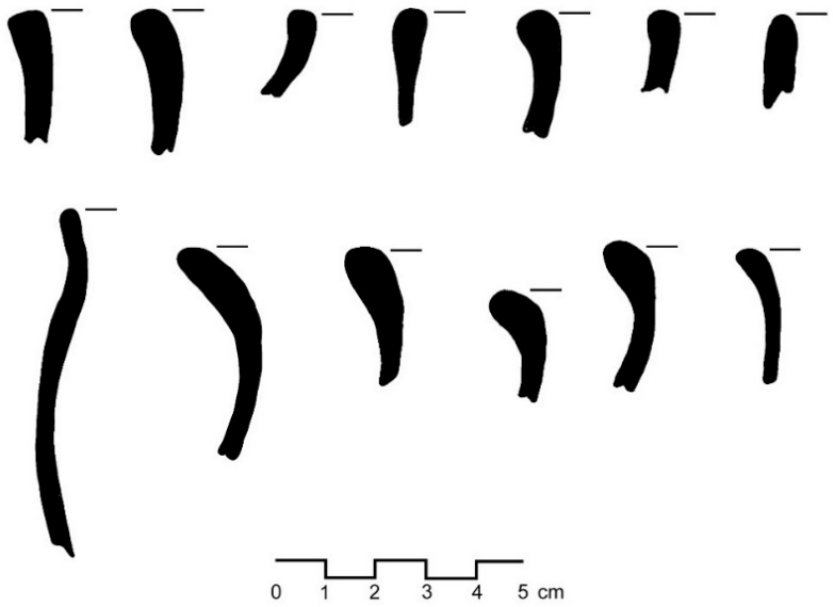

Figure 40. El Paso Polychrome rim sherd profiles from La Cabraña.

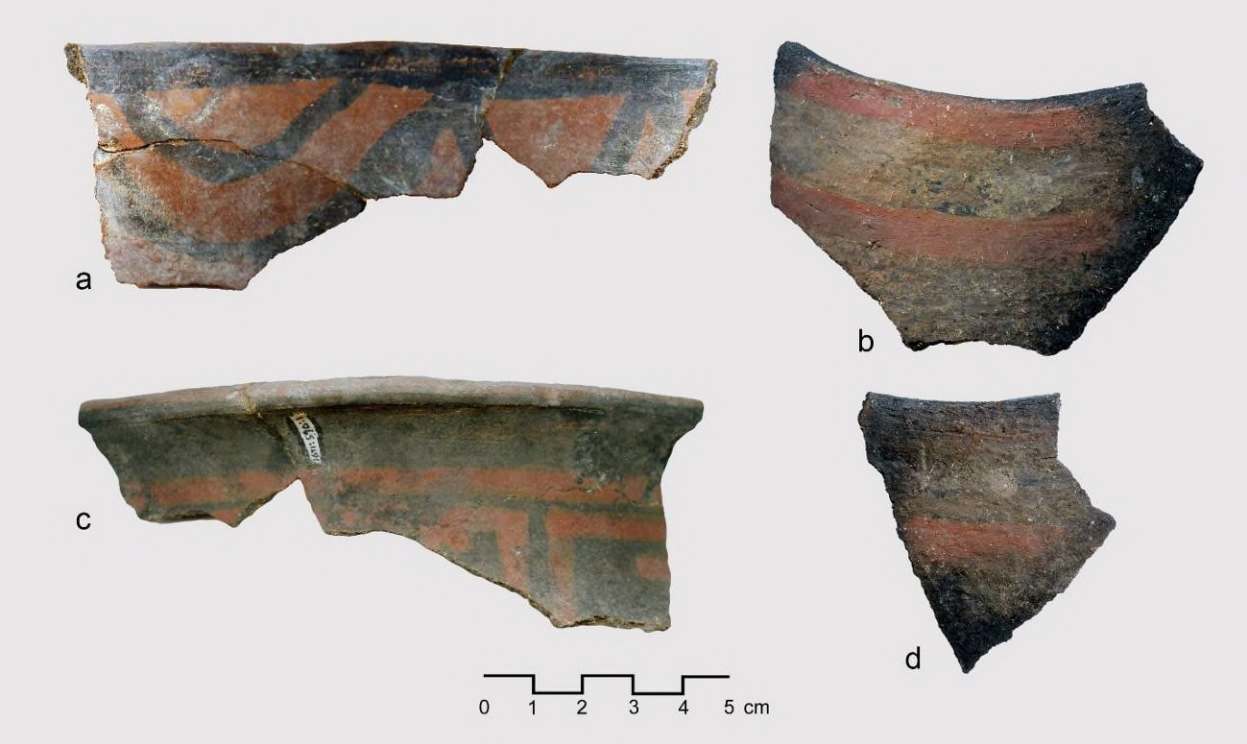

Figure 41. El Paso Polychrome rim sherds: a and b are from jars and c and d are from tecomates (seed jars).

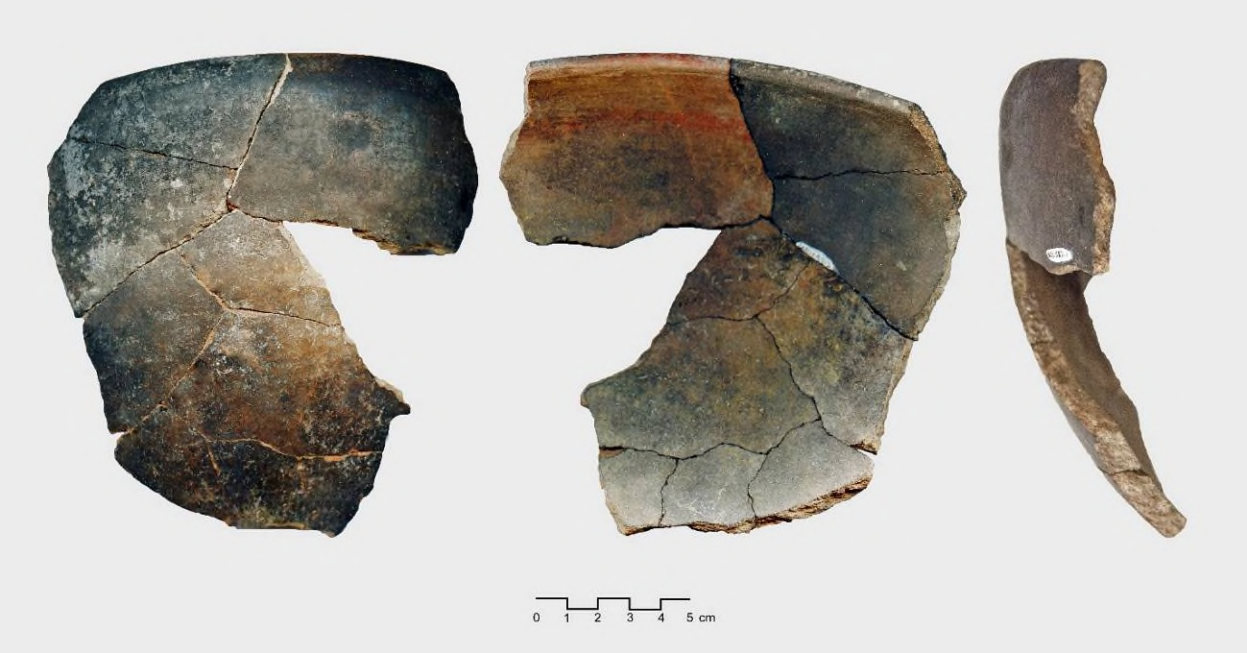

Figure 42. El Paso Polychrome partial hemispherical bowl.

Figure 43. Decorations on El Paso Polychrome sherds.

Figure 44. An El Paso Polychrome sherd disk fragment (a) and a possible sherd scoop fragment (b).

Non-Local Ceramic Types

A total of 306 non-local or unidentified sherds were recovered (Table 3). Of those, 263 were identified representing 11 different nonlocal ceramic types and 43 sherds could not be identified.

Table 3. Identified Intrusive Ceramic Sherds by Type at La Cabraña.

Type	Number of Sherds	Percentage of Intrusive Ceramic Assemblage
Seco Corrugated	123	40
Chupadero Black-on-white	53	17
Gila Polychrome	24	8
Heshotauthla Black-on-red Polychrome	15	5
Tucson Polychrome	12	4
Maverick Mountain Polychrome	1	0.3
Prieto Polychrome	1	0.3
Ramos Polychrome	12	4
Ramos Black	12	4
Playas Red	4	1.3
Playas Red Incised	6	2
Unidentified	43	14.1
Total	**306**	**100.0**

Seco Corrugated

Seco Corrugated was first described by Wilson and Warren (1973). The 123 sherds classified as Seco Corrugated made it the most abundant of the intrusive types recovered (Figure 45). Laumbach and Laumbach provide a recent summary of the type:

> "The geographic name "Seco" was taken from a Black Range drainage adjacent to the Las Animas Creek. Wilson and Warren's observations were derived from ceramic sherds associated with LA 3949, the largest and westernmost of the two sites recorded by Wilson and Beckett. As described, basic attributes of Seco Corrugated are: 1) it is a brownware; 2) it has detritus temper; 3) both bowl and jar forms have indented corrugations, typically over the entire vessel; 4) after the corrugations were indented, they were smoothed to the point of smearing, but not completely obliterated. The smearing process seems to have been accomplished by scraping the clay while it was dry but not yet fired. It was observed that some polishing also occurred on the high points of the formed indentations. Wilson and Warren (1973) note that plain corrugations are apparently rare on Seco Corrugated and no patterned indenting or painting on vessel exteriors was observed (Laumbach and Laumbach 2013:87)."

They further note:

> "The late El Paso phase villages across south central New Mexico consistently contain Seco Corrugated (Browning et al. 1992:73–75; Kirkpatrick et al. 2000:140). Prior to Wilson and Warren's naming of Seco Corrugated, the term obliterated corrugated was commonly used and that practice has continued (Miller and Graves 2009:569[c]; O'Leary 1987:214–220) (Laumbach and Laumbach 2013:88)."

The La Cabraña specimens appear to be from bowls, some of which appear to be moderately deep. A rim sherd from a wide-mouth jar was also noted, as was one from a slightly flaring bowl. Measurable bowl mouth diameters were approximately 24 and 36 cm in diameter. Obliteration of the coils ranged from slight to moderate. The interiors of all the sherds were smudged with the finishes ranging from matte to well burnished. Some sooting of the exteriors was noted. Laumbach and Laumbach (2013:98) indicate that by A.D. 1300s, obliterated corrugated ceramics were being made at Salado sites in the Gila, San Francisco, and Mimbres drainages and at El Paso and Magdalena phase sites in the tributaries of the Rio Grande in the Black Range. They further state that Seco Corrugated is the culmination of 800 years of corrugated ceramic production in the Mogollon region and believe the obliterated corrugated found in El Paso phase sites was obtained through exchange with villages in the Black Range (Karl Laumbach, personal communication 2020; Laumbach and Laumbach 2013:98). Seco Corrugated dates A.D. 1280–1400.

Chupadero Black-on-white

A total of 53 Chupadero Black-on-white sherds was recovered (Figure 46). Chupadero Black-on-white is a long-lived ceramic type that is widely distributed on mid- and late Formative period sites in New Mexico and West Texas; it is common in late El Paso phase contexts and was most likely produced in the Salinas and Sierra Blanca regions of New Mexico (Clark 2006; Mera 1931; Willhite et al. 2017; Wiseman 1982, 1986, 2014). The Chupadero sherds from La Cabraña appear to be from jars with exteriors decorated with solid and hatched designs. The undecorated interiors exhibited both scored and unscored finishes. It has a long history of production that extends from circa A.D. 1100/1150–1550.

Gila Polychrome

Gladwin and Gladwin (1930) first described Gila Polychrome as a Salado ware found in El Paso phase contexts. The 24 sherds recovered from La Cabraña were small and appear to be from bowls; the decoration and layouts conform to published descriptions of the type. Gila Polychrome was first produced circa A.D. 1300 and its production lasted until the mid-A.D. 1400s. It is most abundant at sites dating to the late A.D. 1300s (Crown 1994).

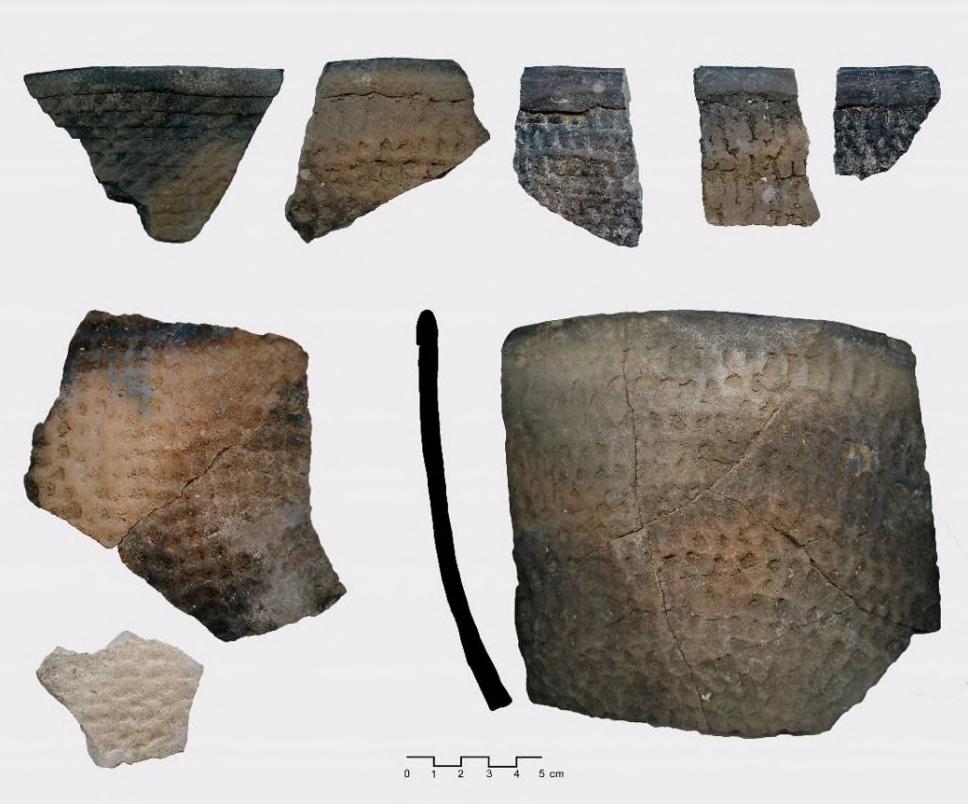

Figure 45. Seco Corrugated sherds from La Cabraña.

Figure 46. Chupadero Black-on-white sherds.

Heshotauthla Black-on-red/Polychrome

Heshotauthla Black-on-red/Polychrome is a Zuni-Acoma Glaze ware first named by Kidder and Amsden (1931). A total of 15 Heshotauthla bowl sherds were recovered (Figure 47a–e). The black glaze paint on the La Cabraña specimens ranged near matte-like to a heavy, almost runny, glaze (e.g., Dittert and Plog 1989; Huntley 2008). Two of the sherds exhibited thin white line exterior decoration and one of these possessed a biconically drilled mend or suspension hole. Production dates for Heshotauthla range from A.D. 1275–1400.

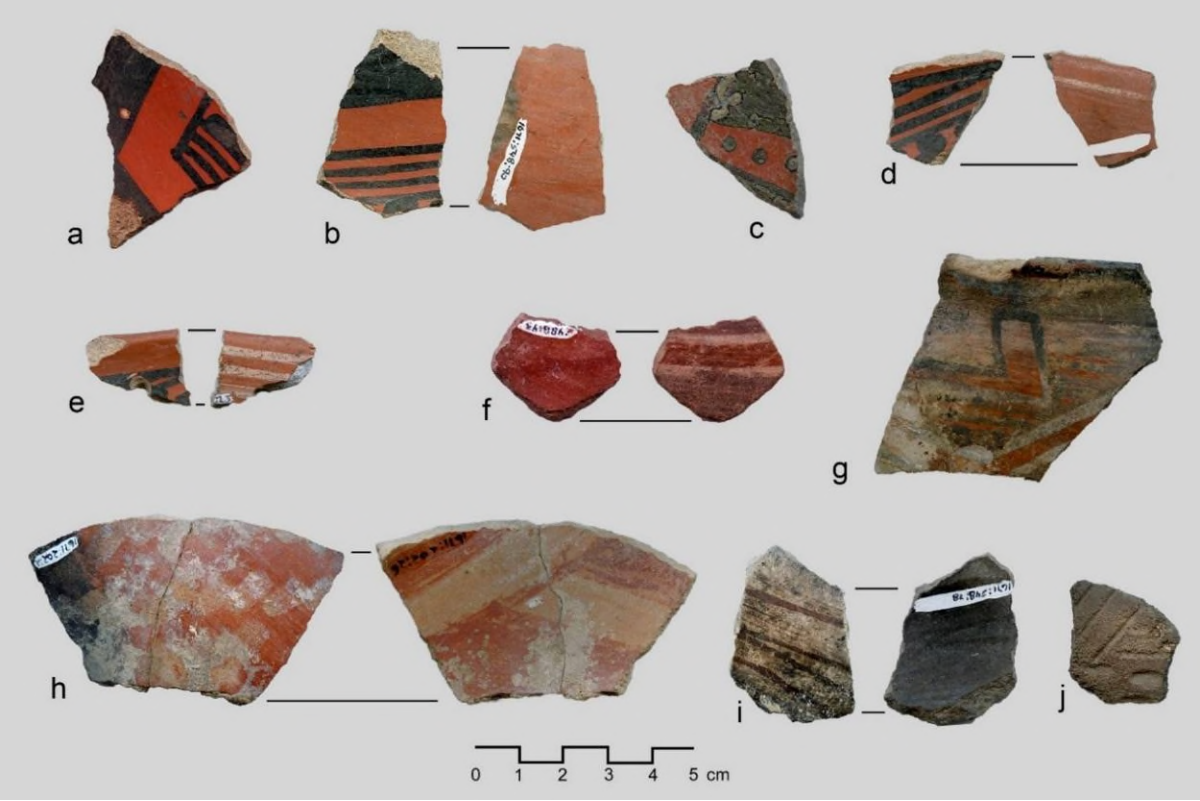

Figure 47. Intrusive ceramic sherds: a–e. Heshotauthla Polychrome; f. Tucson Polychrome; g. Maverick Mountain Polychrome; h. Prieto Polychrome; i. Ramos Polychrome; and j. Playas Red/Brown Incised.

Maverick Mountain Polychrome Series

Three ceramic types of the Maverick Mountain Series were recovered from La Cabraña: Tucson Polychrome, Maverick Mountain Polychrome, and Prieto Polychrome. Tucson Polychrome seems to be the most frequently reported of the three types in El Paso phase contexts, but in general, sherds of this series are not common. Neuzil and Lyons state:

> "Maverick Mountain series vessels have a brown paste, which can vary from light to dark, and generally exhibit sand temper. The entire interior and exterior surface of the bowls of most types are slipped red. The same is true of the entire exterior and the interior rim of each jar. Two types occur as bowls that either lack slip entirely, or only exhibit slip on one surface. Designs in this series are painted with black mineral paint, or some combination or black, red, and white paint (two types employ red as a paint on unslipped surfaces). The black mineral paint can sometimes appear purplish depending on the minerals used to create it (Neuzil and Lyons 2005:36)."

Neuzil and Lyons (2005:35; Neuzil 2005) further note, based on several petrographic analyses, ceramics of the Maverick Mountain Series were made in the Safford and Aravaipa valleys of Arizona and that an additional study indicates they were also made in the Cliff Valley of New Mexico. Sherds of the Maverick Mountain Series constitute 4.6 percent of the intrusive ceramic sherd assemblage.

Tucson Polychrome. Twelve sherds of Tucson Polychrome were recovered from La Cabraña (see Figure 47)—note the purplish hue of the paint as described above). "Tucson Polychrome vessels, including bowls, are most often decorated on the exterior surface. Black paint is applied in broad, simple, usually rectilinear, solid motifs, most often pendant from a wide encircling band. These are then outlined with white paint (Neuzil and Lyons 2005:37)."

They further state that Tucson Polychrome seems to be the longest-lived of the Maverick Mountain Series and that it most often occurs as a recurved bowl. The La Cabraña specimens all appear to be from bowls. Production dates from Tucson Polychrome are A.D. 1275–1450.

Maverick Mountain Polychrome. A single large sherd of Maverick Mountain Polychrome was recovered. Neuzil and Lyons (2005) indicate Maverick Mountain Polychrome bowls are typically incurved or hemispherical and are most commonly painted on the interior, lacking exterior decoration. They note there are exceptions, with the exterior of bowls exhibiting both solid and hatched design elements. The La Cabraña sherd appears to be from a small, wide-mouth jar with a constricted orifice and a slightly flaring rim (see Figure 47g). The rim has a band of black paint and the exterior body is decorated in black, red, and white; hatched design elements are present. Maverick Mountain Polychrome was produced between A.D. 1275–1325.

Prieto Polychrome. Two conjoinable sherds of Prieto Polychrome (Patrick Lyons, personal communication 2020) were recovered (Figure 47h). "Prieto Polychrome is mainly found in bowl form, and contains red painted designs on an unslipped background outlined in white, with a space between the red and white paint (Neuzil and Lyons 2005:37)." Prieto Polychrome is dated between A.D. 1275–1400.

Chihuahuan Types

Both utilitarian and decorated ceramic types associated with the Paquimé (Casas Grandes) Medio period (Di Peso 1974) are commonly represented in El Paso phase sites. Sherds of Ramos Polychrome, Ramos Black, and Playas Red and an incised variant of Playas Red were recovered from La Cabraña. Chihuahuan types account for 11.3 percent of the intrusive ceramic sherd assemblage. The Medio period at Paquimé is dated A.D. 1200–1450/1500 (e.g., Dean and Raves loot 1993; Raves loot et al. 1995a, 1995b).

Ramos Polychrome. Ramos Polychrome, first defined by Sayles (1936; Di Peso et al. 1974a:6:250–298) is typified by white to light gray pastes and surfaces decorated by "fine line work in black and red, red motifs outlined in black, and a series of complex motifs such as macaws, snakes, and parts thereof (Neuzil and Lyons 2005:37)" (see Figure 47i). This is considered the standard variant and is the latest of the Medio period polychromes (Hendrickson 2003; Rakia and Raymond 2003; see Neuzil and Lyons 2005:37–39 for a discussion of recent studies of Medio period polychromes).

Ramos Black. Ramos Black (Di Peso et al. 197a4:6:160–168; Sayles 1936), as found at Paquimé, comes in a variety of forms ranging from hemispherical bowls to jars to effigy jars. It is typically a polished black ware but comes in a textured variety as well. At Paquimé, over 60 percent of the Ramos Black vessels recovered were from burial contexts (Di Peso et al. 1974b:8:364; Rakia 2008). The Ramos Black sherds recovered from La Cabraña appear to be body sherds from bowls.

Playas Red. Two varieties of Playas Red (Di Peso et al. 1974a:6:147–159; Sayles 1936) were recovered; together these account for 3.3 percent of the intrusive ceramic assemblage. Four were sherds of plain red (Standard Variety) and six were incised sherds; all were body sherds. The specimen illustrated in Figure 47j appears to exhibit both incising and punctation. Although Playas Red is associated with the Casas Grades culture, research indicates Playas Red was produced in multiple locations in the Jornada Mogollon region and was not solely imported from Chihuahua (e.g., Bradley and Hoffer 1985; Wiseman 2002:91–92).

Flaked Stone

The flaked stone assemblage recovered from La Cabraña included a variety of artifacts and material types typical of what is generally recovered from El Paso phase contexts. Extensive use of locally available material types is apparent. No specific sourcing studies were undertaken and no microscopic use-wear analyses was performed.

Projectile Points

Thirteen projectile points were recovered. These were generally small specimens, ranging from a minimum length of 9 mm to a maximum of 36 mm. Eight metric attributes were recorded (Table 4), and a ninth attribute—flake scar pattern–was also noted. As defined here, a variable flake scar pattern refers to irregularly sized flakes detached at various angles from the lateral margins of a biface or projectile point. Uniform flake scars are those that are similar in size and occur in generally consistent angles from the lateral margins of a biface or projectile point, and mixed flake scar patterns are manifested as combinations of variable and uniform scars.

Side-notched Points

Four small, side-notched projectile points were recovered. All are basally notched, three are made from chalcedony, and one from quartz crystal.

FS 448:1
Provenience: Room 7 floor
Description: FS 448:1 is a small, side- and basally-notched projectile point made from a grayish, light tan chalcedony (Figure 48a). Both the lateral cross-section and longitudinal section are irregularly biconvex and random facial flaking is partial on both faces. The point is sharp. Both lateral edges are slightly incurvate and the other more so. The shoulders are horizontal; one shoulder is short and slightly pointed and the other is slightly rounded. The side-notches are direct and are approximately the same size. The basal ears are asymmetrical; one has an angled edge to a rounded base and the other is straight to an angled edge that forms a pointed junction. The basal notch is relatively broad and is 3 mm deep.

FS 533:1
Provenience: Room 7 floor
Description: FS 533:1 is a small, side- and basally-notched projectile point made from clear quartz crystal (Figure 48b). It has a rounded tip and is asymmetrical in form. Facial flaking is complete on both faces and the flake pattern is variable. Both the lateral cross-section and longitudinal section are biconvex. One lateral edge is slightly undulating and the other slightly excurvate. The shoulders are weak and rounded, and the side-notches are direct—one is broader than the other. One ear is relatively straight before tapering to a point, the other protrudes slightly downward. There is a basal-notch that is broad and is 3 mm deep.

Table 4. Projectile point measurements (mm) from La Cabraña.

FS No.	General Type	Point Length	Blade Length	Blade Width	Stem/Base Length	Base Width	Stem Width	Notch Depth	Greatest Thickness
448:1	Side notched	15	8	13	7	15	8	2.5/3.5	2
533:1	Side notched	15	9	8	6	11	5	2/1	3
580:1	Side notched	16	10	10	6	12	8	1/1	3
583:1	Side notched	16	13	8	3	9	5	1.5/1	2
929	Side notched	24	15	25	9	17	12	3/3	4.9
610:1	Triangular	22	—	—	—	10	—	—	2
628:1	Triangular	—	—	—	—	10	—	—	2
241:1	Stemmed	—	26	19	—	—	13	—	5
307:1	Stemmed	24	16	17	8	7	10	—	5
145:1	Other	18	—	—	—	14	—	—	3
928:1	Other	13	—	—	—	10	—	—	3
376:1	Other	—	25	11	—	—	—	—	6
450:1	Eccentric	9	3	8	6	7	4	1.5/1	1

FS 580:1

Provenience: Room 3 floor

Description: FS 580:1 is a small, side- and basally-notched chalcedony projectile point (Figure 48c). The specimen was shaped by marginal retouching; facial flaking is variable and incomplete on both faces. Both the lateral cross-section and longitudinal section are biconvex. It is slightly asymmetrical in overall form with one lateral edge being slightly incurvate and the other straight. The point is sharp, and the edges are slightly uneven giving the appearance of serration. The shoulders are weak, and the side-notches are direct with one being broad and deep and the other small and shallow. One ear is slightly more rounded than the other; both protrude slightly downward. The base is a broad V-shaped concavity with a narrower notch at its apex that is nearly 2 mm deep.

FS 583:1

Provenience: Room 3 floor

Description: FS 583:1 is a small, chalcedony side- and basal-notched point with a slightly rounded tip (Figure 48d). Both the lateral cross-section and longitudinal section are biconvex. Facial flaking is complete on both faces and variable. One lateral edge is slightly excurvate and the other is slightly incurvate; both are somewhat irregular and appears almost serrated. The side-notches are shallow and asymmetrical with one being broader than the other; both are direct, and the shoulders are weak and slightly rounded. The ears protrude slightly downward and the basal-notch is nearly 2 mm deep.

FS 929

Provenience: Midden

Description: This specimen is made from silicified sandstone (Figure 48e). It is badly weathered and the flake scars are well-rounded and smooth to the touch. Facial flaking is variable, and both the lateral cross-section and longitudinal section are roughly biconvex. The tip is rounded, one lateral edge is slightly incurvate, and the other slightly excurvate. One shoulder is slightly rounded and the opposite shoulder more abrupt; its tip is missing. The side-notches are direct and the expanding stem is asymmetrical. One ear is rounded and projects downward. The other ear is short, rounded, and even with the adjacent portion of the base. With one ear projecting downward, the base appears concave to straight.

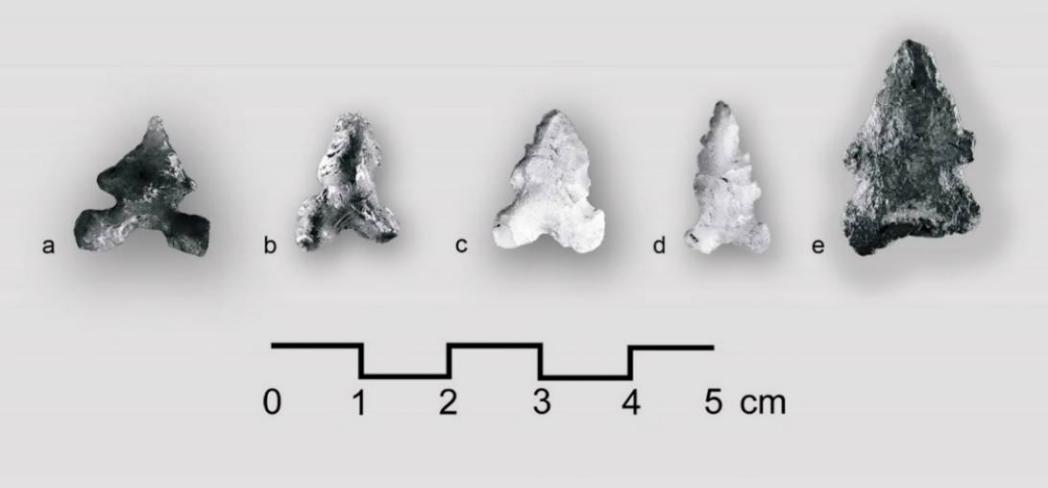

Figure 48. Small side-notched projectile points from La Cabraña (a. FS 488:1; b. FS 533:1; c. FS 580:1; d. FS 583:1; and e. FS 929).

Discussion

Four of the small side-notched points recovered from La Cabraña appear to be variants of small side-notched points found widespread in El Paso phase and other Late Ceramic and early Protohistoric period contexts in southeast New Mexico, west Texas, and northern Chihuahua. These generally appear to be part of the late Pueblo Side-notch Tradition of the American Southwest and are typologically Harrell-like points (e.g., MacNeish 1993:198; Miller and Graves 2019; Miller and Kenmotsu 2004; Rinaldo 1974; Seymour 2004). Two of the points were recovered from Room 3 and two from Room 7. Based on their flake patterns and overall workmanship, it appears these points were expediently made. The materials may have been locally available in river gravels near the site.

Of particular interest is FS 533:1, a specimen made from quartz crystal, recovered from Room 7. Room 7, the room with the only square hearth, had an array of worked minerals and crystals and a necklace with a unique carved pendant; a room suggested to have been occupied by a person of special status within the community. Perhaps the point was used in a ritual context rather than as an implement.

Although a side-notched point, FS 929 does not appear to be the same type as the four small, Late Formative period side-notched projectile points described above. It may be a Middle to Late Archaic to Early Ceramic period point. It is reminiscent of a Chiricahua point (cf. Hicks 1988:Figure 7.23); more specifically it resembles the Hatch point type (Cosgrove 1947:Figure 131; MacNeish 1993:186; Miller and Graves 2019:Figure 1).

Triangular Points

Two small triangular projectile points were recovered. Both were made of obsidian, one is complete, one has its tip missing.

<u>FS 610:1</u>

Provenience: Room 5 fill

Description: FS 610:1 is a small, elongated, triangular, gray obsidian projectile point with a slightly concave base that is 1 mm deep (Figure 49a). The lateral cross-section is biconvex as is the longitudinal section. The lateral edges are straight, and the tip is slightly rounded to sharp. Facial flaking is complete on both faces and the flake pattern is mixed. The shoulders are slightly rounded.

FS 628:1
Provenience: Surface area of Room 2
Description: FS 628:1 is similar to FS 610:1, except the tip of the point is missing (see Figure 49b). It too is made from gray obsidian and the flake pattern is variable; facial flaking is complete on both faces. Both the lateral cross-section and longitudinal section are biconvex. One edge is slightly incurvate and the other is straight, the shoulders are rounded, and the base is barely concave.

Discussion
This point type is found in El Paso phase contexts and has been referred to as the Western Triangular or Fresno projectile point (Dolan et al. 2017; Duran 1982:Figure 7; MacNeish 1993:194; Miller and Graves 2019). Lehmer (1948:Plate XIX) illustrates similar points. The specimens are small enough that they could have been made from the obsidian nodules that are prevalent in the Rio Grande gravels in the area. It is also possible that these points entered the site as finished products and that the obsidian is nonlocal (e.g., Dolan et al. 2017). The workmanship exhibited by these specimens appears to exceed that exhibited by the previously described side notched points.

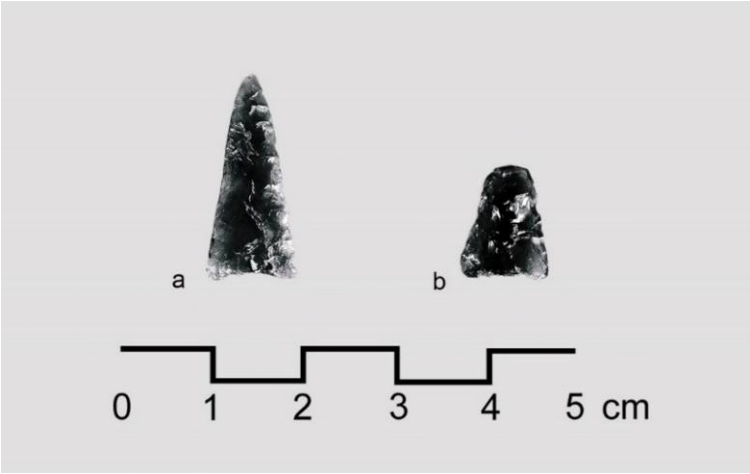

Figure 49. Triangular projectile points from La Cabraña (a. FS 610:1 and b. FS 628:1).

Other Points
FS 145
Provenience: Surface
Description: FS 145 is a small, triangular specimen made from a golden jasper (Figure 50a). One lateral edge is extremely excurvate to the point that the tip almost forms a hook. The other edge is straight until it reaches the recurvate tip. The shoulders are sharp, and the base is concave to notched. The specimen is unifacially flaked, with the opposite face being only marginally retouched. The flake pattern is variable. Both the lateral cross section and longitudinal section are unevenly biconvex. It is possible the specimen is unfinished and thus only unifacially flaked and asymmetrical. It is also possible the specimen was not intended to function as a projectile point, rather the excurvate edge may have been intended as a cutting or sawing edge.

FS 241:1
Provenience: Room 6 cist
Description: This is the largest of the projectile points recovered from La Cabraña (Figure 50b). It is made from a dark, tan-brown chert. Facial flaking is complete on both faces and flake scars are mixed. Both the lateral cross-section and longitudinal section are biconvex. The tip is slightly rounded with one lateral edge being straight and the other slightly excurvate. The shoulders are rounded and a portion of the stem and most of the base are missing.

This specimen appears to be a Late Archaic period San Pedro projectile point that has a wide date range, although it is most common between 1500 to 200 B.C. (e.g., Miller and Graves 2019). Carmichael (1986:Plate 8) illustrates similar Late Archaic/Early Ceramic points from the southern Tularosa Basin. It undoubtedly represents a pick-up and reuse of an earlier point type, a practice that was widespread in the prehistoric Southwest. FS 2241:1 is of particular interest because it was recovered from within the subfloor cist in Room 6 and likely represents a votive offering.

FS 307:1
Provenience: Room 6 floor
Description: This point is a small, stemmed specimen made from obsidian (Figure 50c). The triangular blade is asymmetrical and the tip missing. The lateral edges are irregularly straight with a small notch of missing material on one edge. The shoulders are abrupt, and the stem expands slightly to a round base. Facial flaking is complete on both faces and is variable. Carmichael (1986:Plate 9; MacNeish 1993:190) illustrates similar Late Archaic/Early Formative projectile points he typed as San Pedro (Small Variety). O'Laughlin and Martin (1993:Figure 14) also illustrate a generally similar point and indicate a Late Archaic date for the specimen (41EP2677). Duran (1982:Figure 7b) illustrates a similar point she designates as "Middle Jornada Mogollon." It is also like the aforementioned Hatch point type (Cosgrove (1947:Figure 131; Miller and Graves 2019: Figure 1), and it is likely that FS 307:1 also represents a pick-up and reuse of an earlier projectile point type.

FS 376:1
Provenience: Room 4
Description: This is a marginally retouched interior flake made of red jasper (Figure 50d). The tip is rounded; the lateral edges are slightly excurvate and are slightly serrated. The lateral cross section and longitudinal section are plano-convex. It appears to be an expediently made point or perhaps a point in the process of being made but never completed.

FS 928
Provenience: Surface
Description: FS 928:1 is made of obsidian. Facial flaking is complete on both faces and the flake pattern is variable (Figure 50e). Both the lateral cross-section and longitudinal section are irregularly biconvex. One lateral edge is undulating and the other is slightly incurvate. The tip is slightly rounded and hooks to one side. One shoulder is partially missing but sharper than the opposite shoulder that is rounded; the base is slightly concave to a small notch. This specimen appears to be smaller version of FS 145. It may also be an aberrant form of a Fresno projectile point and therefore similar to FS 610:1 and FS 628:1.

Eccentric Point

FS 450:1
Provenience: Room 7 floor
Description: FS 450:1 (Figure 51) is unique among the projectile points recovered. It is made of a yellow-beige chert and comparatively, it is an extremely small (9 mm in length) and thin specimen (see Table 4). In general form, it appears to be similar to the side-notched points described above. It is shaped primarily by marginal retouch with partial facial flaking. Both the lateral cross section and longitudinal section are irregular. One lateral edge is undulating and the other is incurvate. The tip is bifurcated by a relatively deep notch. Both tip points flare slightly outward. The tip appears to have been deliberately made this way. The shoulders are sharp, and the side-notches are direct. One basal ear is rounded and the other is round to square; the basal notch is direct and as deep as the side notches. It is unclear if this tip design is functional; the function of the specimen in general is unclear. As it was recovered from Room 7, the room with an array of esoteric artifacts, perhaps its function was ritualistic.

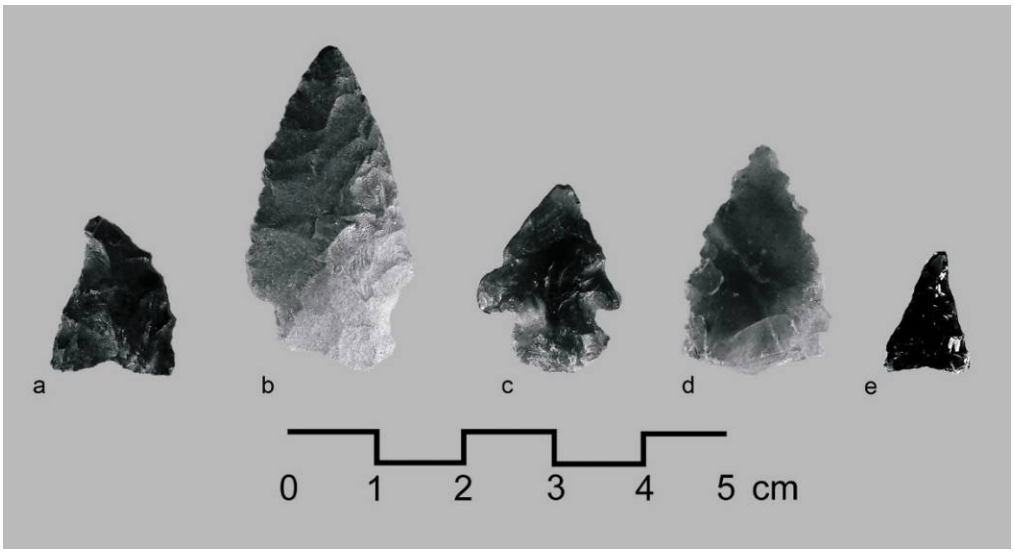

Figure 50. Other projectile points (a. FS 145, b. FS 241:1, c. FS 307:1, d. FS 376:1, and e. FS 928:1).

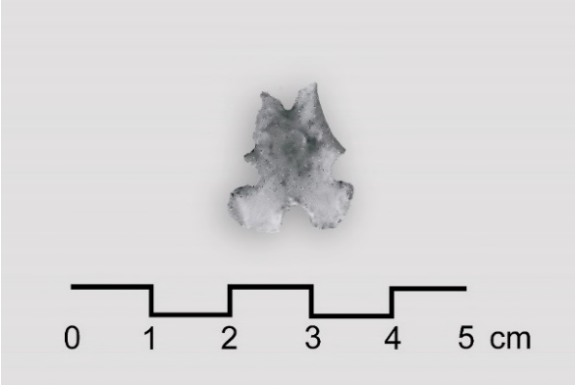

Figure 51. FS 450:1, eccentric projectile point.

Other Flaked Stone

The projectile points were the only formal flaked stone tools recovered at La Cabraña. Nevertheless, several other lithic implements were recovered. Two retouched chert flakes had a series of step fractures along the retouched edges, implying use as scrapers. A rhyolite flake exhibits polish and rounding of protrusions along an edge, suggesting its use as a scraping or cutting tool (Foix and Bradley 1981; Foster et al. 1982).

FS 463 (Figure 52) is a possible scraper, plain made from a semiporous fossilized wood. The parent material was not identified; the specimen is very light-weight and appears to be from a very fibrous tree (fossilized palm wood?). It is white to cream and has a waxy sheen to it. The specimen measures 71.4 × 46.5 × 16.7 mm. It was recovered from the fill of Room 7 and a few flakes of the material were found scattered in the fill and on the floors of other rooms. One end and a portion of an edge had been retouched and exhibited numerous step fractures.

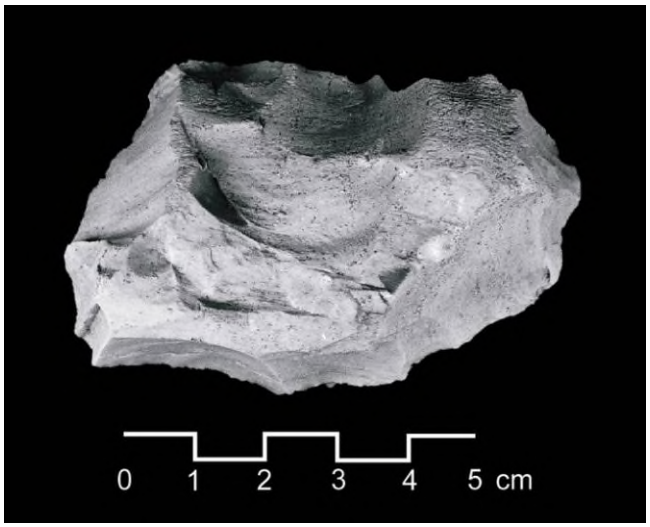

Figure 52. FS 463, possible plain scraper of semiporous silicified wood.

Hammerstones

A total of 34 hammerstones were recovered. Hammerstones have three general purposes: the manufacture and maintenance of flaked and ground stone implements, the sharpening or renewal of grinding surfaces on manos and metates, and as crushers. None of the hammerstones recovered from La Cabraña were formal tools, that is shaped hammers or mauls with hafting grooves. The majority were rhyolite (*n*=16, 49%), followed by quartzite (*n*=14, 39%), with the remaining four (12%) of chert. Sizes and shapes varied. Most were large pebbles or small to medium cobbles with the smallest being an oblong pecking/hammerstone, 51 ×24 × 24 mm, to a triangular, tabular implement, 90 × 72 × 68 mm, to a round cobble, 53 × 72 mm. Specimens ranged from oblong to cuboid to spherical to triangular to round. Distribution of the specimens varied, some were surficial finds, other were recovered from room fill, and others from floor contact. Three were recovered from the floor of Room 7.

Damage, which generally corresponded to their size and material type, on these ranged from light to moderate. Rhyolite was the preferred material type for the large, heavy duty pounding tasks, and thus rhyolite hammerstones tend to exhibit the most extensive damage. That said, even the rhyolite hammerstone generally did not exhibit pitting or spalling that might have been expected from heavy pounding on durable material. In most cases, the battering exhibited amounted to a smoothing or evening of the end or edges used. Most specimens exhibited use of two points or edges of impact.

Cores

Of the 11 cores recovered, four were chert, four were Thunderbird rhyolite, and three were gray-brown quartzite. All were relatively small with multiple platform cores being somewhat larger. The chert cores were the smallest and likely small nodules from the local gravels; they typically exhibited unidirectional flake removal. In addition, obsidian nodules were represented as split pebbles, most of which exhibited no flake removal.

Lithic Debitage

Fractured lithic material was abundant at La Cabraña, having been recovered from all contexts. The lithic debitage assemblage recovered was only given a cursory rough sort and what is discussed in this section is primarily impressionistic. The vast majority of what was recovered exhibited no evidence of having been intentionally reduced. In other words, the material was not the product or byproduct of lithic reduction directed toward the production of expediently produced informal flake tools or formal unifacial or bifacial tools such as projectiles points, knives, or scrapers.

A total of 985 angular fragments were inventoried. This included miscellaneous chips, spalls, angular pieces, and amorphous chunks of lithic material that lack the diagnostic attributes of reduction flakes such as a platform, bulb of force, or negative flake scars. The size (length, width, and thickness) of these fragments varied, but none were overly large. The most common material type was chert (*n*=350, 36%). Most fragments were small and appear to have been derived from pebbles and cobbles found in local gravels. Quartzite was the next most abundant material represented (*n*=275, 28%), followed by limestone (*n*=147, 15%), rhyolite (*n*=86, 9%), andesite (*n*=38, 4%), vesicular basalt (*n*=28, 3%), sandstone (*n*=12, 1%), obsidian (*n*=12, 1%), and less than 1 percent each of gypsum, muscovite biotite, pumice, quartz, basalt, and calcite. These reflect a high percentage of localized lithic resources used for tool manufacture. Probable non-local resources do not appear to be abundant.

Most of the 428 flakes inventoried were small chert flakes (*n*=233, 54%); most appeared to have been derived from the testing and reduction of small cobbles and pebbles. Few seem to be associated with the facial thinning and shaping of formal tools; primary, interior, and facial thinning flakes are not abundant and there was little evidence of the maintenance or resharpening of formal tools. Although the chert cores recovered were small, some of the chert flakes were larger and derived from parent material of some size and interestingly, parent material that was generally not present in the flaked stone assemblage. Based on size and color, some of the chert appeared to be from sources other than local nodules. Quartzite was the second most common material type (*n*=108, 25%) represented followed by rhyolite (*n*=36, 8%), limestone (*n*=22, 5%), obsidian (*n*=18, 4%), with basalt, sandstone, fossilized (palm?) wood, and andesite representing 1 percent or less of the material respectively.

Like much of the chert, the obsidian flakes indicated the use of small nodules or pebbles; the flakes were small and frequently exhibit cortex on the platform. Most terminated in feather terminations and there was no obvious evidence that a bipolar technique was used to split the pebbles or detach flakes. The coarse-grained materials such as quartzite and rhyolite were typically larger and thicker than those from silicious materials with primary and secondary flakes more commonly represented; few tertiary flakes were present.

Few of the flakes showed evidence of edge modification. Two chert flakes exhibited unifacial retouch, each had numerous small step fractures along one edge suggesting their use as scraping tools. One chert bladelet showed edge damage in the form of small step and snap fractures, and one rhyolite flake exhibited polish and rounding of protrusions along its edge, suggesting possible use as a cutting or scraping tool. It has been demonstrated that flakes of coarse-grained materials such as these make durable and efficient cutting and scraping tools (e.g., Foix and Bradley 1981; Foster et al. 1982; Toll 1978). The abundance of these materials in the study area and their excellent suitability for such tasks lend them to this expedient form of lithic technology. This may partially explain the lack of retouched, curated tools such as knives and scrapers made from silicious materials.

Ground Stone

Metates and Grinding Slabs

Three whole metates, a grinding slab, and 25 metate fragments were recovered. One of the whole metates had previously been collected from the site. It is a large slab metate made from andesite, likely derived from the andesitic dike adjacent to La Cabraña; it measured 48 × 37 × 7.3 cm. The worked surface exhibited a slight depression and signs of pecking.

Two complete metates were recovered from the floor of Room 3 and both were informal trough metates made from andesite, also likely derived from the andesitic dike adjacent to the site. FS 829:1 (Figure 53) measured 40.7 × 30.2 ×10.4 cm. The trough, which was well smoothed from use, ran the length of the metate with a maximum width of 18 cm, a minimum width of 15.5 cm, and a depth of 2.4 cm. Its sides and ends of the specimen had only been minimally shaped by flaking and some grinding.

FS 830:1(Figure 54) measured 56 × 30.2 × 19.3 cm. The trough, which ran the length of the metate, had a maximum width of 17 cm, a minimum width of 16 cm, and a maximum depth of 5.1 cm. The trough was also well smoothed from use. It appears to be a finer grain andesite than FS 829:1.

FS 769:1 (Figure 55) was an apparent grinding slab recovered from the floor of Room 4. It was a light tan, fine-grained quartzite slab that was roughly rectangular, shaped on three sides, and measured 19.5 × 25 × 3.4 cm. Both faces were covered with a layer of darker tan-brown material that was the result of minerals (probably iron oxide in this case) concentrating along bedding planes during or after the metamorphosing of sandstone into quartzite (Gary Huckleberry personal communication 2020). The layer on the utilized surface was about a millimeter thick and on the back, it was slightly thicker. Use-wear was not extensive and it was confined to the center of the slab. The worn area measured approximately 8 × 10 cm. In cross-section, the implement was slightly concave and slightly convex

A total of 25 metate fragments were recovered from the rooms; 15 were from Room 7, seven were from Room 4, one each from Room 1 and 6, and one from the surface. Nineteen were made from various quartzites, five were vesicular basalt, and a single specimen was from sandstone. The majority were from trough metates, although basin metates were also represented. Use ranged from light to moderate to well worn. One fragment exhibited concavity on both faces suggesting a double-faced metate. Pecking was evident on several specimens, but it is not clear whether it represents shaping or sharpening. Two of the vesicular basalt metate fragments were apparently from well-shaped formal metates; one vesicular basalt metate fragment was possibly from a basin metate. A specimen, FS 491:1 from Room 7, was the edge of a trough metate with some staining from red ochre.

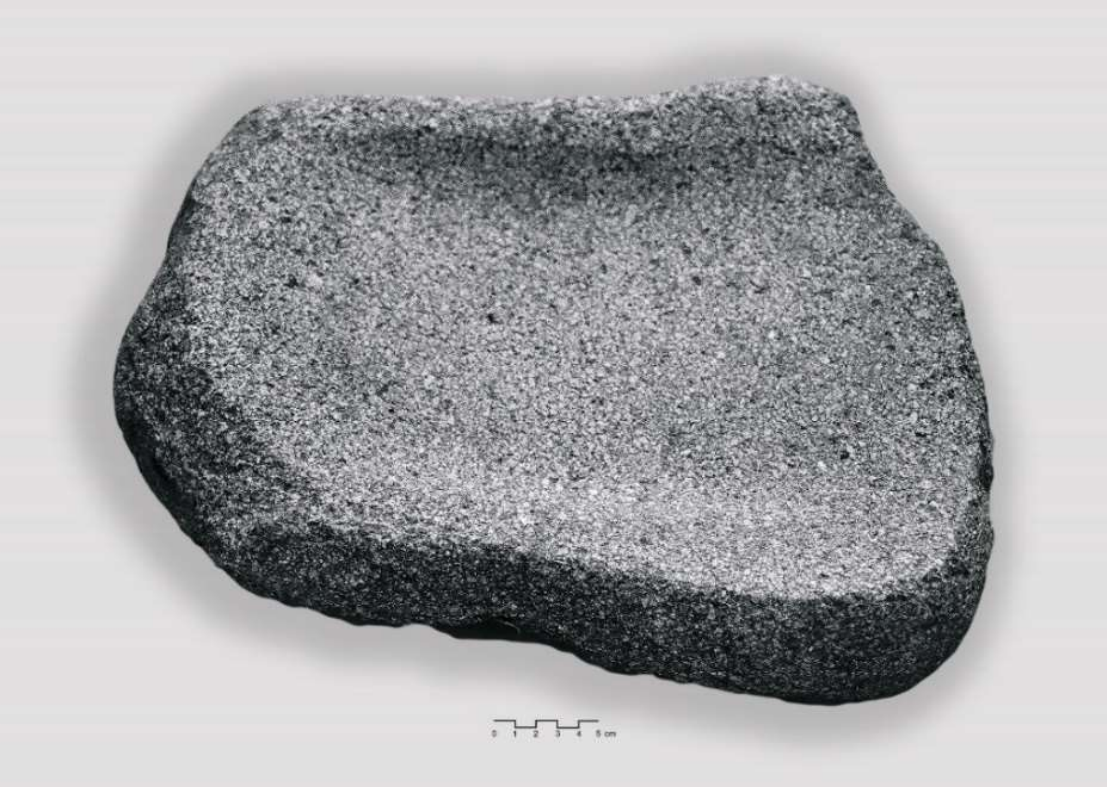

Figure 53. FS 829:1 trough metate from Room 3.

Figure 54. FS 830.1 trough metate from Room 3.

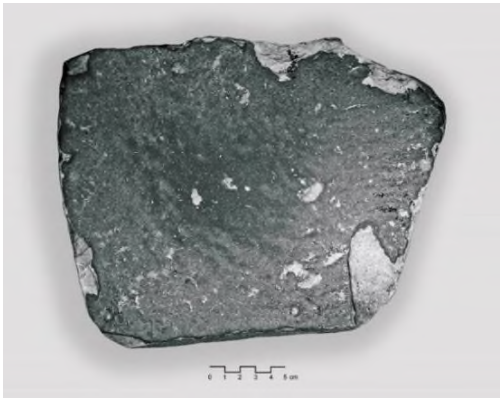

Figure 55. FS 769:1, grinding slab from Room 4.

Manos

Four complete one-hand, two complete two-had manos, and 47 fragmentary specimens were recovered. Most of these, 62 percent (*n*=33), were from quartzites. Vesicular basalt accounted for 22 percent (*n*=12) of the material types; andesite 9 percent (*n*=5); sandstone 4 percent (*n*=2); and rhyolite 2 percent (*n*=1). Data on the complete specimens are summarized in Table 5 and illustrated in Figures 56 and 57.

Both the one-hand and two-hand varied in size, weight, and other attributes—including degree of use, shapes, degree of shaping, number of surfaces used, and sharpening. Striations were visible on several the specimens indicating use in a reciprocal motion. Red pigment was present on several of the fragments and one complete specimen. Some of the specimens exhibited evidence of burning, which probably occurred when the pueblo burned. Several of the fragments exhibited battering suggesting secondary use as hammers. It is also of note that one of the complete manos and several fragments exhibited slight concavities on the surface opposite the primary grinding surface, indicating a secondary grinding surface.

Shaft Straighteners /Abraders

Five complete shaft straighteners/abraders (e.g., Rinaldo 1974:86; Woodbury 1954:108–110) typical of those found in the Jornada area were recovered (Table 6; Figure 58). Four were made from quartzite cobbles and one from vesicular basalt. All except one were single groove implements with grooves ranging from 3 to 4.5 mm deep and 5 to 9 mm wide, and all appeared to have been shaped to some

Table 5. Summary of whole manos from La Cabraña.

FS No.	Provenience	Material Type	Length (mm)	Width (mm)	Thickness (mm)	Weight (gr)	Comments
One-hand Manos							
257:1	Room 6 fill	Quartzite	125	76	16–37	582	Both ends shaped; one grinding surface; one end exhibits evidence of burning.
265:1	Room 6 fill	Quartzite	155	98	3–45	655	Both surfaces extremely used, one edge is worn thin and partially flaked away; ends shaped; some evidence of battering on the ends.
337:1	Room 6 floor	Vesicular basalt	126	89	23–41	288	The surface is very rough with little apparent smoothing from use; one grinding surface.
657:1	Room 8 fill	Quartzite	130	105	11–27	623	Broken in half, one half is burned. Both surfaces exhibit use; one side is slightly concave, the other flat; the convex side has red ochre staining.
Two-hand Manos							
231:1	Room 5 surface	Quartzite	204	150	43–71	3367	Large loaf-like specimen; one surface used; roughly shaped.
828:1	Room 3 floor	Andesite	270	122	57–73	5112	Long, heavy rectangular specimen; shaped; one grinding surface is well smoothed from use; red ochre staining on one grinding surface; ends shaped.

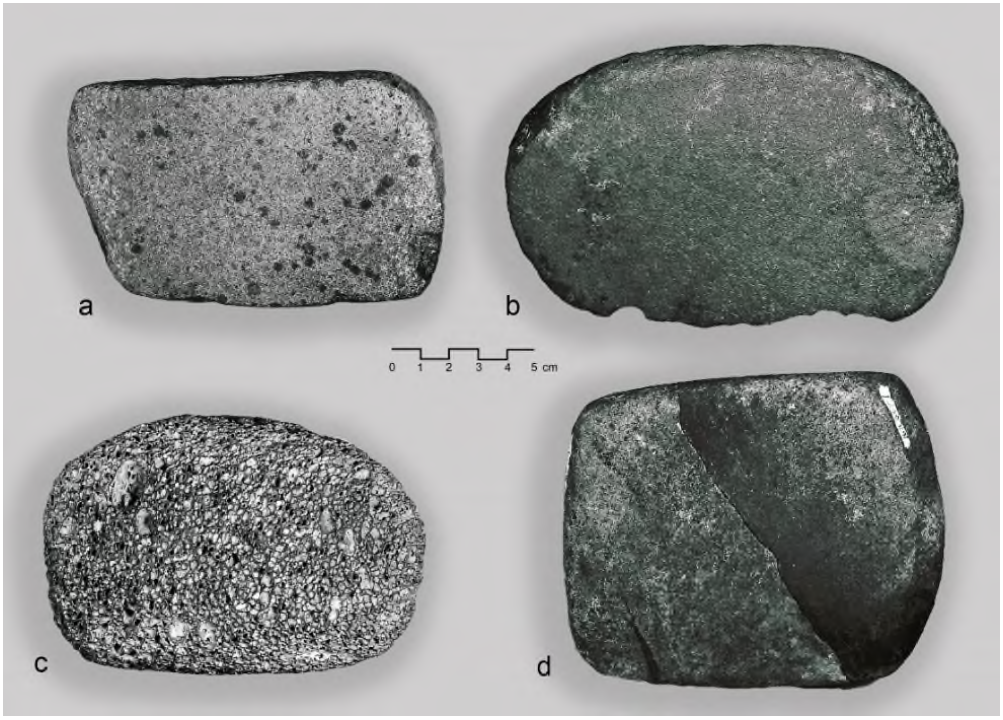

Figure 56. Complete one-hand manos: a. 257:1, b. 265:1, c. FS 337:1, and d. FS 657:1.

Figure 57. Complete two-hand manos: a. 231:1 and b. FS 828:1.

degree. Of note is FS 284:1, a squarish specimen that has an ice tong or near figure eight, X-like symbol engraved on one side of the grooved face (Figure 59). This symbol has been recorded elsewhere in the Jornada area on other artifacts, including shaft straighteners, *Olivella* shell beads, and at rock art sites (e.g., Brook 1971, 1985; Green 1967; Sutherland 1976). Brook (1985:77) notes the co-occurrence of this symbol with a feline footprint symbol and suggests it is a clan symbol. It was also recorded at Casas Grandes on an *Olivella* bead and on several shell trumpets (Di Peso et al. 1974a:6:Figure 504.6). Woodbury (1954:Figure 11g) illustrates a shaft straightener from the historic Hopi site of Awatovi, which also has an X-like engraving. A sixth possible shaft tool was recovered from Room 8; however, the specimen was badly burned and the quartzite material was decomposing, making identification of the specimen as a shaft abrader uncertain (Figure 4.19d).

Possible Sharpening Stone

FS 304, a roundish stone (60) that measured 15.8 × 13.5 × 2.4 cm; it was recovered from the cist in Room 6. A groove ran approximately two-thirds the way across one face of the stone. The groove was not polished and was approximately 7 mm deep; it ranged from 10 to 20 mm wide. It is possible this was used for sharpening the tip of a wooden or bone shaft. The specimen was found on the same layer in the cist as a small round polishing stone, some yellow ochre, and several pieces of angular rock. Its function is unclear as there was no evidence that it was used to grind pigment.

Pestles

One rhyolite and two quartzite pestles were recovered. FS 435:1, a large gray quartzite pestle (Figure 61a), was recovered from the surface. It was a large oblong specimen, 45.4 cm in length and weighing 5 kg. It had a maximum circumference of 29 cm and a minimum circumference of 15.7 cm. Use-wear was present on both ends, with the largest end being the most extensively worn. The use-wear extended up the

Table 6. Shaft abraders/straighteners from La Cabraña.

FS No.	Provenience	Material Type	Dimensions (mm)	Description
284:1	Room 6 floor	Quartzite	62 × 62 × 35	This specimen is roughly square with the edges and grooved surface pecked and ground smooth, especially in the area of the engraved X. The groove runs somewhat diagonally across the surface, it is 3-mm-deep and 8-mm-wide and the sides taper and at the bottom of the groove is slightly squared. The groove itself is moderately well smoothed. The bottom side of the specimen exhibits a trace of red ocher and obvious burning. The presence of the red ocher suggests this tool may also have doubled as a grinding tool.
479:1	Room 7 fill	Quartzite	61 × 47 × 33	This is a slightly ovoid specimen with the grove running across the width of the tool. The groove is 3.5-mm-deep and 9-mm-wide. Some striations are evident as is some polishing.
536:1	Room 7 floor	Quartzite	60 × 49 × 17	This is a squarish tabular piece of material with the groove running slightly diagonally across the width of the specimen. The specimen exhibits pecking from the shaping of the tool. The groove measures 3-mm-deep and 5-mm-wide, exhibits some light striations, and no polish. The specimen shows some slight burning.
663	Room 8 fill	Vesicular basalt	98 × 80 × 70	This is a cubical piece of vesicular basalt with two grooves on one surface; one groove runs slightly diagonally across the surface of the specimen and the other angles in from the side meeting the longer groove and forming an inverted or backward L-shape. The grooves, respectively, average about 10- and 8-mm-wide and 3- to 4-mm-deep. They are not highly polished.
676:1	Room 8 fill	Vesicular basalt	78 × 60 × 33	This specimen is sub-rectangular in form with a slightly diagonal groove running the length of the tool. The specimen exhibits flake scars and grinding from shaping of the parent material. The groove measures 3-mm-deep and 8-mm-wide and is highly polished. The bottom face of the tool also exhibits some polishing; however, it is unclear whether this is from shaping or use as a grinding implement. Traces of red ocher are present in the groove and on one side of the specimen.
678:1	Room 8 floor	Quartzite	54 × 39 × 25	This is an oblong specimen with a straight groove through the length of the tool. The groove is 4.5-mm-deep and 8-mm-wide; it is well polished and parallel striations are visible the length of the groove. The grooved face of the tool is well smoothed with one side being polished. The bottom face is flat although there is no evidence that this surface had been modified through shaping or use.

Figure 58. Shaft abraders from La Cabraña: a. FS 284:1 (note "X" on right side of the implement); b. 479:1; c. 536:1; d. FS 663; e. FS 676:1; and f. FS 678:1.

Figure 59. Detail of "X" engraved on shaft abrader FS 284:1.

Figure 60. FS 304, a possible sharpening stone from the cist in Room 6.

end of the pestle, approximately 4.4 cm, and appeared in the form of smoothing from grinding with some evidence of battering. The lack of use-wear beyond the end of the pestle suggests it was used in a shallow mortar. The smaller opposite end exhibited little use.

FS 821:1 was a small, gray, quartzite pestle (Figure 61b) recovered from the floor near the hearth in Room 4. It was oblong, almost rectangular in form; it measured 17.2 cm long and weighed 1.2 kg. It was sub-rectangular in cross section with the used end measuring 6.0 × 6.2 cm; use-wear extended 1.5 cm up the end of the specimen. Both smoothing and battering were evident; although, the battering may have been the result of pecking to shape the working end. The opposite end was rounded and exhibit no evidence of use. A fragment of a third pestle made from rhyolite was also recovered.

Figure 61. Pestles: a. FS 435:1 and b. FS 821:1.

Polishing/Burnishing Stones

Four polishing/burnishing stones were recovered: FS 242:1 from the cist in Room 6; FS 395:1 from the fill in Room 3; FS 510:1 from the floor of Room 7; and FS 714:12 from the overburden in Room 1. FS 242:1 was quartzite and was 69 × 39 × 24 mm. It was burned and it exhibited some light pecking on its edges and ends suggesting it was also used as a light duty hammerstone. FS 395:1 was a round piece of white quartzite 25 mm in diameter and 13 mm thick. FS 510:1 was pink quartzite and oblong, 67 × 28 mm; it exhibited extensive burning. All three were highly polished and two exhibited light striations. FS 714:12 was a chalcedony pebble with a maximum diameter of 34 mm and thickness of 19 mm. It was smooth and had been burned. It did not show signs of extensive use and may be a natural water-worn pebble. Since it was recovered from a subfloor cist in Room 6, it is possible the object had significance beyond that of a utilitarian item. That said, it was found with pigments that may have been used to decorate pottery. Additionally, a near perfectly round, highly-burnished (water worn) stone, FS 299:1, 32 mm in diameter and 6.2-mm-thick, was also recovered from the subfloor cist in Room 6. Its function is unclear, but it may be a polishing stone.

Other Ground or Modified Stone

Two concretions exhibiting some modifications and appearing as miniature bowls were recovered. FS 711:1 (Figure 62a) was recovered from the floor of Room 1 and it was broken and burned. The best-preserved side appears to have been ground smooth and the bottom may have been ground flat. It was roughly 40 mm in diameter and 28 mm thick; the interior bowl was 34 mm wide and it was approximately 14 mm deep. The second specimen, FS 775:1 (Figure 62b) was recovered from near the floor of Room 4. It was a light-colored fine grain quartzite(?) concretion that exhibited some light polish on the rim and on the bottom. It was a maximum of 55 mm in diameter and was 36 mm thick with a bowl that was approximately 11 mm deep and 35 mm wide. The function of these two specimens is unclear.

Figure 62. Sandstone concretions: a. FS 711:1 from the floor of Room 1 and b. FS 775:1 from the fill of Room 4.

Jewelry

A small in number of items of personal adornment were recovered (Figure 63), along with some, small pieces of turquoise from the surface and various subsurface contexts at the site. One small round piece of turquoise appeared to be a bead blank and several small rectangular pieces were evocative of tesserae. Items consisted of turquoise beads, pendants, and earrings, *Olivella* whole shell beads, shell disk beads, a shell tinker, small sandstone concretions used as beads, and a fossil crinoid section turned into a bead.

Most these were from two necklaces. Such items are common in the Jornada region and in the Southwest in general.

Two small, biconically drilled shell disk beads, one 3.5 and the other 3.7 mm in diameter, were recovered from the surface as was a small, whole, *Olivella* shell bead 10.1 mm in length. Two stone beads were also recovered, one was 6 mm in diameter. The other was from Room 7, it was 7.9 mm in diameter, well-shaped, and biconically drilled. Two of the turquoise pendants (FS 298:1) that may be a pair of earrings were recovered together from the bottom of the cist in Room 6 (Figure 63e). Both were oblong with one measuring 12.8 × 9.8 × 2 mm and the other 12.4 × 9.8 × 2.3 mm. The former was conically drilled and the latter biconically drilled. Both faces on the two specimens were ground smooth as were their edges; the material they were made of was a mix of turquoise and stone matrix. The cist in Room 6 also produced a small, roughly rectangular piece of turquoise (Figure 63g). Its edges and faces had been shaped and smoothed; one face exhibited an incomplete drill hole. It measured 12.8 × 8.5 ×2.8 mm.

An oblong gypsum pendant was recovered from Room 2; it measured 23 ×15 × 2.5 mm with engraving on both faces (Figure 63h). A very thin and fragile nacreous shell (species undetermined) pendant roughly in the form of a fish was also recovered; it measured 34-mm-long and 14-mm-wide. This was nearly identical to two fish-shaped shell pendants recovered from Sabina Mt. Pueblo south of the Hueco Mountains (Brook 1980:59, 70) and was like pendants described by Lehmer (1948:62). Two band fragments of a *Glycymeris* shell bracelet were also recovered as was a piece of what appears to be copper ore that was biconically drilled and used as a pendant.

The *Olivella* and *Glycymeris* shells were most likely derived from the northern Gulf of California and obtained through exchange (e.g., Bradley 1996). The *Olivella* beads averaged around 15.8 mm in length. Crinoid beads were recovered and are also reported from later prehistoric sites in the region. The fossils from which they were made can be found in uplifted Cretaceous strata in the nearby Mesilla Bolson (LeMone and Simpson 1981). Based on color, several varieties of turquoise were present. Samples of the turquoise artifacts were submitted to Dr. Jerry Hoffer at the Geological Lab at UTEP; at least two sources were represented with one unidentified and one being the Jarilla Mountain source near Orogrande, New Mexico some 75 km north-northeast of La Cabraña.

Room 1 Necklace (FS 721)

A necklace consisting of 10 *Olivella* whole shell beads and a small, light blue turquoise pendant (see Figure 63f) was recovered from the floor of Room 1 (Figure 64). Two of the *Olivella* shell beads were burned. The pendant was biconically drilled and was 13.5 × 8 × 1.4 mm; the suspension hole was 2.4 mm in diameter. It was light blue-green in color, well-smoothed, and roughly rectangular with two slightly rounded corners.

Room 7 Necklace (FS 524)

The most interesting of the necklaces was recovered from the floor of Room 7 (see Figure 28). It consisted of the following (Figure 65): 10 *Olivella* whole shell beads (two of which were engraved); 1 shell (*Conus* sp.) tinkler; 1 small turquoise disk bead; 1 crinoid section; 4 shell disk beads ranging in diameter from 7.4 to 14.5 mm; 1 small round sandstone concretion; 2 sandstone concretions (one round bead 1.8 cm in diameter and one tubular bead 3.31-cm-long and 1.3 cm in diameter) with natural perforations; 1 perforated piece of amorphous beach worn shell detritus; and a pendant that was 3.24 × 4.48 × 0.46 cm. The turquoise bead is 5.6 mm in diameter and 2-mm-thick with a suspension hole 1 mm in diameter. It exhibited striations on both faces, had slightly rough edges, and some degree of polishing was present on all surfaces. The specimen was a light-blue turquoise.

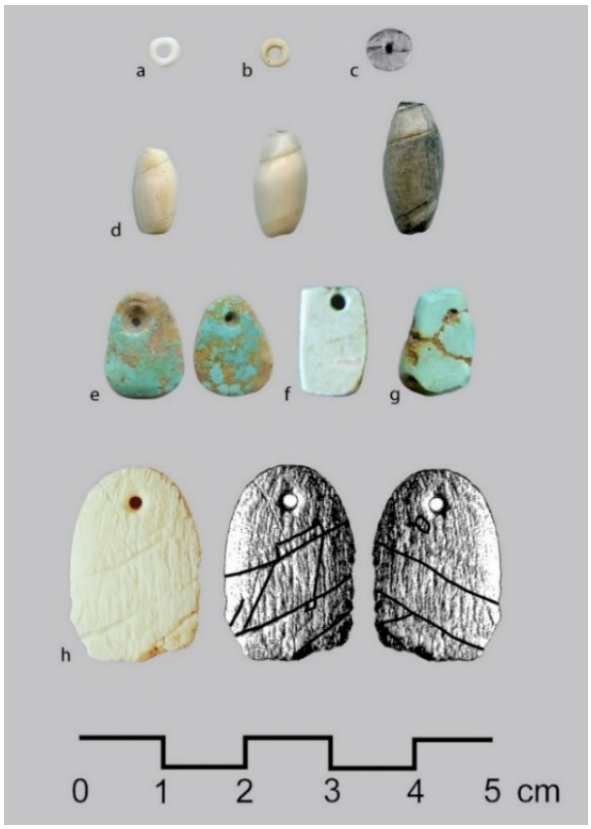

Figure 63. Examples of beads and pendants from La Cabraña: a. and b. are shell disk beads; c. stone disk bead; d. *Olivella* whole shell beads; e. a pair of turquoise earrings (FS 298:1) from the bottom of the cist in Room 6; f. turquoise pendant from necklace (FS 721) from Room 1; g. turquoise pendant blank (FS 295:1) from cist in Room 6; and h. gypsum pendant (FS 635) from the floor of Room 2 with illustrations of engraving on both faces.

Figure 64. Necklace from the floor of Room 1.

The pendant was sub-rectangular in form and made from a white stone, probably a fluorite, that was sufficiently soft enough to be shaped, polished, and engraved. Two suspension holes were present. The suspension hole on one of the longitudinal edges had worn through. The other was on an adjacent shorter edge and it too showed signs of wear in that it had elongated from the presumed original round perforation; this perforation was covered by a shell disk bead. The wear on both perforations indicate that the pendant had been worn for a long period.

On one face what was a rectangular, figure 8-like image, some triangular meanders that resemble mountains, some other less defined meanders, and some random scratches. On the opposite face was a zigzag line, one line, and some random scratches (Figure 66). Interpretation of this incising is problematic, especially if the worn-through suspension hole was the original, which logic suggests. If so, the figures would have been oriented horizontally. We initially suggested the figure 8-like image might represent a masked figure wearing a kilt; it is evocative of a katsina or masked dancer. If indeed this figure was designed to be seen horizontally its significance is unclear, as are the other renderings on that face. The incised zigzag line on the opposite face, if initially designed to be presented horizontally, may represent a mountain horizon. If designed to be seen vertically, it is possible the line is a lightning bolt. Regardless of our speculative interpretations, it is almost certain this pendant and the necklace with its assorted beads was possessed by a person of stature or esoteric power within the La Cabraña community.

Figure 65. Reconstructed necklace from the floor of Room 7.

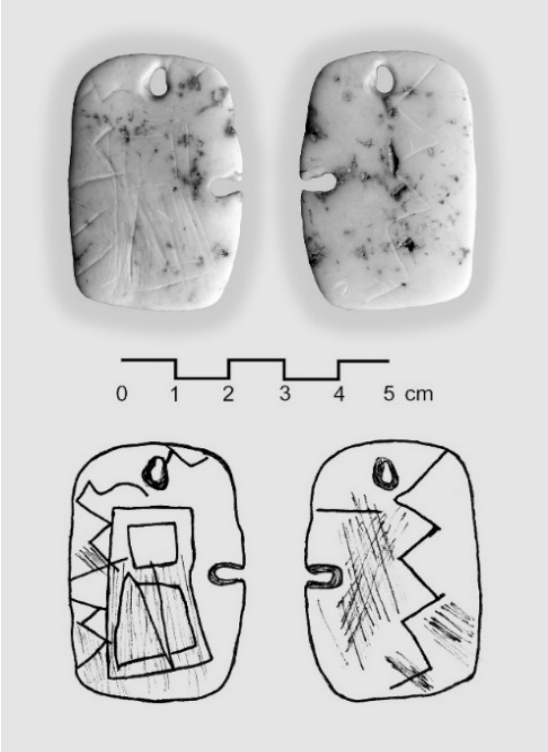

Figure 66. Detail of the pendant from the necklace from the floor of Room 7.

Minerals, Pigments, And Fossils

Nearly 200 pieces of minerals (limonite, gypsum, quartz crystals, malachite, calcite, turquoise), pigments (kaolin, hematite, ochre), and fossils were scattered through the rooms at La Cabraña. Some were recovered from the sub-floor cist in Room 6; however, most were recovered from two concentrations, Clusters I and II, on the floor of Room 7. As reported in Chapter 3, these were found in the southwestern quadrant of the room with Cluster I covering an area of approximately 46 cm in diameter and Cluster II an area of 20 × 35 cm. Cluster I included 14 crinoid fossils, one of which appeared to have been partially drilled; 12 bivalve fossils; a crystal; two unidentified fossils; five worked fossils; a copper ore bead/pendant with striations; two shaped circular crystals with striations/grooves (one with a cross incised into it); a large fossil bivalve pendant with a suspension hole and a deep grove incised through its longitudinal center; a large crinoid with multiple striations; a carved stone shaped like an snail shell or possibly a modified fossil (Figure 67); and multiple other rocks, crystals, and fossils, some of which also exhibit striations and grooves (Figure 68).

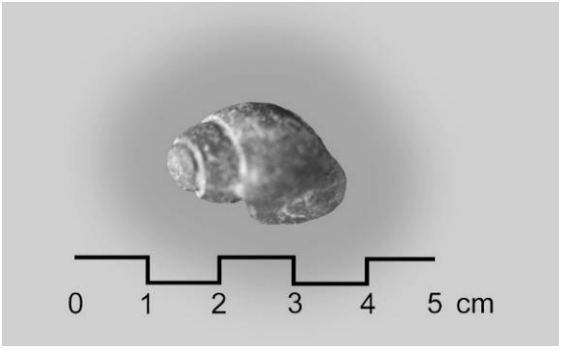

Figure 67. Carved stone snail shell from Cluster I, Room 7.

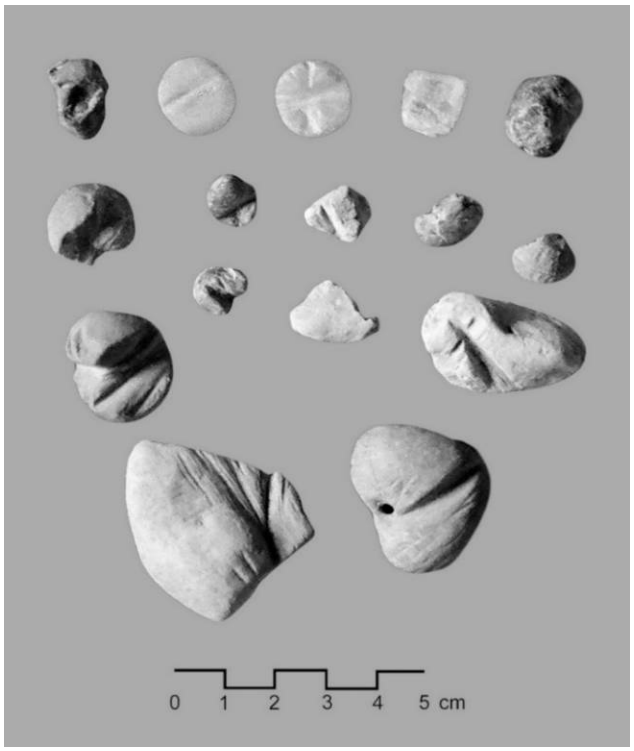

Figure 68. Examples of grooved minerals, crystals, and fossils from Cluster I, Room 7.

Items in Cluster II were not as numerous and varied somewhat from those in Cluster I. Included within Cluster II were a calcite crystal with striations; a square calcite crystal; a crystal; an *Olivella* shell; a small crinoid fossil; a fossil bivalve with striations; a carved piece of stone shaped like a snail shell (much like the one found in Cluster I); flakes of gypsum?; a piece of marine shell; a fossil with striations; a round concretion with striations; a circular piece of malachite, 9 mm in diameter and 3.2 mm thick, that was shaped but not drilled (possible bead blank); and kaolin.

As Miller (2009a:410) notes, such deposits and items undoubtedly had special meaning for the inhabitant(s) of the room and that such deposits have variously been suggested to be associated with medicine and healing. Such materials have been found at other Jornada pueblos and at Paquimé and have variously been described as medicine pouches, a medicine man kit, or shamanic deposit (e.g., Di Peso 1974a:2:587–588; Rakita 2008:127; Stubbs 1930). Miller further notes the similarity of these deposits to Navajo *jish* bundles (Frisbie 1987) and that the acquisition of such materials involved an investment of time and expense.

Bone Awls

Two bone awl fragments were recovered from the floor of Room 7 (Figure 69). One, FS 502 was just the tip of an awl and the other, FS 623, the tip and a portion of the adjacent shaft. These were the only bone implements recovered from the site. The specimens were sufficiently modified and fragmentary that species identification was not possible. Both were partially burned.

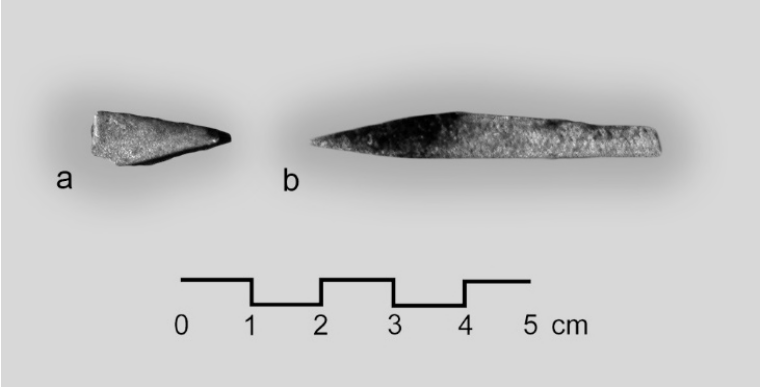

Figure 69. Bone awl tips from Room 7: a. FS 502 and b. FS 623.

Summary and Discussion

Ceramics

The material culture recovered from La Cabraña is generally typical of that found in late El Paso phase contexts across the Jornada Mogollon area. The artifact assemblage was dominated by El Paso Polychrome sherds, painted and unspecified brownware body sherds likely from unpainted portions of El Paso Polychrome jars. The El Paso Polychrome assemblage appears to fit well within the range of El Paso Polychrome assemblages of late El Paso phase with both varieties being represented (e.g., Perttula et al. 1995:215–216). Jars, large and smaller, with recurved rims were represented, as were hemispherical bowls.

A sample of 15 arbitrarily selected El Paso Polychrome sherds, samples of adobe from the walls of the pueblo, and soil samples from adjacent to the site were subjected to X-ray fluorescence to ascertain whether El Paso Polychrome was being produced at or near the site. The analysis was carried out by Dr. Jerry M. Hoffer of the Geology Department at UTEP with the assistance of Jane Bradley. The elemental profiles of the El Paso Polychrome sherds are displayed in Table 7 and Figure 70. Despite the limits of the study, it was clear that the sherds analyzed were from vessels not produced from source materials that occurred in immediate proximity to the site. As seen from Figure 70 the vessels from which the 15 sherds were derived exhibit nearly identical elemental profiles, suggesting that common clay and temper sources provided the material for the ceramics. How representative this is in terms of the El Paso Polychrome assemblage as a whole is unclear.

Nevertheless, this begs the question as to whether the occupants of La Cabraña made their own El Paso Polychrome vessels or whether they obtained the vessels needed through exchanges with production sites elsewhere? The lack of excavations beyond the roomblock itself precluded the identification of any ceramic production loci that might have been associated with the site. Furthermore, few items that might be associated with the production of ceramics were recovered and no specific potters' tool kits were identified. Those items that might have been used by potters at La Cabraña, including pigments, minerals, and polishing stones: these, however, may also have been used for other purposes.

The intrusive ceramic assemblage consisted of several ceramic types, all represented by sherds, most of which are commonly found in late El Paso phase contexts across the Jornada Mogollon region. These include Seco Corrugated, Chupadero Black-on-white, Gila Polychrome, Tucson Polychrome, Maverick Mountain Polychrome, Prieto Polychrome, Ramos Polychrome, Ramos Black, and several variants of Playas Red. Seco Corrugated was the most abundant of the intrusive types identified. Of particular interest for their rarity are Maverick Mountain and Prieto Polychromes, both of which belong to the Maverick Mountain series.

Table 7. X-ray fluorescence results (ppm) from El Paso Polychrome sherds from La Cabraña.[1]

Sample No.[2]	48 (Surface)	175 (Room 9)	220 (Room 5)	286 (Room 6)	334 (Room 6)	359 (Room 4)	437 (Room 7)	614 (Room 3)	618 (Room 3)	655 (Room 8)	662 (Room 8)	689 (Room 10)	691 (Room 10)	708 (Room 1)	723 (Room 1)
Element															
Na	101	67	107	95	94	91	101	87	110	114	90	123	117	87	84
Mg	131	94	142	134	124	122	174	128	156	138	109	203	152	125	141
Al	659	724	683	677	634	616	617	736	946	766	703	986	646	710	723
Si	2872	3070	3843	3358	2674	3160	3536	3421	4362	3804	3182	4472	4052	3550	3382
P	184	83	108	79	101	106	140	85	133	145	124	133	99	84	100
K	3113	1426	2168	2765	1946	1759	3301	1986	2246	2978	1697	2444	2333	2570	2627
Ca	2152	1467	1187	1500	1951	2156	1873	1802	2437	2683	1331	2045	1696	1519	2301
Ti	905	935	1110	1009	1052	931	927	1042	1135	1059	1153	1463	1110	1098	719
Cr		123	138	164	144	163	133		177		132	198	147	156	117
Fe	21303	19794	23036	21623	22148	22971	22960	21390	29121	23852	23846	29165	21926	22057	15677
Cl	141				94	81	170	105	235	125			117	89	100
Cu	204	154	202	163	217	140	198	200	272	256	211	231	249	205	173
Mn	225	263	440	327	237	245	274	535	343	754	225	382	246	344	297
W	284	219	314	280	300	249	289	277	335	273	277	349	327	255	266
Zn	180	137	212	303	192	146	264	191	251	231	159	236	203	202	212
Pb	163	143	184	154	153	149	175	145	227	177	181	193	197	180	135
Se	190	132		177					223			214	194	155	
Rb	392	281	406	380	349	294	408	339	532	348	347	398	358	402	325
Sr	716	582	762	1044	1103	801	733	701	680	1034	506	1489	1069	548	861
Ba											111		129	115	106
Ni	119	92	125	99	130	93		117	145				130		107
Ga		137	160	131		116	164		179	183	159				166
Br	185		180	158	172		190		234			202	176		
Sb								209							
Ge	187														
Cd	248					228									

[1]Analytic parameters:10 mA (milliampere); 40kV (kilovolt); 0-40 eV (electron volt); Mo anode (Molybdenum anode); no filter, 100 sec. (100 seconds in a vacuum). [2] Sample Number = Field Specimen Number

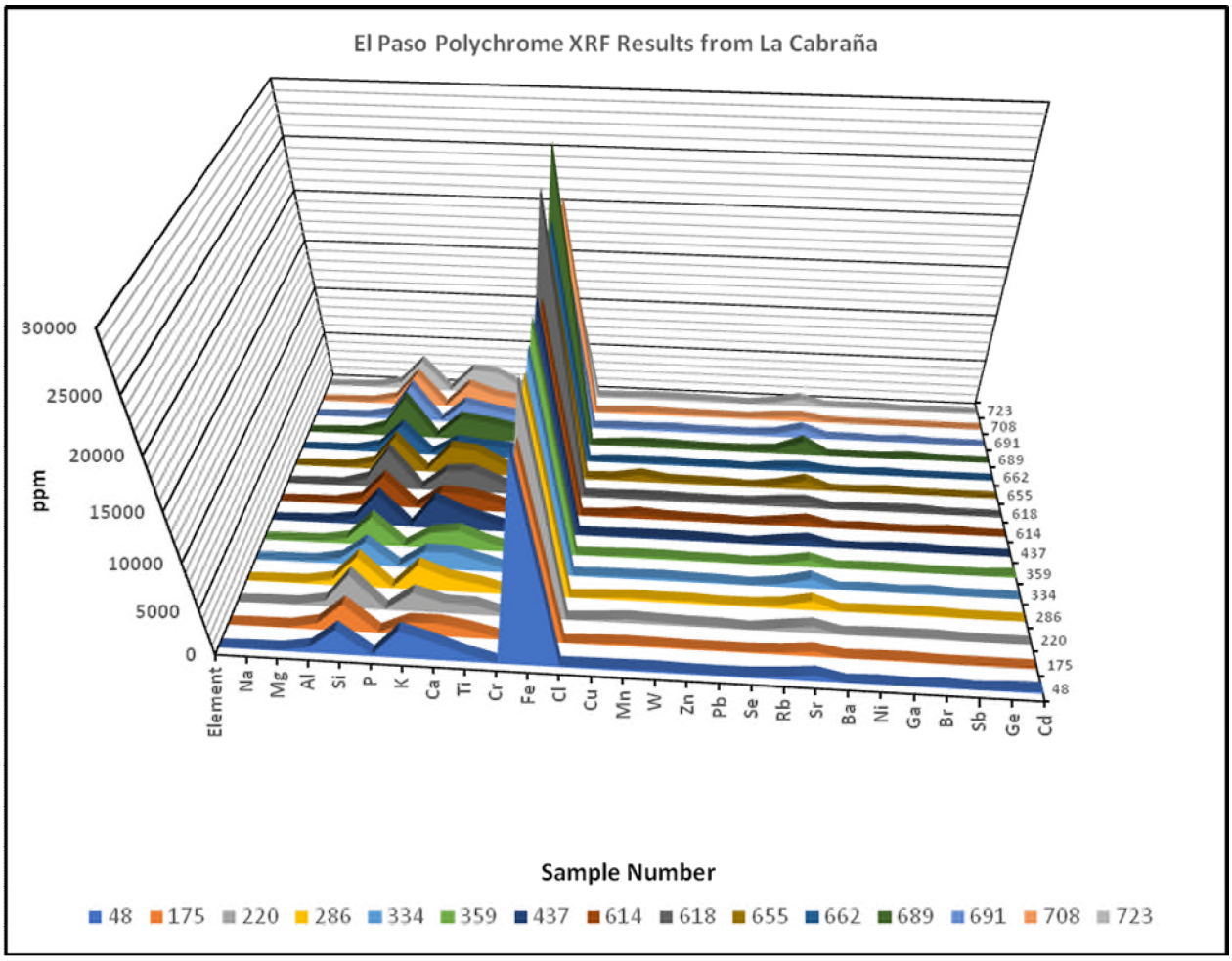

Figure 70. Graphic representation of XRF results from 15 El Paso Polychrome sherds from La Cabraña.

The variety of intrusive ceramics represented indicate that the occupants of La Cabraña had access, directly or indirectly, to inter-regional exchange networks that allowed them access to non-local ceramics. The nature and extent of their participation is not clear. Seco Corrugated appears to have been obtained for domestic use and it is probable that some of the other types represented also functioned in the domestic sphere. The decorated types may have had more social or ideological significance representing items of status or of religious or social integrative value. Although probable source areas for these types have been identified, the mechanisms of procurement by the Jornada Mogollon are generally poorly understood. Furthermore, as with Playas Red, understanding of regional ceramic production centers remains limited.

Lithic and Mineral Resource Availability

The excavation of La Cabraña produced a number of lithic and mineral artifacts made from a variety of material types that could be obtained in proximity to the site. Non-local materials, although not abundant, were also present and appear to have been used for specific purpose tools, or as ornaments, or as possible status objects.

Underlying the study area is a deposit of alluvial river gravels and sands deposited by the ancient Rio Grande. Gravels and nodules from this formation are exposed in the arroyos and drainages in the general

area. Among the rock types found within this formation are rhyolites, cherts, quartzite, and obsidian (Hawley et al. 1969). The nearby Franklin Mountains and Mt. Cristo Rey also contain a variety of rock types. The Franklins house outcrops of cherts, limestone, rhyolite, sandstone, andesite, various other granitics, and several minerals. In other mountains in the region one can find a similar variety of rock types outcropped, but these were unlikely to have been directly exploited by the inhabitants of La Cabraña. The Jarilla Mountains appears to have been the source of some of the turquoises found at the site, while the West Potrillo Mountains and possibly Black Mountain were source areas for the vesicular basalt found.

Cherts are available from nearby river deposited sands and gravels of the Santa Fe Group (Harbour 1972:60), as well as from outcrops in the Franklin Mountains. A wide variety of cherts of varying quality are present in the nearby deposits of the Leeward Slope and Lower Bajada zones. They generally occur in small nodules (less than 8 cm in length (O'Laughlin 1980:170). Their importance to the inhabitants of La Cabraña was likely due to their quality and ease of acquisition. The size of the material, however, greatly limits their functional possibilities. Other possible source area are the Hueco Mountains. Dark cherts occur in deposits from the Franklin and Hueco Mountains, but they are coarse-grained and not highly suitable for tool manufacture (Whalen 1978:4). The Crazy Cat and Tom Mays Park areas of the Franklin Mountains also contain chert gravels as well as quartzite, rhyolite, limestone, and felsite (Dr. David LeMone, personal communication 1983).

Fine to coarse-grained quartzite material occurs in cobbles in the river-deposited gravels of the Santa Fe Group and are in nearby arroyos and washes of the Leeward Slope, but are more common and larger on the east side of the river in the Lower Bajada Zone. Most of these are less than 10 cm in size (O'Laughlin 1980:170) and they are not as common as the rhyolites or limestone present (Fields and Girard 1983:181). The Crazy Cat area also contains a variety of quartzite cobbles in the alluvium around the landslide formation.

Rhyolite is a common material type in the area, it ranges from a very fine-grained variety to coarse-grained types with numerous phenocrysts. The fine-grained variety has few phenocrysts and generally is light pink to purple in color. Soledad Rhyolite exhibits good conchoidal fracturing and is more easily used in tool manufacture; it is found in outcrops in the Organ Mountains, but also occurs in local river deposited gravels in the arroyos and washes primarily in the Lower Bajada Zone near the site. Cobbles of this material range in size from 5 to 20 cm (O'Laughlin 1980:170).

Thunderbird Rhyolite is the most commonly occurring rhyolite in the area, it is found in the local Franklin Mountains as well as in river-deposited gravels near the site in the Lower Bajada Zone. Here is found as sub-angular to rounded cobbles that range from approximately 5 to 20 cm in size. Rhyolite cobbles also are found on ridgetops in the study area (Fields and Girard 1982:181). The Thunderbird Rhyolite formation itself is in the western portion of the southern Franklin Mountains (Lovejoy 1980:35), but also occurs elsewhere in the mountains and in the alluvial gravels surrounding them. This is a very coarse-grained porphyritic material with numerous angular, rose-colored, phenocryst inclusions, thus, it does not fracture well and is not easily retouched.

Several types of sandstone are found in the study area in the Franklin Mountains in deposits such as the Bliss Sandstone formation as well as in the river deposited gravels. Varieties range from fine-grained friable types to coarser-grained materials with colors ranging from light brown to dark brownish-red. Although sandstone is somewhat rare in the local gravels (O'Laughlin 1980:158), angular chunks are present in the arroyos of the alluvial fans of the Franklins. Bliss Sandstone is dark red to brownish-red in color and is a fine-grained and friable material (Lovejoy 1980:59).

Limestone is one of the most common materials found in the local river gravels and occurs in great amounts on the alluvial slopes of the Franklins and in deposits in the mountains themselves. It is probably the most common rock type in the river deposited gravels (Fields and Girard 1983:183) and occurs in the Leeward Slope and Lower Bajada zones as nodules of approximately 5 to 20 cm in size (O'Laughlin 1980:170). Extensive deposits occur in the Franklin Mountains in the Hueco, El Paso and Magdalena Limestone formations (Lovejoy 1980:151). Mt. Cristo Rey also contains numerous limestone outcrops. The material shows great variability, it is generally light to dark gray in color and coarse-grained in texture. A variety of Cretaceous and Permian fossil fauna are often found in the limestone of the area.

Basalt was present in very small quantities in the lithic assemblage and is found as small nodules in river gravels in the study area, but it is not abundant (Fields and Girard 1983:182). The basalt is a fine-grained volcanic that ranges in color from dark gray to black and exhibits fair to good fracture characteristics. The andesite represented at the site was likely derived from the nearby andesitic dike that extends east-west across the valley and under the Rio Grande riverbed.

Obsidian outcrops do not occur in the local area, but small nodules that rarely exceed 5 cm in diameter (e.g., Dolan et al. 2017; O'Laughlin 1980:170) are found in the local river-deposited gravels of the Upper and Lower Bajada and Leeward Slope zones. Colors range from dark gray to black, and most of the nodules have a thick cortex (Fields and Girard 1982:183). Although obsidian is probably one of the best raw materials for flaked tools in the area, the small size of the available material would have greatly limited its use. Large nodules are not abundant, but undoubtedly would have been prized items.

Other rocks and minerals found in the study area include calcite, muscovite, biotite, fluorite, hematite, gypsum, and quartz. These can all be found in the Franklin Mountains in the Castner Limestone Formation (Deen 1976:185–189). Calcite is present in small angular fragments in the local alluvial gravels in colors that range from transparent to white, yellow, and yellow/brown. Quartz is found in copper bearing fault dikes near Transmountain Park and in Red Bluff Granite formations in the Franklins (Deen 1976:189–195). Gypsum is available from deposits in the Franklins but also may be found in the Hueco Mountains or San Andres foothills (Hair 1976:63). Any of these rocks and minerals could have been found in the gravels of the local area or of the alluvial slopes of the Franklins but were more likely obtained in the mountains themselves.

Pigments such as hematite, malachite, limonite, and kaolin are available from sources in and around the Franklin Mountains. These occur in deposits near the Tom Mays Park area on Transmountain Road and near a fault-dike zone that houses copper and quartz. Large amounts of limonite are present in these veins, as well as some hematite and malachite (Deen 1976:195). Kaolin may be available in nodules in the alluvial gravels.

Finally, a variety of fossils can be found in Permian and Cretaceous strata of the Franklin Mountains, in sequences of Cretaceous shales and limestones of Cerro Cristo Rey, and in the Mesilla Bolson in scattered andesitic formations that have uplifted Cretaceous strata. Fossils found at La Cabraña include gastropods, bivalves (*Texigryphaea* spp.), brachiopods, and crinoids. Most are of Permian origin and can only be found nearby in the Franklins. Scattered formations in the Franklins have exposed fossil marine fauna; these include Smeltertown (Coronado Andesite), Muleros (Three Sisters Andesite, Coronado Andesite, Thunderbird Andesite), Lagrima (East Crazy Cat, West Crazy Cat), Anapra (West Crazy Cat Canyon), and Boquillas (West Crazy Cat Canyon). Gastropods can be recovered from Smeltertown, Muleros, Lagrima, and Buda formations. Bivalves also are found in these formations, as well as in the Anapra, Del Rio, and Boquillas formations. *Texigryphaea* spp. is restricted to the Smeltertown, Muleros, Lagrima, and Buda formations. Crinoids are found in the Franklin Mountains in deposits extending from the Tom Mays Park and Vinton Road areas to the area around the Coronado Country Club. Extensive continuous deposits of Cretaceous fossil faunas are in the Cristo Rey and Sierra Juarez complexes. However, for

these areas no detailed information is available on the types of cretaceous fauna or their locations (LeMone and Simpson 1981:45–52).

Non-Local Lithic Resources

Some of the lithic resources represented at La Cabraña were of non-local origin. Turquoise is not available from nearby deposits, but is found in the Jarilla Mountains near Orogrande, New Mexico, approximately 75 km to the northeast of the study area. Jarilla turquoise is a light to medium blue, low-grade turquoise that occurs in very thin deposits and is generally softer than higher quality varieties (Phil Weigand, personal communication 1983). Two samples (sampling loci identified by Phil Weigand) of turquoises from the Jarilla Mountains were subjected to XRF along with 13 pieces of turquoise from La Cabraña (Table 8; Figure 71). Three of the 13 La Cabraña samples are from the Jarilla Mountains; FS 295 and FS 298 compare to Jarilla Mountain Sample #4 and FS 721 compares to Jarilla Mountain Sample #5. The other source or sources remain unidentified.

Other non-local lithic resources represented at La Cabraña include a particular type of vesicular basalt that is found in the West Potrillo Mountains approximately 50 km west of the site. These mountains are composed of extensive deposits of Quaternary olivine alkali basalt, with peaks that extend as high as 1,800 m in elevation and lava flows that cover well over 777 km^2 (Hoffer and Sheffield 1981:79). This material is highly porous and extremely durable, and makes for effective grinding implements. This makes its importation worth the extra the extra cost or the extra energy expenditure of obtaining it. It is unclear whether it was imported as finished products or as a raw material. Another possible source for the vesicular basalt at La Cabraña is Black Mountain, approximately 35 km northwest of the site. Additionally, Miller (2009c:18) makes passing mention of vesicular basalt sources from the volcanic lava flows that border the Rio Grande valley south of Las Cruces.

Shell

Marine and freshwater shell ornaments are common on many Jornada Mogollon sites and the La Cabraña shell assemblage appears generally typical of those found at El Paso phase sites. *Olivella* sp. whole shell beads (likely *O. dama*), small discoidal beads from unidentifiable species, two *Glycymeris* sp. bracelet band fragments, and two *Conus* tinkler fragments were recovered. All are available in the Panamic Province of the Gulf of California (Keen 1971) and widely distributed throughout the American Southwest and Northwestern Mexico (e.g., Bradley 1996; Brand 1938). The mechanisms by which marine shell (raw or finished products) were obtained by the occupants of small Jornada pueblos like La Cabraña are not fully understood (Bradley 1983, 1993, 1996).

The *Olivella* shell had been minimally modified with slight grinding of their spires to produce holes for stringing. Many were found singularly in the rooms, but in some cases multiple beads were found in association with one another, some with stone pendants, as if they had been strung together. Two of the *Olivella* beads associated with the necklace in Room 7 were incised with lines on the body.

One nacreous Unionidae freshwater shell pendant and several fragments were also recovered. The pendant was extremely thin and friable and shaped in the form of a fish. As indicated above, the specimen is almost identical to two freshwater shell fish pendants found at Sabina Mt. Pueblo (Brook 1980: 59, 70) and like pendants described by Lehmer (1948:48, 62). The Hot Well Site produced two Unionidae shells, each was found in separate caches (Lowry and Bentley 2005:201–206).

The freshwater shell recovered could not be identified to species because of the extensive modification of the material. Freshwater mollusks also occur in the Pecos, Conchas, Arkansas, and Canadian river drainages and ornaments made from the shell are found on numerous Southwestern sites (Bradley 1996:76–78, 80–82).

Table 8. X-ray fluorescence results (ppm) from Jarilla Mountains and archaeological turquoise from La Cabraña.[1]

Sample No.[2]	Jarilla Mt. #4	Jarilla Mt. #5	36	65	295	298	365	454	518	541	721	756	Trash Midden	Ad. N	Ad. S
Element															
Na	73	83	15	18	50	79	24	26	38	20	98	41	144	123	103
Mg	80	109	20	27	49	89	23	26	54	42	127	49	121	131	103
Al	315	522	46	57	192	466	54	148	167	84	686	82	377	343	347
Si	941	1079	61	88	384	1668	209	422	638	163	1547	297	2790	2393	2314
P	458	753	102	139	424	690		198		174	1213	141		206	174
S							697		1874	2145			1860	810	1176
K	374	213	14	38	157	447	186	251	431	129	990	154	1657	2380	1754
Ca	590	1225	25	43	349	700	692	215	470	218	3412	5491	4580	5348	3637
Ti	211	191			165	323	60	51	87	40	154	454	454	556	510
Cr	106	130	147	17	52			32	59	34	148	37		110	102
Fe	11905	9794	52	313	4015	8382	1127	1241	11884	946	10026	1070	7055	11296	8318
Cu	13511	33543	108	2543	14909	20929	4239	6957	4257	4591	46903	79	276	271	254
Au	148	268			92	218		54			236				
As	773	534		22	57						173	202			
Se	119		18	12		173					177				
Sr	889	1618	19	37	314	2196	162	433	291	124	1034	113	1203	998	1080
Mn	113	140	13	16		138	29	42	66	35		54	274	332	277
Zn	311	637							209			69		228	
Pb							33		80					253	261
Rb	128	191				190			68				451	405	434
Ba									32				147		
Cd				23											
Sn				16											
Nd						139									
Ni								46							
Cl					886										
Ni												55	157		142
W													385	400	410
Ge													370		
Br														260	

[1]Analytic parameters:10 mA (milliampere); 40kV (kilovolt); 0-40 eV (electron volt); Mo anode (Molybdenum anode); no filter, 100 sec. (100 seconds in a vacuum). [2] Sample Number = Field Specimen Number.

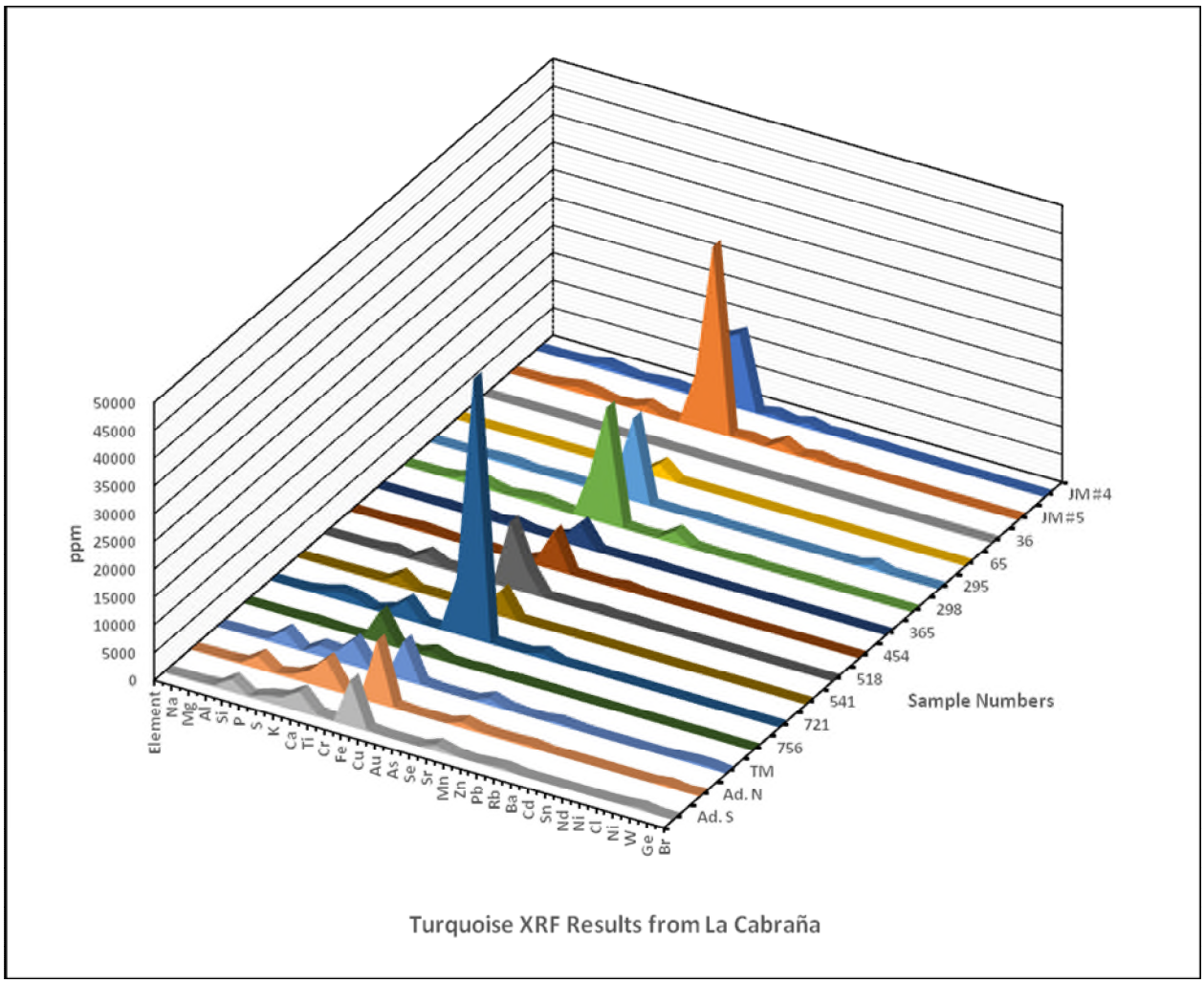

Figure 71. Graphic representation of XRF results from 13 archeological turquoise samples from La Cabraña and two samples (JM #4 and JM #5) from the Jarilla Mountains turquoise source.

The small quantity of shell ornaments at La Cabraña, relative to some of the other larger sites in the Jornada Mogollon such as Hot Well and Sgt. Doyel (Lowry and Bentley 2005), suggests limited access to the material. There was no evidence of shell ornament production at the site, although whole *Olivella* shells could easily been made into beads.

Bone

Only two bone tool fragments were recovered, both were awl tip fragments. They are thought to be from large mammal and represent the only faunal remains from a large mammal recovered from the site. No evidence of bone working was identified at the site, although flake tools and some of the ground stone recovered could have been used to shape and sharpen such implements. The awls could have been made from bone taken from large animals hunted in the nearby foothills and mountains or they could have been acquired through exchange.

CHAPTER 5
DIET AND SUBSISTENCE

In archaeology, dietary analyses and subsistence studies are often considered under a single rubric, although they do in fact represent two distinct aspects of a culture's economy and adaptation to the environment (Spielmann 1990). Dietary studies focus on the identification of the foods eaten, seasonal availability of foods, and the nutritional benefits of the foods being consumed, while the focus of subsistence studies is the acquisition of food resources and their allocation. Excavations at La Cabraña produced a quantity of prehistoric faunal and botanical remains. While most of these are associated with diet, some of the specimens represent utilitarian items such as bone awls or floral materials (e.g., mesquite branches, reeds) used in construction (Bradley 1983; Foster et al., 1981).

Faunal Remains

Nearly 13,000 bone fragments (Table 9) were recovered, most came from the barrow pit midden east of the roomblock. The majority of the remains were associated with the prehistoric occupation of the site although a few historic/modern specimens were also recovered.

Historic/Modern Remains

The historic/modern domesticated fauna recovered consist of chicken, cow, pig, sheep/goat, cat, and turkey (Table 10), although it is possible the turkey remains are associated with the prehistoric occupation of the site. The name of the site, La Cabraña, is taken from the fact that goats were kept at the site area historically. All the remains, except for that of a cat, were likely food sources.

The presence of turkey is of interest although its association with the prehistoric occupation of the site is ambiguous because of the disturbed contexts from which turkey bone was recovered. Turkey remains have been recovered from a variety of prehistoric sites and contexts across the American Southwest and northern Mexico (e.g., Breitburg 1993; James 2011; Munro 2011; Rea 1980). A total of 104 elements (probable and identifiable partial or whole bones) of turkey were recovered. The bones were from medium to large size birds, suggesting they represent domesticated animals.

Both wild (Merriam's Wild Turkey) and domesticated turkey may have been available to the occupants of La Cabraña; however, the presence of turkey at archaeological sites in the area is limited or indirect. Eggshell tentatively identified as turkey is reported from Madera Quemada Pueblo, but no skeletal remains were recovered (Brown and Brown 2009:294–295). Regionally, the best evidence of the domestication and maintenance of turkeys come from Paquimé where remains and pens have been identified (Breitburg 1993; Di Peso 1974c:4:268; McKusick 1974). In the Jornada area, possible turkey pens have been identified at Alamogordo and Madera Quemada Pueblo (Bradfield 1929; Miller and Graves 2009a:199; Stubbs 1930). The Miller et al. (2009:324–326) observation that architectural data from the Jornada area suggests that if turkeys were raised and kept, their numbers were so low that they would not have contributed significantly to the prehistoric diet at any given site is of note. If the La Cabraña turkey remains are prehistoric, it is unclear whether they represent food remains or whether they were raised for their feathers, or both.

Table 9. Total faunal remains recovered from La Cabraña.

Taxa	Common Name	Burned	Unburned
Ovis/Capra	Sheep/goat		2
Felis domesticus	Cat		1
Bos taurus	Cow		20
Sus scrofa	Pig	59	
Trionyx spiniferus	Spiny soft-shell turtle	3	
Meleagris gallopavo	Turkey		34
Gallus	Chicken		32
Eggshell	Birds		2
Medium Aves/ ?*Meleagris gallopavo*	Birds	70	
Large mammal		3	69
Aves (small)	Birds		15
Rodents		7	22
Dipodomys sp.	Kangaroo rat	4	10
Neotoma cf. *albigula*	White-throated woodrat	3	8
Spermophilus spilosoma	Spotted ground squirrel		4
Sigmadon cf. *hispidus*	Hispid cotton rat		1
Peromyscus sp.	Mice		2
Leporidae	Rabbits	342	465
Lepus sp. (*n*=365)	Jackrabbit		
Sylvilagus sp. (*n*=442)	Cottontail		
Small/medium mammal (*n*=5,000+)		3,500+	~2,000
Colubridae	Snake		2
Unidentified small/medium mammal from midden*		3,600	2,000
Fish bone fragments from midden*			6,100
Fish bone fragments recovered from rooms			4
Lepisosteus sp.	Gar		
Ictalurus sp.	Catfish		
Pylodictus olivaris	Flathead catfish		
Catostomidae	Suckers		
	Totals	**4,121**	**8,789**
		Grand total	**12,910**

*****Estimations

Table 10. Remains of domesticated animals from La Cabraña.

Species	Common Name	Number of Fragments
Meleagris gallopavo	Turkey	
phalanx		4
tibiotarsus		5
ulna		2
tibia		1
humerus		2
femur		1
tarsometatarsus		1
miscellaneous		88
Gallus (miscellaneous)	Chicken	31
Large mammal (miscellaneous)		73
Bos taurus (miscellaneous)	Cow	20
Sus scrofa (teeth and skull fragments)	Pig	60
Felis domesticus (tibia)	Cat	1
Ovis/Capra sp. (phalanx)	Sheep/goat	2
	Total	**291**

Prehistoric Remains

Aves

In addition to the turkey bone, a small number of small bird bones were recovered. Because of their size and fragmentary condition, it was not possible to identify them. A variety of birds nest in the El Paso area and that number swells dramatically in the winter with many species migrating into the region (Cutler 2000; Paton et al. 2003). It is unclear whether the remains of these birds represent incidental occurrences or food remains. It is also possible they were captured for their feathers.

Rodentia

Whole and fragmentary elements and teeth of rodents, rats and mice were recovered (see Table 9). The assemblage was dominated by kangaroo rat (*Dipodomys* sp.) (Table 11). At least four individuals are represented and of the 14 elements or element fragments, four were burned suggesting use as food. Other taxa represented consist of white-throated woodrat (*Neotoma cf. albigula*), spotted ground squirrel (*Spermophilus spilosoma*), hispid cotton rat (*Sigmadon cf. hispidus*), and mice (*Peromyscus* sp.). Rodents make up a small percentage of the faunal assemblage with a total of nine individual represented. Although they constitute 28 percent of the terrestrial species identified, they would have contributed only a minor amount of biomass if consumed as food. However, their small size and the fragility of their bones has likely skewed the recovery rate and thus they may be underrepresented in the overall faunal assemblage.

The taxa represented have wide ranges and were, obviously present in the project area prehistorically as well as today (Findley et al. 1975). Ord's and Merriam's kangaroo rats are present today although they live within preferred habitats within the area. *D. ordi* prefers friable sand soils or alluvium while *D. merriami* is more at home in open areas associated with desert pavement or clay or gravel surfaces.

Table 11. Summary of Identified Faunal Species (excluding fish).

Species	Number of Elements	Percent of Total	Number of Individuals	Percent of Total
Sigmadon sp.	1	< 1	1	3
Spermophilus spilosoma	4	< 1	1	3
Dipodomys sp.	14	1.7	4	13
Neotoma sp.	8	1	1	3
Peromyscus sp.	2	< 1	2	6
Lepus sp.	365	44	9	28
Sylvilagus sp.	442	53	13	41
Trionyx spiniferus	1	< 1	1	3
Total	**837**	**100**	**32**	**100**

Kangaroo rats live in colonies, are nocturnal, and feed on the seeds of grasses and forbs (Gebel 1981:46). The white-throated woodrat has a substantial range from mixed coniferous forests to desert lowlands; it feeds upon seeds, green vegetation, and insects, although they prefer cacti and succulents (Gebel 1981:49). They too are nocturnal.

The spotted ground squirrel inhabits the sandy grasslands and deserts of southern New Mexico (Findley et al. 1975:121). They feed primarily on green grasses, forbs, leguminous seeds (mesquite beans), and seeds, and will also eat insect larvae, insects, and even small vertebrates such as lizards. Their range extends from South Dakota to the Mesa Central of Mexico, and although they hibernate for an extended period in the northern part of their range, the length of hibernation in the southern part of their range, in the warmer climates, is undetermined.

Also, among the rodent remains recovered were those of mice (*Peromyscus* sp.). Habitats occupied by this genus range from piñon-juniper country to sandy desert lowlands (Findley et al. 1975:200–225), and they consume a variety of seeds, greens, and arthropods (Gebel 1981:46). A bone tentatively identified as, the hispid cotton rat, was also recovered. The hispid cotton rat is also omnivorous, although its preference is for seeds and the stems and the foliage of green plants. They are also known to eat insects and other small animals.

The archaeological presence of rodents is common across the Southwest (e.g., James 1994, 2011). Although there is ample evidence they were consumed as food, much of their occurrence is often the result of the natural process of burrowing and living on the sites. Despite commonly thought of as pests, Szuter (1991a) points out that rodents may provide some benefits to horticulturalist in that they consume weeds and insects in the fields, and they increase soil fertility by burrowing.

The ethnographic literature suggests that the hunting of small game such as rodents and birds was not a specialized activity and it occurred without magic, ceremony, or ritual (Pennington 1963, 1969; Szuter 1991a; Underhill 1936). Rodents could have been taken using a variety of methods, most of which are not observable in the archaeological record. They could have been clubbed or stabbed with sticks, stoned, trapped, or snared, taken from their burrows, or hunted with a bow and arrow (e.g., Castetter and Bell 1942; Castetter and Underhill 1935; Cushing 1920; Spier 1928; Szuter 1991a; Underhill 1946). These animals could have been hunted in agricultural fields or their capture could have been embedded in other activities such as firewood or wild plant collection (Szuter 1991b). Their preparation for consumption requires little effort. They are most often roasted on a spit without the removal of their skins or evisceration; their feet, ears, and tails burn off and once cooked, their skins can easily be pulled off before they are eaten. Viscera, bones, and any bones not easily crushed by chewing could be spit out or

otherwise discarded (Szuter 1991a). Some peoples take the time to skin and gut the animal before roasting or spiting it (Pennington 1963; 1969). Cordell (1977) reports the presence of cut marks on the pelvises of pocket goffers at Tijeras Pueblo in New Mexico.

Leporidae

Both black-tailed jackrabbit (*Lepus californicus*) and desert cottontail (*Sylvilagus audubonii*) are represented in the La Cabraña faunal assemblage. Like many other species, their density, which often increases, is affected by anthropogenic impact on the local environment (Madsen 1974; Suter 1991a). Even though these two species co-occur and were sought after as important sources of protein, they have different behaviors and habitat preferences that require different behaviors and techniques for their procurement (Legler 1970; Szuter 1991a).

A total of 365 jackrabbit fragments and 442 cottontail fragments were identified representing 9 and 13 individuals respectively. Jackrabbit accounts for 43.6 percent of the identified terrestrial faunal assemblage and cottontail 52.8 percent. Additionally, in excess of 5,000 highly fragmented bones, most of which are likely leporid, were recovered and classified as small/medium mammal. Burning is evident on 342 of the identified leporid fragments and more than 3,500 of the small/medium mammal fragments are burned.

Jackrabbits prefer open desert habitat so that they can take advantage of their speed to elude predators while cottontails prefer brushy habitats where they can hide. Rabbits have long breeding seasons, the lengths of which vary depending on local environmental conditions. Both jackrabbits and cottontails produce multiple litters and the number of individuals produced varies. Jackrabbits produce one to four litters annually with each litter containing 1 to 11 offspring, while cottontails produce two to five litters that average two to five individuals each. There appears to be two population peaks annually for both, one in the late summer and one in the early spring (Davis et al. 1975).

Although archaeological evidence in the Southwest for communal jackrabbit drives is limited, they are most effectively hunted by communal groups who drive the animals into nets or brush enclosures where they were trapped and killed (Dean 2007a; James 1994). Cottontails on the other hand were most likely hunted or captured individually by bow and arrow, spears or pointed sticks, snares and traps, and clubs or rabbit sticks (e.g., Basehart 1974; Bayham 1976; Castetter and Bell 1942; Kelly 1977; Pennington 1969, 1980; Spier 1933). Nevertheless, direct evidence of the procurement of lagomorphs rarely survives in the archaeological record. Once killed, they were skinned, pulled apart, and roasted or boiled (Joseph et al. 1949; McGee 1898; Szuter 1991b).

The ratio of jackrabbits to cottontail in archaeological faunal assemblages is often discussed in terms of the Lagomorph Index (Bayman and Hatch 1985a, 1985b; Szuter 1989; 1991a; Szuter and Bayham 1989). The index is the proportion of cottontails in all lagomorphs found at the site and is generated by either dividing the number of cottontail remains, either the number of identifiable specimens (NISP), or the minimum number of individuals (MNI) by the total number of lagomorphs (NISP or MNI). As Dean (2007:8) observes, the Lagomorph Index has variously been used to identify changes in vegetation patterns due to climate change (e.g., Bayman and Hatch 1985a, 1985b; Szuter 1989), environmental changes relating to agricultural activities (Szuter 1984, 1989, 1991b), changes or advances in hunting techniques (Dean 2003:291; Szuter and Bayham 1989), increased intensity in the use of a site (Szuter 1984), and a decline in foraging efficiency (Dean 2003:289). Despite its wide use across the Southwest, interpreting the index is not straightforward. Numerous variables have been suggested to affect the index including recovery, and a variety of environmental, cultural, economic, behavioral, preferential, and logistical variables (Dean 2007a:14–23; James 1994). Dean further observes that these variables not only are often interdependent and that their interplay is often extremely subtle or not evident.

Accepting the limitations of the sample size and recovery methods, based on the NISP, the Lagomorph Index at La Cabraña is 0.55, while based on the MNI it is 0.59. Both counts indicate that cottontails were more abundant or accessible in the vicinity of La Cabraña than jackrabbits. Of course, this assumes that the ratio of cottontails to jackrabbits in the thousands of bone fragments classified as small/medium mammal and thought mostly to be Leporidae, is approximately the same. The most obvious explanation for the dominance of cottontail is the riparian setting of La Cabraña. Vegetation that would have provided cover, the general availability of water in this desert setting, and the presence of agricultural plots would have made the area prime habitat for cottontails. Thus, the local environment (e.g., Bayman and Hatch 1985a, 1985b) and the fact they are most often hunted individually may be the primary variables influencing the dominance of cottontail. It is unclear how anthropogenic vegetation changes resulting from the occupation of La Cabraña may have affected the Lagomorph Index. Szuter (1989, 1991a), based on data from Hohokam sites in Arizona, argues that increased disruption of natural vegetation patterns resulting from the intensity and duration of a site's occupation produces a low Lagomorph Index score. Activities such as clearing of vegetation for agricultural purposes reduces available cottontail habitat and therefore the number of cottontail present. Dean (2007a) suggests that this likely influences the Lagomorph Index, but perhaps in ways not considered by Szuter. Dean observers that in riverine settings in central and southern Arizona, the clearing of vegetation, the use of irrigation, and the resulting growth of cultigens and wild and encouraged plants resulted in higher Lagomorph Index values. Dean further indicates that at non-riverine sites the clearing of vegetation resulted in greater amounts of open area where jackrabbits flourished resulting in a lower Lagomorph Index.

Dean (2007a:20–21) also discusses the effect of prey choice on the Lagomorph Index. This is discussed in terms of both taxa preference and hunting intensification. She indicates that less desirable taxa, small game such as cottontails, are included in the diet only when the cost of capturing and processing more desirable taxa (jackrabbits) is too great. Dean, citing Rea (1998), notes that ethnographically in southern Arizona jackrabbit is preferred because of its size and the difficulty of hunting cottontails. However, in an area where cottontails were abundant and frequently encountered by chance as well as hunted, the Lagomorph Index value would be high, perhaps as in the case of La Cabraña.

Dean (2007a) goes on to note that human dietary stress often results in hunting intensification, a greater exploitation of small game (cottontails, birds, rodents, fish), and an increase in long-distance hunting of artiodactyls (Dean 2007b, James 1994; Szuter and Bayham 1989). She (Dean 2007a:21) found that in the Salt and Gila basins of Arizona, during the Classic period, the Lagomorph Index value increased significantly from earlier times. She further observed that this increase was concomitant with evidence of agricultural intensification (expansion of irrigation systems and dry farming), extensive cultivation of wild resources (agave), and greater use of wild plant resources. Thus, a broader diet appears to be one explanation of a higher Lagomorph Index value. The relevance of this to the La Cabraña data is unclear. Clearly the occupants of La Cabraña exploited a variety of dietary resources, both wild and domesticated. As suggested by Lindsay (1983 [see below]) the pollen data may suggest evidence of fluctuations in the local environment. Whether these were sufficiently stressful to force intensification of subsistence activities is unclear based on the data at hand.

In summary, the significance of the La Cabraña Lagomorph Index value is unclear. The most obvious explanation may be that that the riparian setting of La Cabraña allowed cottontail populations to flourish and therefore they were more accessible because of their abundance; their smaller size, as compared to jackrabbit, does not appear to have been a factor affecting their exploitation. Nevertheless, as Dean (2007a:23) notes, the Lagomorph Index reflects complex interaction between people, their social and economic structure, the environment where they live, and their dietary needs, and that the most obvious explanation may in fact be only a partial explanation.

Reptilia

Few reptile remains were identified at the La Cabraña. Three burned pieces of carapace from a *Trionyx spiniferus*, the spiny soft-shell turtle, were recovered. These turtles inhabit riverine settings and are present in the area today. The remains of these turtles have been identified at the Mesilla phase Sandy Bone site north of La Cabraña indicating a long use prehistorically in the area (O'Laughlin 1977:28–30). The use of turtles and tortoises has been reported archaeologically and ethnographically across the Southwest (e.g., James 2011; Schneider and Everson 1989). They could have been taken from the rivers or damp area adjacent to the river. Turtle meat could have been boiled or roasted and their shells and bones were used for the making of ornaments and rattles (e.g., James 1994).

Two unburned snake vertebrae, Family Colubridae, were also recovered. Although snakes are edible and found in archaeological contexts, the two La Cabraña specimens were likely intrusive.

Fishes

The fish remains recovered from La Cabraña were identified by Robert McCord. Three genera and one family of fishes were identified among the 5,000+ fish bones and scale fragments recovered from the midden. Most of the remains were highly fragmentary and could not be identified. Among the identifiable elements and fragments were scales, pectoral fin bones, vertebrae, mandible and skull fragments and pharyngeal arches that develop into the branchial or gill arches. Most of the vertebrae are small although some were extremely large (8 cm) indicating that some very large fish were represented. Approximately three percent of the vertebrae were burned.

Identified taxa consist of catfish (*Ictalurus* sp.), flathead catfish (*Pylodictis olivaris*), gar (*Lepisosteus* sp.), and suckers (Family Catostomidae) (McCord 1982). Catfish were most numerous with *Ictalurus* sp. being the most common. None of its remains could be identified below the level of genus. Today, *I. punctatus*, the channel catfish, is the only catfish found in the El Paso area. It is most commonly found in medium to large, swiftly running, clear water rivers with sandy or gravel bottoms. Lieb (2000), however, indicates it is a central U.S. species and was introduced into the Rio Grande. On the other hand, *Pylodictis olivaris* is native to the Río Grande although today it no longer occurs in the El Paso area. It occurs to the north and Lieb (2000) indicates that it may persist in the Río Grande canyon area to the south in southern Hudspeth County west Texas.

Catfish are generally nocturnal bottom feeders and are a common food fish when present in a given area. This is particularly true of the channel catfish, which averages around 10 pounds in weight but can weigh as much as 75 pounds; other catfish can exceed 100 pounds in size (Koster 1957). Catfish can be taken using a variety of methods including hook and line, by hand, spearing, or with a net.

The remains of gar consisted of the diagnostic diamond or trapezoidal shaped scales, procoelous vertebrae (vertebrae that are anteriorly concave and posteriorly convex so that they fit together—ball and socket like), and fragmented dermal remains (McCord 1982). None of the remains could be identified below the level of genus. The only gar that are found in the Río Grande today are *L. osseus* (long nose gar) and *Atractosteus spatula* (formerly *L. spatula*–alligator gar). McCord (1982) suggests that the La Cabraña gar remains likely represent a range extension of *L. osseus*, although this could not be confirmed because of the fragmentary nature of the remains. *L. osseus* occurs as far north as the confluence of the Río Grande and Pecos River although Lieb (2000) indicates they occur in the Río Grande canyon between the Eagle and Indio Mountains in Hudspeth County. *L. osseus* is at home in either fresh or brackish water. Their diet is primarily other fish although they also eat insects, crustaceans, worms, and algae. *L. osseus* is also a food fish and it can be 2 to 3 feet in length in adulthood (Koster 1957). They are most easily caught with a net or spear; they have sharp teeth and can easily cut a fishing line.

Members of the Family Catostomidae (suckers) were also recovered (McCord 1982). The identification of suckers was based primarily on pharyngeal arches; however, none of the specimens could be identified below the family level. Six species of sucker are found in the Río Grande today, although the only one abundant in the El Paso region is *Carpiodes carpio*—the river carpsucker. Suckers are bottom dwellers that feed on insects, mollusks, crustaceans, worms, and algae. They prefer quiet waters and backwaters, live in schools, and average about 2 pounds although they can grow up to 10 pounds in weight. Koster (1957) notes that these suckers are not easily caught using a line and hook and that because of their relatively small size; they taste poor and are considered a rough fish. Some of the other species of suckers that inhabit the Río Grande are more palatable, reach lengths over 2 feet, and achieve weights of 5 to 20 pounds.

In summary, a variety of fish species are represented in the La Cabraña faunal assemblage and all prefer large- to medium-size rivers with good flowing waters. Flathead catfish and gar mainly feed on smaller fish while the others are primarily omnivores. It is of note that many of the taxa represented at La Cabraña are no longer present in the El Paso region. Clearly, the damming and channelization of the Rio Grande and historic and modern agriculture in the Middle Río Grande River valley have altered the river's ecology sufficiently to alter the distribution of many of the fishes found at La Cabraña.

Ethnographic studies indicate that many groups supplement their diet with fish on a year-round basis (e.g., Kelly 1977; Pennington 1993, 1969). Nevertheless, it is most likely that the fish were taken at times when the water level was lower and the flow reduced. As previously discussed, historical documents indicate the Río Grande was often subject to two peak flows, one in the spring (April–June) tied to snowmelt and one in the summer (July–September) tied to the onset of the monsoon (Landis 2001). Thus, typically, fishing could have been more easily accomplished during a brief period in early summer and from the early fall through early spring. Even at times of high water and flow, it likely would have been possible to take fish from the slower moving water of branches of the river or from holes below overhangs along the bank.

Catfish are most easily taken by hook and line while gar and suckers are most easily caught using seines or nets. The use of seines or nets would likely result in the capture or multiple individuals of varying size. It is also possible that stupefaction was used (e.g., Kelly 1977; Pennington 1969; Spier 1933) and they could also have been caught using traps or by hand. Once caught they were likely gutted and roasted or buried in hot coals; cooking takes about 20 minutes. When roasted, the scales and skin and the fins are easily peeled off. Boiling is sometimes used, and the meat could have been cut into strips and dried or salted and dried for storage. Dried fish is usually boiled for consumption (Kelly 1977; Pennington 1963, 1969; 1980).

Archaeobotanical Remains

The macrobotanical remains and pollen recovered consisted of both wild and domesticated taxa. Macro-archaeobotanical remains were recovered from both the rooms and the midden with most being recovered from the midden. Sources of food as well as materials used in construction and for other utilitarian purposes were represented in the taxa identified (Foster et al. 1981; Williams 1982). Approximately 50 percent of the midden's fill was subjected to flotation.

Non-domesticated Taxa

Aizoaceae

Burned seeds from the midden were tentatively identified as *Trianthema portulacastrum* (horse purslane). They were small (2 mm in diameter) and rough and black in appearance (Correll and Johnson 1970;

Kearney and Pebbles 1969). They are quite similar to other taxa including *Astragalus* sp., *T. angustissimum* and *Triosteum aurantiacum*; therefore, a definitive identification of the La Cabraña seeds as *T. portulacastrum* is tentative. Horse purslane is an annual that favors sandy soils, disturbed areas, and it is a common weed in agricultural fields. It grows in elevations from 1,000 to 4,000 feet above sea level.

Horse purslane seeds are commonly encountered archaeologically in many parts of the Southwest. Ethnographically, it is eaten as greens and its edible seeds are collected in quantity. The plant appears with the onset of summer rains and the seeds are available in the summer into the early fall (Curtin 1984; Felger and Moser 1985). Crosswhite (1981) reports that the Akimel O'odham (Pima) allow irrigation water to flow out across the desert to encourage the growth of horse purslane.

Cactaceae

A single burnt *Opuntia* sp. (prickly pear) seed was recovered from the midden. It was morphologically similar to *O. phaeacantha*, although smaller in size than modern specimens. *Opuntia* is a frequently identified cactus in the archaeological record of the Southwest and its use by Native American populations of the region and northern Mexico is widespread. Both the pads and fruits are eaten; the flower is eaten raw or sometimes fried in deer fat (Castetter and Underhill 1935; Rea 1997). The fruit, available from July through September, is eaten raw or cooked, or sometimes dried or boiled down into a thick syrup; it is also a source of reddish dye (Robertson 1973).

The young pads, available in the early spring, are usually cut into thin strips and eaten after boiling or roasting (Harrington 1967). Very young pads, before thorns develop, are sometime used as scrubbing pads for personal hygiene. The seeds, although usually discarded, are sometimes parched and ground into meal (Huckell 1998). Although widely used ethnographically, seeds of *Opuntia* often occur in low numbers in archaeological sites. Huckell (1998:65) suggests this may be a preservation issue in that if the seeds from the fruit are discarded away from a source of heat and not carbonized, thus the likelihood of preservation is greatly reduced.

Prickly pears are available in the mountain and upper bajada zones of the western flank of the Franklin Mountains east of the site (O'Laughlin 1980). However, prehistorically, their distribution in the area may have been greater than it is today. Cactaceae pollen, although in minor amounts, was in floor samples from Rooms 2, 3, and 4, and from a pit in Room 6; it was also found in a pollen sample from the midden. The presence in the rooms may indicate the processing or consumption of prickly pear in those rooms.

Compositae

Compositae is the sunflower family. Two unburned seeds identified as *Ambrosia* sp. (ragweed) were recovered from the midden; these may be modern (Williams 1982). *Ambrosia* pollen was present in all the sediment samples analyzed from prehistoric contexts as well and the modern ground surface control samples. It represented less than 20 percent of the pollen in all the samples.

Ethnographic uses of ragweed include food and medicine for curing aliments of the eyes. As noted by Lindsay (1983), *Ambrosia* is reported to be a food source in the Southwest and Great Plains (Whiting 1978; Rea 1997).

Chenopodiaceous

Atriplex canescens (fourwing saltbush) was identified in the flotation samples from the midden. Represented were fruits, seeds, and wood charcoal; the fruits and seeds were unburned. Fourwing saltbush wood charcoal was also identified in carbonized roof fall from several of the rooms where it appears to have been used as a construction material.

Fourwing saltbush, a large, perennial shrub, is common in the desert Southwest; it prefers fine floodplain and alkaline soils. It produces a large, winged fruit in the summer that may cling to the plant well into the winter (Huckell 1998). The leaves, used as herbage, sprout in the late spring. The plant is common on the site today and occurs in the adjacent Riverine zone as well as the Leeward Slope and West Mesa zones to the west of the site and the Lower Bajada zone east of the Río Grande (O'Laughlin 1980).

Ethnographic data indicate the plant was used for a variety of purposes by Native American peoples. Saltbush charcoal commonly appears in hearths indicating wide use as a fuel wood. Huckell (1998:66) reports that the seeds are ground and eaten although it is not clear whether this includes the hard fruit case from which it is very difficult to extract the seed. Huckell further suggests intensive parching may have been a solution for this and an explanation for the presence of burned seeds in the archaeological record. The plant's salty herbage is commonly used to season food (Ebeling 1986), and medicinal uses are also reported (Stevenson 1915, 1993; Felger and Moser 1985; Rea 1997). Saltbush ash is also reported to be used as coloring for cornmeal; the Hopi use it to color piki bread (Castetter and Bell 1942; Whiting 1978).

Chenopodiaceae-Amaranthaceae

As typically stated in macrobotanical reports, archaeological seeds of the Chenopodiaceae-Amaranthaceae families are referred to as cheno-ams because they are virtually identical morphologically, especially after being charred (Huckell 1998). Cheno-ams remains are one of the most frequently recovered botanicals from archaeological contexts across the Southwest and their use is widely reported in the ethnographic literature. Cheno-am seeds were recovered from the midden at La Cabraña. Additionally, substantial amounts of cheno-am pollen were found in sediment samples processed from archaeological contexts at the site as well as the control samples from the modern ground surface near the site (Lindsey 1983).

Cheno-ams are weedy annuals that favor disturbed areas including the margins of agricultural fields where they are encouraged and in stream channels (Bye 1981; Huckell 1998; Rea 1977). They are important for both their herbage and seeds. The plants begin sprouting in late winter producing greens that can be used through the summer. The whole plant can be picked and used, or the leaves can be picked allowing the plant to sprout new leaves that can also be harvested. The Tepehuan boil the leaves and once drained, lightly season them with salt (Pennington 1969). Beginning in the summer the plants produce voluminous quantities of small seeds that are parched and then ground into meal. Among some ethnographic groups, cheno-ams contribute significantly to the diet (Castetter 1935; Castetter and Bell 1942; Felger and Moser 1985; Huckell 1998; Whiting 1978). The meal is also used to make gruel and is also used to extend corn meal (Pennington 1969). The Tohono O'odham (Papago) use the seeds quickly rather than storing them (Castetter and Bell 1942).

Cucurbitaceae

A burned seed of *Cucurbita foetidissima* (buffalo gourd) was recovered from the midden. The use of buffalo gourd as a food appears to be limited. Such gourds prefer alluvium or disturbed soil. They flower from May to August and then produce a baseball-size fruit (Huckell 1998; Kearney and Peebles 1960). Vines that are up to 6 m in length that can yield as many as 200 fruits. Buffalo gourd is present in the El Paso area today and can be found along roads.

Huckell (1998) reports that the seeds and immature fruit of the buffalo gourd are consumed although time and effort are required to remove the butter constituents of the young gourd; she further notes that the seeds are used as a source of cooking oil. Among groups in northwest Mexico, it is used as a kick ball and rattle (Pennington 1969, 1980). Huckell (1998) indicates that the rinds of the buffalo ground are thin and their use for utilitarian purposes is limited because they are easily broken. The mature fruit pulp and the

large starchy root are reported to produce a soap (Cutler and Whitaker 1961; Huckell 1998). Other types of gourds have a long history and variety of uses in the prehistoric Southwest (Adams and Fish 2011).

Fabaceae (Leguminosae)

Prosopis glandulosa. Both burned and unburned pods of honey mesquite were recovered from rooms and the midden. Evidence of the use of mesquite is common in the Southwest having been exploited by virtually every group within its range, mainly areas below 5,000 feet in elevation (Huckell 1998). Mesquite is common in the area of La Cabraña, it is a phreatophyte that favors moister environments such as floodplains. It ranges in size from shrubs to trees, although the size varies depending on age and soil and moisture conditions (Harrington 1967). Archaeologically, it appears as a food, fuel wood, and a source of construction material. Its use of by ethnographic groups in the Southwest is extensively documented (e.g., Adams and Fish 2011; Basehart 1974; Bohrer 1970; Castetter and Bell 1942; Doelle 1976; Rea 1997).

Mesquite flowers in the late spring and begins producing bean pods that grow throughout the summer. In the late summer and early fall the pods darken as the beans ripen. By the time they are fully ripe and dry, August to October, they are at their sweetest; they fall to the ground and can be collected, or they can be picked form the tree. The beans are nutritious, the ripe mesocarp contains about 30 percent sugar and 7 percent protein. The mesocarp encases a small seed that is difficult to process and digest, and although high in protein they are generally discarded (Huckell 1998). The flowers are also very sweet and are eaten as well (Harrington 1967; Weiner 1980).

As the above cited ethnographic accounts indicate, mesquite is a valuable resource. One of the greatest values of mesquite is that the beans and pods are easily stored with no preparation required. The beans or the beans and the pods or the pods themselves are ground or pounded into flour from which the seeds and other debris is removed. The Seri remove the seeds from the flower and parch them before grinding them into flour for use in pinole (Russell 1975). Huckell (1998) suggest the seeds may have been most frequently used during times of food shortages.

The flour produced is used in a variety of ways. Water is added and small cakes are formed and dried for later use or storage. Also, a flour and water mix is allowed to ferment producing in alcoholic beverage (Kearney and Pebbles 1960). The beans may be boiled and mashed and consumed as a mush or mixed with other dishes (Castetter and Opler 1936). The flour can also be made into a bread. Mesquite sap is sometimes collected and allowed to dry forming a hard, sweet candy.

Mesquite trees produce a variety of other useful products. Ethnographically, mesquite was widely used for medicinal purposes. The leaves and other parts of the plant were used to cure eye ailments by the Maricopa (Pee Posh), Mescalero Apache, and Akimel O'odham, and the bark, which is high in tannin, was used to treat intestinal problems (Basehart 1974; Weiner 1980; Rea 1997). The sap was used by the Apache for fletching arrows (Basehart 1974). The wood was used for a variety of purposes ranging from construction of habitations and other features to musical rasps.

At La Cabraña, mesquite was recovered as part of roof fall that included grasses, reeds, and weeds. Burned beans, pod fragments, and seeds were recovered from the midden; it is assumed these were food items. Mesquite charcoal was also recovered from the rooms in contexts indicating its use as fuel wood.

Prosopis pubescens. Abundant quantities of tornillo/screwbean were recovered. The tightly twisted morphology of seed pod of this tree legume is distinctive, making is easy to identify. Tornillo is found in the project area today and in the Riverine zone (O'Laughlin 1980); it prefers a mesic habitat, and its distribution is similar to that of honey mesquite. It generally ripens after honey mesquite with the pods ready for harvest in the late summer into the fall (Adams and Fish 2011; Kelly 1977). Burned tornillo

seed pods were recovered from floor contact and as part of the roof fall from Rooms 1, 3, 5, 6, 7, and 9 and burned seed pods and seeds were recovered from the midden

Tornillo is prepared in the same manner as honey mesquite, the pods are ground into flour that is made into bread or used to extend other flours and it can be made into a drink. Yuman groups harvest the pods and bury them for a couple of weeks or so because at the time of picking the seeds are hard and bitter (Bell and Castetter 1937; Spier 1933:59). This process results in the softening and sweeting of the seeds. In addition to being a source of food, the bark of the tornillo is used as a medicine to treat wounds and the wood is used for a variety of purpose from fuel wood to construction.

Tephrosia tenella. Burned seeds of *Tephrosia tenella* (Hoary pea) were recovered from the midden. The plant grows at elevations from 3,000 to 6,000 feet on hill and mesa slopes. It is not known to be an edible plant and its presence in the midden is not understood. Karen Adams (personal communication 2011) notes that Kearney and Peebles (1960) report that *Tephrosia* species are suspected of being poisonous. She further indicated, citing Ebling (1986) that *T. leiocarpa* is used to combat fleas, lice, and ticks, and *T. talpa* is a fish poison (Pennington 1963, 1969; Weiner 1980).

Gramineae

Numerous fragments of carbonized *Phragmites communis* (reeds) were recovered from both rooms and the midden. In the rooms, reeds were mixed with other burned grasses of the Family Gramineae and wood charcoal indicating that they were used in the construction of the roofs. Reeds are used for a variety of utilitarian purposes. The culm, the hollow jointed stem, was used for arrows and as prayer sticks, weaving rods, pipe stems, cigarettes, matting, cordage, and thatching. The rootstocks and seeds are used as food (Kearney and Pebbles 1969; Williams 1982). The seeds are available in the summer and rootstocks year-round although the rootstocks of young and less mature plants would likely be more tender. Reeds grow in marsh and wetland setting along riverbanks. It is of note that today none have been identified in the El Paso area (Foster et al. 1981).

Gramineae pollen (grasses) was abundant in the analyzed prehistoric sediment samples; however, it was less so in the modern samples suggesting that grasses were more prevalent prehistorically in the vicinity of La Cabraña than they are today (Lindsey 1983).

Cultigens

The fabled agricultural triad—corn, beans, and squash—were also represented in the macro-archaeobotanical remains at La Cabraña. Cucurbits (squash or pumpkin) and maize were recovered from the midden and beans were recovered from both the midden and several rooms. The use of cultigens in the Southwest began in the latter centuries of the Middle Archaic period (5,000–4,000/3,500 B.P.) and although their use quickly spread, it was many centuries later that for most Southwestern societies they became the primary source of food. By the Southwestern Pueblo period (A.D. 950–1500) a variety of dry farming and irrigation agricultural techniques were used across the region allowing the growth of various cultigens, the most important being maize (Zea mays) (Adams and Fish 2011). Evidence of cultigens in the pollen samples analyzed was limited to maize (Lindsey 1983).

Zea mays

Evidence of maize was manifested in both the macrobotanical remains and the site's pollen profile. Burned corn cupules, kernels, and cob fragments were recovered from the midden. These were identified as intermediate between a Pima-Papago and a Pueblo flour, possibly a Harinosa de Ocho (Charles Miksicek, personal communication 1982 to Charlotte Williams) and both eight and ten row varieties were identified. These varieties have been reported elsewhere in the area (e.g., O'Laughlin 1977, 1980). In

general, it appears that maize was the most intensively grown cultigen at La Cabraña, although it appears that the amount present was somewhat surprisingly low compared to other El Paso phase pueblos in the area (e.g., Brook 1966:4; Ford 1977:203, Green 1980:79–82; O'Laughlin 2001a). Of note, two El Paso phase rooms at the Cox Ranch Pueblo in the Hueco Bolson yielded an estimated 200 bushels of corn (Miller et al. 2009; Vermillion 1939).

As there is no evidence of irrigation at the site and it is assumed dry farming was the principal agricultural strategy employed. The occupants at the site may also have utilized their proximity to the river, farming on its floodplain taking advantage of the high-water table and easy access to water and occasional flooding of the river. Small feeder ditches may have been used. Fields of maize, possibly with beans and squash intermixed, could have been planted on the floodplain or on the leeward slope adjacent to the site either in pockets of suitable soil or in family garden plots. Maize has a long history of use in the American Southwest and its presence is intertwined with the development of all pre-Columbian and historic Native American cultures of the region; its appearance, spread, and use are some of the most widely studied aspects of Southwestern prehistory (e.g., Adams and Fish 2011:156–157).

Cucurbitaceae

Burned seeds from the genus *Cucurbita* were recovered from the midden. These were sufficiently charred and deteriorated that it was not possible to identify them beyond the level of genus. Cucurbits include squash, pumpkin, and gourds and virtually all parts of the plant—seeds, roots, fruit, and leaves—are used for food or containers. Early, before the arrival of gourds, pumpkins appear to have been used as containers with the seeds being eaten rather than the rind (Ford 1985; Huckell 1998). The most commonly occurring domesticated archaeological cucurbit in the Southwest is *C. mixta*.

Archaeobotanical evidence of the use of cucurbits by the Jornada Mogollon is limited. In part this is due to the lack of widespread excavations and probably poor preservation. Brook (1966) reports cucurbit remains from a pit at the Hot Well Site as does Ford (1977:200) at Three Lakes Pueblo. The Three Lakes Pueblo cucurbit was identified as warty squash, a squash with high water requirements and that is most often associated with irrigation (Ford 1977:200). Cucurbit remains from El Paso phase contexts have become more widely identified as more excavations have occurred. O'Laughlin (2001a) has identified them at Firecracker Pueblo east of El Paso. More recently, O'Laughlin (2005) reports additional cucurbit remains from the Hot Well Site, and Dering (2009) reports their presence at the Madera Quemada Pueblo.

Ethnographic reports indicate widespread use of cucurbits across the Southwest. Castetter and Bell (1942) report that the Akimel O'odham plant two crops a year using irrigation. The first is planted in early spring, the second in July—the Tohono O'odham plant in July with the onset of the monsoon. The crop is harvested in the fall and can be stored without preparation for up to six to nine months or more (Castetter and Bell 1942; Pennington 1980; Rea1997). They may be stored whole in well ventilated areas or in large, covered pits or sliced and dried and then stored in ollas (Castetter and Bell 1942). Castetter and Bell further indicate the Akimel O'odham and Tohono O'odham occasionally ate the flower and consumed small quantities of seeds (Rea 1997).

Fabaceae (Leguminosae)

Based on their size and morphology, three types of beans were identified at La Cabraña: *Phaseolus vulgaris* (common bean); *P. acutifolius* (tepary); and *P. lunatus* (lima bean) (Foster et al. 1981; Williams 1982).

Only one specimen of *P. vulgaris* was recovered. Williams compared it to Hopi common beans; the La Cabraña example was similar in morphology although somewhat smaller. The common bean appeared in the Late Archaic and its use became more prevalent with the widespread adoption of ceramic technology

(Adams and Fish 2011; Castetter and Bell 1942). Their advantage over the tepary bean is that they require a slightly shorter growing season, but they are not as hearty. Although commonly found in archaeological sites in the Southwest, they are not particularly abundant in sites in the El Paso region. Ethnographically, they are prepared by boiling. Spier 1933:64) indicates once Yumans shell the bean, the seeds are allowed to dry for three or four days for storage in a basket. The beans were boiled, sometimes being soaked first. Parched beans were ground and the flour mixed with "wheat flour." Boiled beans were sometimes fried. Pennington (1969:104–105) indicates the Tarahumara never soak their beans before boiling them. The beans are eaten once soft or sometimes mashed and fried on a *comal*; these are sometimes then mixed with meat and sometimes this mixture is used to stuff a tortilla.

Nine tepary beans were recovered. Both wild and domestic varieties of tepary are widely reported in the archaeological Southwest, including the El Paso area. They appear to have spread to the rest of the Southwest from the Hohokam area of Arizona (e.g., Bohrer 1987; Ford 1985; Huckell 1998; Kaplan 1960). Teparies are thought to have entered the Southwest about the same time as cotton around A.D. 500 probably via the west coast of Mexico (Ford 1985; Martin and Plog 1973), although a full understanding of their history and spread remains somewhat elusive because of their poor preservation qualities (Huckell 1998). Kaplan (1956) documented eight varieties of teparies from prehistoric and historic contexts and Freeman's (1912) earlier study indicates that even more varieties, many of which are now extinct, were present (Huckell 1998).

Williams (1982) measured the teparies following Kaplin (1956). The specimens ranged from 4 to 9 mm in length, from 8 to 11 mm in width, and from 4- to 9- mm-thick. The use of wild and domesticated varieties of teparies among the Akimel O'odham and Tohono O'odham of central and southern Arizona is well documented (Kaplin 1960; Rea 1997). Teparies are hardy and productive and therefore a valuable commodity. The primary reason for the widespread popularity of the tepary may be its extreme drought tolerance and it is also resistant to insects that commonly plague common beans (Huckell 1998; Kaplin 1960). Teparies are also highly absorbent. Huckell (1998), citing Freeman (1912), reports that in one experiment teparies produced approximately 40 percent more mass of cooked beans than did an equivalent amount of navy beans. Teparies are good sources of protein and carbohydrates (Freeman 1912; Huckell 1998; Kaplin 1960).

One shortcoming is that teparies have a longer growing season than the common bean or maize (Castetter and Bell 1942). The Tohono O'odham plant teparies with the onset of the monsoon in July and harvest them in October. The Akimel O'odham often plant two crops, one of which matures in late June and the other in October (Castetter and Bell 1942).

Two burned lima beans were recovered, one from the midden and one from the floor of Room 3. Both specimens were within the dimensions reported by Kaplan (1956) for lima beans (Williams 1982). The specimen from the midden was 1.2 × 1.0 cm and the one from Room 3 was 1.3 × 0.8 cm. Adams and Fish (2011:158) state that "some tropical cultivated species of beans, including lima and jack, came into the Southwest during a wave of introductions after 1,300 B.P. (Kaplan 1956; Sauer and Kaplan 1969)." Thomas O'Laughlin (personal communication 1983) stated that lima beans had been recovered from Embree Pueblo, an El Paso phase site dating to circa A.D. 1300, north of Las Cruces. To this date, La Cabraña and Embree Pueblo remain the only two prehistoric sites in the El Paso region to produce lima beans.

Pollen

La Mar W. Lindsay

The late La Mar W. Lindsay, then of the Environmental Studies Group, Salt Lake City, analyzed 27 pollen samples from La Cabraña (Lindsay 1983). This discussion is an abridged version of his report. The

samples were collected from both prehistoric contexts and the modern ground surface adjacent to the site (Table 12; Figure 72). Each sample processed weighed 50 grams and pollen was extracted following Mehringer (1967). Extracted material was stained with basic fuschin, mounted in glycerol, and then counted under 600× magnification. Samples were identified using modern reference collections at the University of Utah Herbarium.

Table 12. Pollen sample proveniences at La Cabraña.

Sample Number	Provenience
1	SW ¼ , Room 1 floor surface
2	Room 1, hearth contents
3	SW ¼, Room 1 floor surface
4	Room 2, NW ¼, floor surface from under a broken bowl
5	Room 2, hearth contents
6	Room 3, SW ¼, floor surface
7	Room 3, hearth contents
8	Room 3, SE ¼, floor surface from under an inverted metate
9	Room 4, SW ¼, floor surface from below a mortar
10	Room 4, hearth contents
11	Room 6, fill from subfloor cist
12	Room 6, E ½, roof fall at floor contact
13	Room 6, NE ¼, floor surface
14	Room 6, hearth contents
15	Room 7, SE ¼, floor surface
16	Room 7, hearth contents
17	Room 7, NE ¼, roof fall at floor contact
18	Room 8, hearth contents
19	Room 10, hearth contents
20	Room 7, adobe sample from north wall
21	Room 6, adobe sample from south wall
22	Room 1, adobe sample from west wall
23	Shovel test from possible trash midden (unexcavated) located 30 m southeast of the roomblock
24	Possible buried surface approximately 50 m north-northwest of roomblock
25	Modern ground surface approximately 50 m west of the roomblock
26	Modern ground surface approximately 55 m south of the roomblock
27	Modern ground surface approximately 50 m north of the roomblock

Note: Rooms 2, 8, and 10 were more disturbed and thus pollen preservation in these rooms may have been more affected that in the other rooms sampled and analyzed.

Pollen abundance and preservation was highly variable in the prehistoric samples. In most samples, counts of 200 grains or greater were obtained. Pollen from hearths and adobe wall samples was the most poorly preserved, and in many other cases pollen was sparse and the grains were either distorted or eroded. In many cases this required counting the entire slide to obtain adequate counts. Sample 6 (SN-6, Room 3) yielded only 176 grains and SN-7, hearth contents from Room 3, had too few grains to count, as did SN-14, hearth contents from Room 4, and SN-20, the sample of adobe wall from Room 7.

Additionally, counting was complicated by the presence of abundant silicates and spores or charred plant matter. Nevertheless, in most cases, only about 5 percent of the grains present were classified as indeterminate/unidentified. By comparison, pollen from the modern surface samples was abundant and well preserved, with the samples yielding counts of over 300 grains. In all, adequate pollen counts were obtained from 23 of the 27 samples submitted; only the count from SN-6 lacks statistical reliability and SN-7, SN-14, and SN-20 were essentially devoid of pollen.

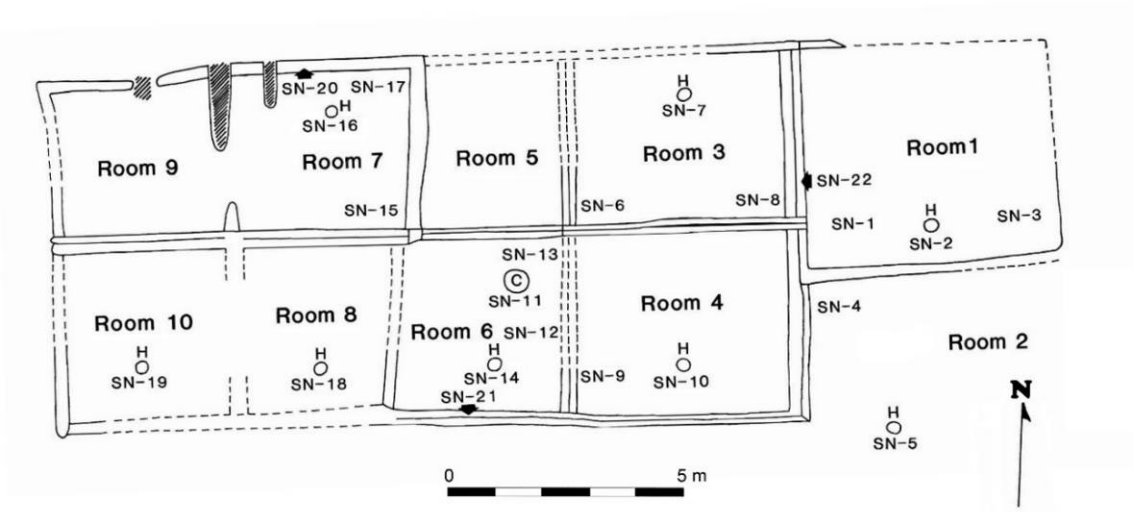

Figure 72. Map showing the location of pollen sampling loci within the La Cabraña pueblo roomblock.

Results

Arboreal pollen counts in both the modern and prehistoric samples were negligible; identified taxa consisted of *Pinus ponderosa* (ponderosa pine), cf. *Pinus edulis* (piñon pine), *Pseudotsuga* sp. (Douglas fir), *Juniperus* sp. (juniper), *Quercus* sp. (oak), *Populus* sp. (cottonwood), and *Salix* sp. (willow). Also identified, but only in the modern samples was *Acer negundo* (box elder) and *Tamarix* sp. (tamarisk/salt cedar). Although *Acer negundo* is native to North America, it may represent a historic/modern introduction to the area or perhaps transported pollen from higher elevations of south-central New Mexico. *Tamarix* is non-native and represents a historically introduced species.

The presence of arboreal pollen (pine, piñon, and juniper) from the mountain zone in the prehistoric pollen assemblage is not unusual. These pollens are commonly transported great distances by the wind and are common in the pollen rain across the Southwest (Martin 1963; McAndrews and Wright 1969; Mehringer 1967). Among these taxa, juniper was most commonly represented in the prehistoric samples; it was also present, in lesser amounts, in the modern samples. There are three possible explanations for the discrepancy between the prehistoric and modern samples: 1) juniper may have been more prevalent in the Franklin Mountains prehistorically; 2) juniper may have been used in the construction of the pueblo (and perhaps for other purposes); and 3) the rapid depletion of junipers stands in the area during early historic times. *Populus* and *Salix* are likely underrepresented in the prehistoric samples because their pollen does not preserve well (Havinga 1967).

Non-arboreal pollen types present were predominantly grasses and cheno-ams (Goosefoot family and amaranth). Low spine (*Ambrosia* type) Compositae were well represented and high spine types were abundant in some of the samples. *Artemisia* (sagebrush) occurred in a number of samples but was only present in trace amounts. Also present were creosote bush, *Prosopis* spp. (as both mesquite and tornillo), and *Lycium* sp. (wolfberry). On average, these accounted for two to three percent of the samples in which they were identified, although in the case of SN-12, *Prosopis* spp. accounted for 30 percent of the sample. Also identified, represented in minor amounts, are *Sarcobatus* sp. (greasewood), *Ephedra* sp. (Mormon tea), and *Acacia* sp. (acacia). Represented in very minor amounts were *Eriogonum* sp. (a wild buckwheat), *Polygonum* sp. (a wild buckwheat), *Rumex* sp. (a wild buckwheat/docks and sorrels), lilies including *Yucca*, and an unidentified umbel (an inflorescence that consists of a number of short flower

stalks). Pollen representing riparian taxa included sedge and *Typha latifolia* (cattail); these were not abundant although five percent of the grains in SN-9 were *T. latifolia*.

Prehistoric cultigens were poorly represented in the pollen remains. *Zea* was represented in small amounts in samples SN-3, SN-6, SN-15, SN-16, SN-18, SN-19, SN-22, and SN-23. *Zea* was present in five of the seven rooms sampled and likely represented consumption or storage of maize in the rooms (SN-3, 6, 15, and 16). In two cases, *Zea* pollen was recovered from the hearths in Rooms 8 and 9 (SN-18 and SN-19). This could represent the preparation of corn within the room or the fact that corn cobs or plant parts may have been burned in the hearths. SN-23 was from the midden and the presence of maize may represent the disposal of plant parts or possibility it represents pollen rain from a nearby cornfield.

Some of the legume pollen identified may represent *Phaseolus,* but this is uncertain. As noted above, three species of beans were recovered from the site. No cucurbit pollen was identified, although several burned cucurbit seeds were recovered from the midden.

Fouquieria sp. (ocotillo) and *Carya* sp. (hickory) were identified only in the modern surface samples. Today, ocotillo does not occur at or near the site and the origin of the *Carya* sp. is unclear.

Economic Implications

The analyzed pollen record from La Cabraña provides only limited insight into prehistoric diet and subsistence. However, it does support and supplement the macrobotanical data from the site. Grass and cheno-am pollens dominate the pollen assemblage. Grass seeds could have been harvested and processed for consumption and numerous genera among the cheno-ams, particularly Chenopodium (goosefoot) and *Amaranthus* (amaranth), are sources of food (e.g., Pennington 1963; Whiting 1978). Also likely represented among the cheno-ams was *Chrysothamnus* sp. (rabbitbrush) and saltbush. As seen in Figures 73 and 74, cheno-ams occur in high frequencies in some of the rooms.

Economic composites identified included both *Ambrosia* type and *Helianthus* and both are reported as food sources in the Southwest and Great Plains (Asch et al. 1972; Whiting 1978). However, *Helianthus* was only identified in SN-25, a sample from the modern ground surface. High spines identified included *Solidago* sp. (goldenrods), *Senecio* sp. (daisies), and various thistles, some of which have medicinal uses (Whiting 1978). The subfloor cist in Room 6, sample SN-11, contained an abundance of high spine pollen.

Mesquite and tornillo, *Prosopis* spp. pollen counts were variable room to room with Rooms 1 and 7 having moderate amounts of the pollen present. Both are found in archaeological sites in the area and are known and widely use sources of food (Bell and Castetter 1937). Sample SN-12, roof fall/floor contact collected in the east half of Room 6, yielded a relative high amount of *Prosopis* spp. pollen that is likely associated with construction materials used in the roof although it is possible that it also is associated with food processing in the room.

Several the taxa identified in the pollen assemblage served or had secondary uses as utilitarian times. Grasses were found mixed in roof fall indicating they were used in the construction of the pueblo. *Sarcobatus* (greasewood) could have been used in construction as well as a fuel (Whiting 1978; Vestal 1940).

Zea pollen was the only cultigen identified with certainty, although the Leguminosae pollen identified may have included some *Phaseolus*. The trace amounts of *Zea* pollen in a number of samples and its occurrence in the archaeobotanical assemblage suggest a dependence upon the plant. Perhaps a heavy reliance on maize in the context of rapid environmental fluctuations (see below) may have been particularly disadvantageous in the latter stage of the occupation of the site and maybe area in general.

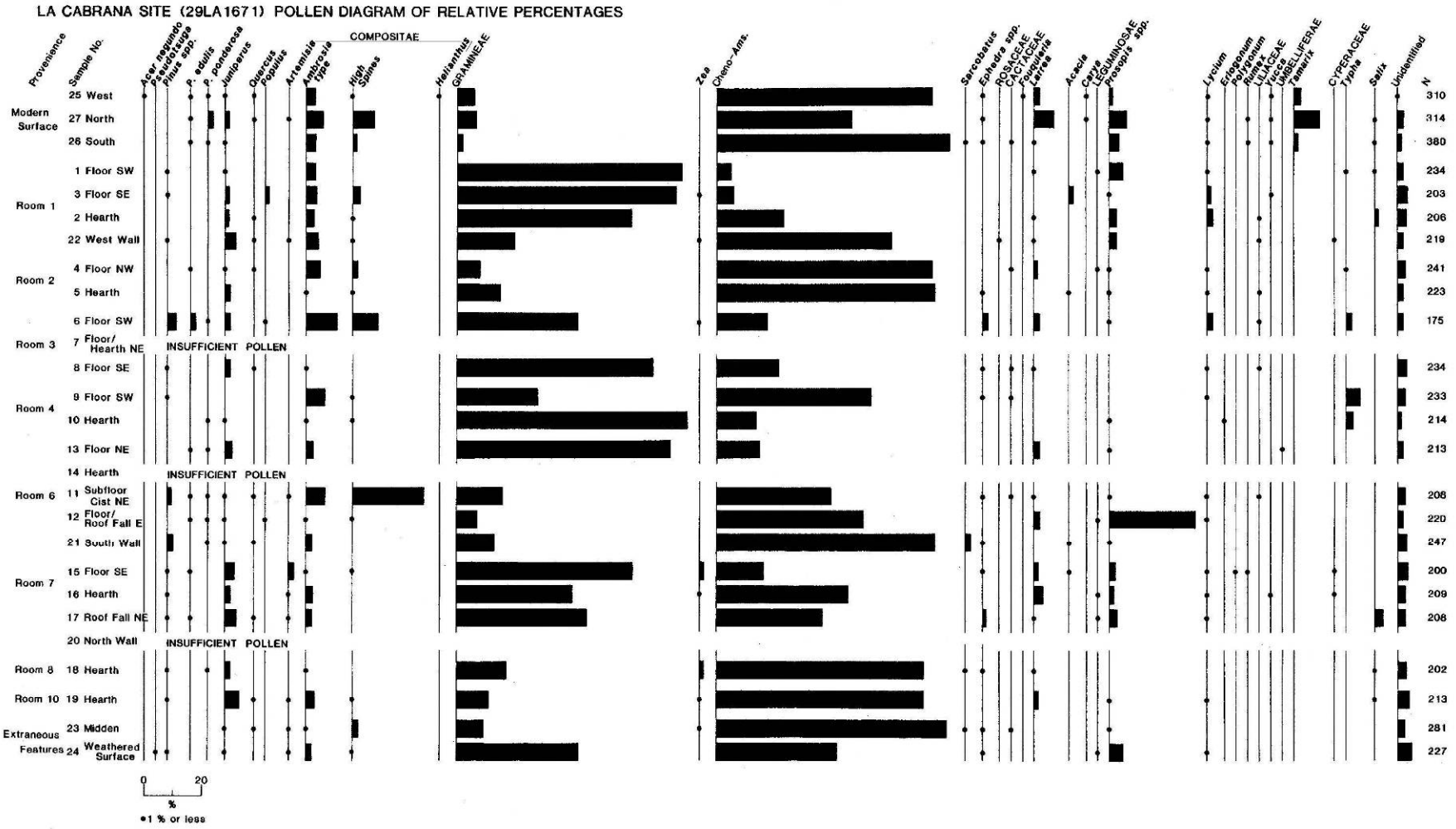

Figure 73. La Cabraña pollen diagram of relative percentages.

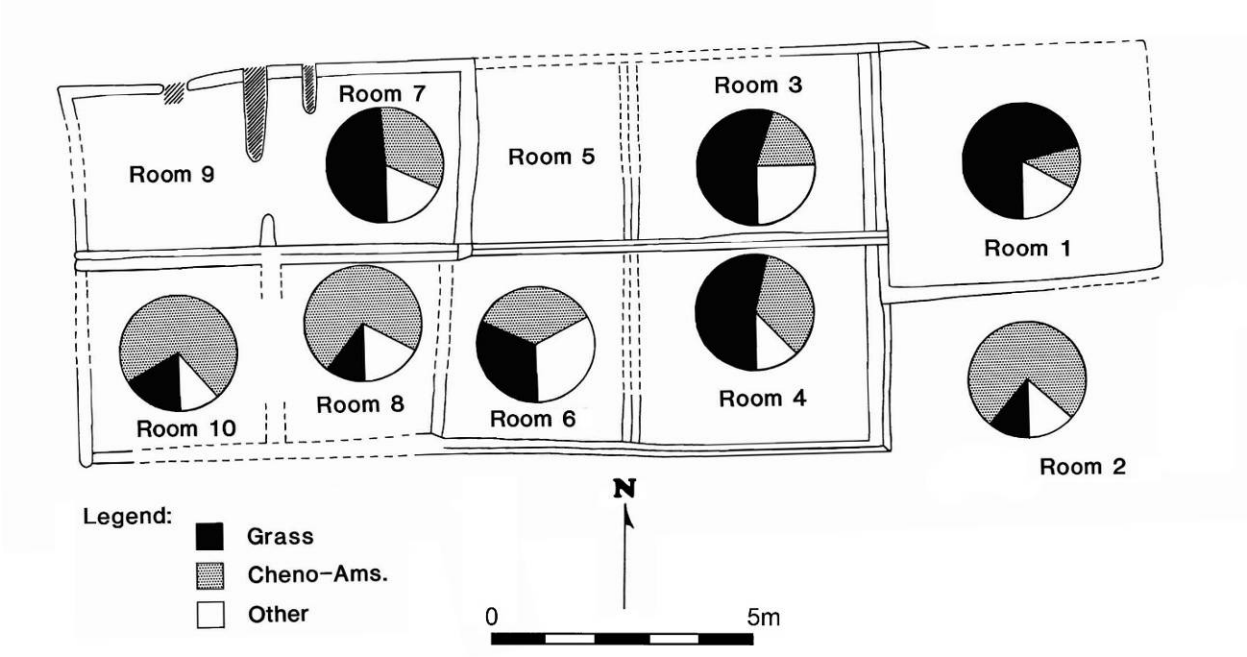

Figure 74. Cheno-am-Grass ratios by room at La Cabraña.

Intrasite Variability/Room Function

Inferences, based on the results of the pollen analysis, regarding intramural variability and room function are limited by the preservation, modern/historical disturbances (Rooms 8 and 10), and the limited number of pollen samples processed from the rooms. Nevertheless, some patterns are observable. Using the results of all the samples (excluding the modern ground surface samples) analyzed, a pattern in the dominance of grasses and cheno-ams is noted. Rooms 1, 3, 4, 6, and 7 show a significant abundance of grasses over cheno-ams while in Rooms 8 and 10 cheno-ams dominate. However, Rooms 8 and 10 appear to be significantly more disturbed by post-abandonment processes than the other rooms, so the significance of high amounts of cheno-ams is unclear; although it is possible different construction materials are represented or possibly issues with sampling. In the area designated Room 2, a possible extramural activity, grasses and cheno-ams are represented in amounts similar to Rooms 8 and 10. It is of note that the ratios of cheno-ams over grasses in the modern surface samples are similar to those of Rooms 2, 8, and 10.

Not surprisingly, the roof fall samples (SN-12 and SN-17) produced quantities of *Prosopis* spp. pollen and moderate amounts of *Salix*. The pollen identified in the adobe wall samples submitted for analyses was variable and the only thing of potential significance was the identification of *Zea* pollen in SN-22, suggesting the soil collected for the making of adobe was in proximity to a corn field. The pollen samples from the hearth and from the cist in Room 6 yielded no insights into room function or the activities carried out within the room. The pollen data, in general, indicates that all or most of the rooms served as nothing more than general, multipurpose rooms and that none served a special function.

Environmental Implications

Only the better-preserved samples were referenced in the discussion of grasses versus cheno-ams. Excluding the samples from Rooms 2, 8, and 10, evidence suggests that during the later El Paso phase, grass pollen counts dominate at a ratio of 3:2 over cheno-ams, while in the modern samples cheno-ams dominate 15:1 over grasses. A similar pattern is seen at Pickup Pueblo, an El Paso phase site northeast of

El Paso on the eastern side of the Franklin Mountains (Horowitz et al. 1981). The data from the upper levels of Zone 2 at the Keystone Dam Site 9 (dated A.D. 900–1100 and A.D. 1100–1400) (Culley and Clarey 1980; O'Laughlin 1980) appear in contrast to those data from La Cabraña and Pickup Pueblo. The La Cabraña data indicate a marked local environmental change from El Paso phase to modern times. When the data from La Cabraña, Pickup Pueblo, and the Keystone Dam Site are considered, while recognizing the ambiguities in comparing these three data sets against each other, there appears to be evidence of a rapidly fluctuating and changing environment. The question that arises is whether the shift from the dominance of grasses to the dominance of shrubs occurred at the end of the El Paso phase. Horowitz et al. (1981) suggest, based on the limited data from Pickup Pueblo, that a grassland dominated environment persisted to the late 1800s. Although O'Laughlin (1980:14) suggests this is in part due to overgrazing in the 1800s, this may ignore the significance of the lack of grasses in the upper levels of Zone 2 at the Keystone Dam Site. I agree with O'Laughlin' s (1980:14) suggestion that environmental fluctuations likely occurred, but such fluctuations may have had greater consequences than originally suggested, and that the relatively brief occupations at La Cabraña and Pickup Pueblo may be tied to the occupants' inability to adapt to such rapid change. *Lycium* pollen occurs in limited amounts with trace amounts present in more than half the samples. Although the berries are used as food (Whiting 1939), it is not clear whether its presence is a result of consumption or whether it is part of the natural pollen rain of the area.

Rumex, *Yucca*, *Salix*, *Populus*, and *Ephedra* pollen, although represented in trace amounts, represent other potential economic plants; their presence is documented archaeologically and their use is documented ethnographically. *Rumex* is used as a source of dye and in construction; *Yucca* used for twine and rope; *Salix* and *Populus* are used in construction; and *Ephedra* as a beverage (Harrington 1967; Whiting 1978). Samples SN-9 and SN-10 from Room 4 contained moderately sizeable amounts of *Typha* pollen. It too was used archaeologically and ethnographically as food and in construction (Madsen and Lindsay 1977; Whiting 1978).

SUMMARY

The prehistoric faunal, macrobotanical, and pollen remains recovered from La Cabraña indicate an agriculturally based diet supplemented by a variety of non-domesticated animals and plants. Faunal remains indicate cottontail and jack rabbits along with fish may have contributed regularly to the diet of the occupants of the pueblo. Other remains of likely prehistoric association included spiny soft-shell turtle and rodents. The unburned turkey bone recovered is of uncertain temporal association. Additionally, a number of other unburned elements from birds, rodents, and a snake, were also recovered; these most likely represent post-occupational origins. The lack of remains of large ungulates such as deer is of note although they could have been hunted and butchered at the kill site and the meat packaged and transported back to the site.

Evidence of maize, beans, and squash was found. Maize appears most frequently in both the macrobotanical and pollen records. It is the most commonly represented of the domesticates and was likely cultivated near the site. Evidence of beans and cucurbits was far more meager with the presence of the lima bean being of particular interest. Nevertheless, these three cultigens complement one another nutritionally thus providing a nutritionally rounded diet and their presence is a further demonstration of their widespread use during the El Paso phase.

Mesquite and tornillo were relatively prominent in the macrobotanical remains, both as food remains and in the charred remains of roof fall. Not only a dependable dietary supplement, stored these two legumes could have provided sustenance during times of seasonal shortages of cultigens or crop failure as well as extending stored supplies of cultigens such as corn. Other evidence of the use of economically viable wild plants included prickly pear, horse purslane, cheno-ams, and cattail was recovered. Many of these plants

would have produced greens early in the spring that could have been used and then later, seeds that could have been collected.

Together, the subsistence remains recovered from La Cabraña are generally typical of those found in El Paso phase settlements. Further, these remains appear to represent an unspecialized, broad-based adaptation to the local environment, oriented toward use of the riverine setting of site (e.g., O'Laughlin 1977).

The pollen evidence generally mirrored the macrobotanical data although several species (cattail, willow, and cottonwood) were unique to the pollen record. The pollen data suggest evidence of environmental fluctuation and a higher ratio of grasses was present in the past representing a slight to moderate difference between the prehistoric environment of La Cabraña and that of the modern era.

CHAPTER 6
SUMMARY AND CONCLUSIONS

La Cabraña is a mid-fourteenth century Jornada Mogollon pueblo, on the first terrace adjacent to the Rio Grande in the lower central Rio Grande Valley within the Mesilla Bolson. The pueblo was generally poorly preserved, having been subjected to a series of post-abandonment impacts that likely included overbank flooding of the Rio Grande, sheet runoff from rainfall, wind erosion, bioturbation, and the use of the site area as a modern era goat farm and farmstead. These impacts had destroyed portions of walls and floors. Nevertheless, investigation of La Cabraña has expanded extant knowledge of the Jornada Mogollon El Paso phase.

With one possible exception, that being Worley Pueblo (Nuestra Señora de las Conejas) site complex, no large plaza-oriented pueblos have been reported in proximity to La Cabraña. Worley Pueblo, southwest of La Cabraña atop the mesa overlooking the Rio Grande Valley, is cited as a large habitation area covering an area of 53 acres (Taylor 1981). However, the site has not described in detail. Most of the known large plaza-oriented pueblos occur in the Hueco Bolson to the east of the Franklin Mountains or well to the north in the Tularosa Basin or along the western flanks of the Sacramento Mountains (Marshall 1973; Miller et al. 2009). Several small, partially investigated linear pueblos have been reported in the area of La Cabraña and Worley Pueblo. If indeed the Worley Pueblo was a large El Paso phase pueblo, it is possible if not likely the small pueblos in its vicinity with economically, socially, and ritually tethered to the site.

Small pueblos near La Cabraña include the Bob John Site (Brook 1984), Anapra Pueblo (Scarborough 1985), and the Country Club Pueblo (Anonymous n.d.; Cosgrove and Cosgrove 1965). These too have been badly damaged or nearly destroyed and the investigations that occurred were limited. At the Bob John Site, northwest of La Cabraña, Brook (1984) excavated one room, a partial room, portions of a "patio," and tested a trash mound. Much of the site had already been destroyed by the time Brook was able to conduct his salvage excavation and thus the full extent of the site is unknown. The artifact assemblage from the Bob John Site was less varied than that recovered from La Cabraña; however, this may have been the result of the extremely poor condition of the site and the limited nature of the investigation. There were several features that distinguished the Bob John Site from La Cabraña. Of particular note is that Brook found evidence of plastered floors and evidence of refurbishing of features. Additionally, there was evidence that a "wide street" separated the roomblocks of the pueblo and evidence of large well-plastered surfaces that Brook suggested to be communal activity areas. Most of the rooms at the Bob John sites were small, less than 3 m^2. Brook also makes mention that the roofs of the Bob John pueblo were adobe plastered and he states that they were not at La Cabraña. Despite Brook's assertion, although the evidence was not pervasive, the roofs of the La Cabraña rooms were likely plastered as well.

Anapra Pueblo is southwest of La Cabraña. It is an east-west oriented roomblock like La Cabraña and consisted of at least eight rooms (Scarborough 1985). As noted above, the site had been heavily damaged by construction. Rooms ranged in size from approximately 3.6 to 23.8 m^2. The smallest room was smaller than any of the La Cabraña rooms and was in the range of those thought to likely represent a storage rooms. The largest room approached the size of Room 2 at La Cabraña and thus possibly represented the pueblo's communal room. Scarborough (1985:129) believed, based on wall abutment patterns, the roomblock was not a single, well-planned construction. Further, he believed he had identified two, possibly three, distinct floors. The upper floor (Floor 1) was separated from Floor 2 by 20 cm of compacted windblown sand leading him to suggest the pueblo may have been abandoned and reoccupied, something not evident at La Cabraña. Floor 1 appeared to be an unplastered compacted surface whereas Floor 2 was a poorly preserved plastered surface. Additionally, two postholes, one along the northern wall of the excavated room and one along the western wall, were identified. The largest was 23 cm in

diameter. Scarborough speculated these were associated with the construction of the room walls rather than roof supports. However, one would expect that if they were associated with the construction of the walls and placed to strengthen the walls, they might have been embedded in the walls. No such features were identified at La Cabraña. The third possible floor—based on Scarborough's Figure 3—was approximately 18 cm below Floor 2; however, he was uncertain of its identification as a floor. This tentatively defined surface rested on a substrate red sand and decomposing caliche that underlay the pueblo.

This cursory comparison of La Cabraña to the Bob John Site and Anapra pueblos demonstrates that although there is much in common between small, linear El Paso phase pueblos, there is equal variability in their construction and use. No detailed information is available for the Country Club Pueblo, to the northwest of La Cabraña. Scarborough (1985:135) mentions the presence of yet another small Anapra-like pueblo across an arroyo adjacent to the Anapra Pueblo. The clustering of these small pueblos within a 10 km radius of La Cabraña is of interest and undoubtedly speaks of their proximity to the water as well as the abundance of agriculturally suitable land and the array of biotic and lithic resources in the area.

Site Structure

El Paso phase Jornada Mogollon pueblos fall into two broad categories, sites consisting of small linear roomblocks and larger, plaza-oriented pueblos (e.g., Marshall 1973; Miller et al. 2009). La Cabraña is generally typical of a late El Paso phase Jornada Mogollon small linear pueblo and shares many traits with similarly excavated linear pueblo sites (e.g., Brook 1984; Gerald 1988; Scarborough 1985). The La Cabraña roomblock consisted of up to ten rooms arranged in a double row of five rooms each with the pueblo oriented east-west. The rooms at La Cabraña, including projected floor areas for Rooms 2, 8 and 10, ranged in size from 9.5 to 24.8 m^2. The two rooms on the eastern end of the pueblo, Rooms 1 and 2, are nearly a third to twice as large as the other eight rooms present. Room 1 appears to be the large communal room for the pueblo, while the nature and function of the area designated Room 2 (with its atypical hearth location) is undetermined. We have suggested the possibility that the Room 2 area represented an attached ramada area; however, it is most likely the poorly reserved remnant of a room. If indeed a room, it appears that La Cabraña may have had two large communal rooms, possibly one for each tier of habitation rooms.

Excavations beyond the roomblock were limited to a single, barrow pit midden east of the roomblock and a test unit excavated to attempt to define the extent of Room 2. Thus, little can be said regarding the nature, number, and distribution of extramural features at the site and therefore, overall site structure. Until recently, little in the way of systematic excavations in extramural areas of Jornada pueblos have been completed. Such excavations at Firecracker Pueblo (O'Laughlin 2001a) and Madera Quemada Pueblo (Miller and Graves 2009a) exposed a variety of extramural pits, cists, work surfaces, and isolated structures. Undoubtedly, some such features were present during the occupation of La Cabraña.

Architecture, Room Function, Population Size, and Social Organization

As detailed in Chapter 3, architecturally the La Cabraña Pueblo appears typical of late El Paso phase pueblos. Wall construction was of coursed adobe and evidence of foundation footers was identified for several the rooms. No entries were identified, and it is presumed the rooms in the northern tier had entries that opened to the north and those in the southern tier had entries that opened to the south. This presumption is based on the location of the hearths in the rooms, which were centrally located off either the northern or southern room walls.

Roof construction was from parallel beams of mesquite or tornillo spanning the width of the room; these were then covered with branches of the same and that these were then covered with smaller branches, grass, and reeds before the roofs were plastered. One possible exception was Room 8 where an alternative method of roof construction may have been identified (see Figure31). There was some suggestion that two primary beams spanning the width and length of the room were placed perpendicular to one another, crossing at the center of the room, and then smaller branches were placed diagonally from the walls of the room to the main beams. These were then covered with grass and plastered. There is a certain logic and economy to this construction method if large beams were limited during the construction of the pueblo. Two possible postholes were identified in only one room, Room 5, but they are not believed to be roof support posts. No evidence of roof support posts was identified.

Remnants of interior wall plastering were noted in several rooms. Floors were either compacted earth or lightly plastered, and in some rooms plastering was evident around the hearth. Other than the hearths, floor features were rare. Room 6 had a large subfloor cist that apparently contained votive deposits. Room 3 had a shallow pit or cist near its hearth; its function is undetermined. Although preservation was an issue there was no evidence of remodeling or refurbishing of the floors. The lack of floor features and refurbishing is generally typical of Jornada riverine pueblos.

Eight of the ten rooms, Rooms 3 through 10, are thought to have functioned as habitation rooms; all but two had hearths in the standard location; the likely hearth areas of Rooms 5 and 9 had been destroyed post occupation. Although several of the rooms are smaller, there was no evidence that they functioned exclusively as storage rooms. Room 7—the room with the square hearth and two deposits of worked minerals, crystals, and fossils, and a unique necklace with a pendant on the floor—may have been occupied by an individual perceived to have special powers or curing abilities. Whether the room served exclusively as place of curing activities is a point of speculation.

Both Rooms 1 and 2 were larger than the other rooms. Room 1 is interpreted to be a communal room. In general, at least one such room is typical of El Paso phase pueblos. Other than its size, one clue to the special nature of Room 1 may be the broken and burned pile of stone found north of the room's hearth. It appeared as the sheared off mouth of a mortar, although it is possible it was an elaborate stone hearth collar made specifically for the room's hearth. It exhibited extensive evidence of exposure to heat, more than might be expected from the burning of the room. It is also of note that Room 1 was attached to the northern tier of rooms and that, based on the location of the hearth, the entry was probably in the south wall.

The function of the area designated Room 2, one of the most poorly preserved areas of the roomblock, remains equivocal. The south and east walls were completely missing and initially we suggested the area may have been an attached, roofed ramada. This is questionable in that the floor area was squared off as if its boundaries had been defined by walls. If a ramada, one would have anticipated that charcoal and use staining would have projected beyond the boundary of the roomblock. It is of further note that the hearth in Room 2 was in an atypical location. If a walled room, Room 2 would have cut access to Room 1 if the door to Room 1 was in its southern wall. As previously discussed, it is possible that Room 2 was a second large communal room at La Cabraña. Whether it replaced Room 1 or whether it was built to serve a second lineage or social unit at the pueblo is undetermined. Although the function of Room 2 remains unclear, we now conclude it is likely the poorly preserved remnant of a room rather than an attached ramada.

Attempting to generate population estimates for habitation sites has a long history in archaeology. Recently, Miller (2009b) has reviewed the methods, mostly based in cross cultural studies, underlying various models used to develop population estimates for the Madera Quemada Pueblo. Following Miller, we generated a population estimate of 15 to 20 people for La Cabraña. We further postulate that it is

likely that at least two households were present. How these households were organized within the pueblo and their social obligations to one another remain points of conjecture.

Chronology

Five ^{14}C assays were processed from La Cabraña (Table 13; Figure 75; Appendix A). These assays, the nature of the El Paso Polychrome assemblage, and the accepted intrusive ceramic preproduction rages indicate La Cabraña is late El Paso phase pueblo likely dating sometime between A.D. 1300 and the early A.D. 1400s. Four of the five ^{14}C assays appear to support this. The fifth, UCR-1528, is thought to be aberrant. The reason for the discrepancy between it and the other four assays is unclear. It may be the oft cited "old wood" problem or contamination of the charcoal from which the sample was derived.

The next questions are when was the site built, how long was it occupied, and when was it abandoned? A single sherd of Maverick Mountain Polychrome is suggestive of an early A.D. 1300s date for the initial occupation of the site as it has a relatively short period of production, A.D. 1275–1325. Maverick Mountain Polychrome is not frequently reported in El Paso phase contexts and its presence at La Cabraña is not fully understood. The production dates for Heshotauthla and Prieto polychromes range from A.D. 1275 to 1400. These are also taken to suggest a fourteenth centaury occupation of the site. The other intrusive ceramic types do little to clarify or narrow an estimate of when the pueblo may have been constructed.

Returning to the ^{14}C assays, the average date of the median probabilities for the four accepted ^{14}C assays is A.D. 1368. This is suggestive of a mid A.D. 1300s initial occupation of the site but does not provide any further resolution to the issue.

The poor preservation of the site and the lack of investigation of extramural areas surrounding the roomblock greatly hinder estimating the duration of the occupation of the site. Nevertheless, it appears that the occupation La Cabraña was short lived. This assumption is based primarily on architectural details from the pueblo; specifically, the lack of remodeling within the rooms. The fact that hearths were not repositioned or remodeled and the lack of evidence of replastering of floors are the primary indicators that the occupation was not long.

Table 13. ^{14}C assays from La Cabraña (LA 1671), south-central New Mexico.

Lab #	^{14}C yr BP (1 σ)[1]	2σ Calibrated Age[2] (probability)	Median probability	Material	Context
UCR-1524	600±90	A.D. 1229–1456 (p=1.000)	A. D. 1352	Grass and reed fragments	Floor, SE corner Room 7
UCR-1525	530±80	A.D. 1280–1616 (p=1.000)	A. D. 1394	Mesquite charcoal	Floor, SE quarter Room 4
UCR-1526	620±80	A.D. 1262–1438 (p=1.000)	A. D. 1347	Mesquite charcoal	Floor, SW quarter Room 3
UCR-1527	600±70	A.D. 1279–1432 (p=1.000)	A. D. 1351	Grass charcoal	Floor SE quarter Room 1
UCR-1528	780±80	A.D. 1041–1388 (p=1.000)	A. D. 1228	Mesquite charcoal	Floor, NE quarter Room 3

[1]BP = A. D. 1950

[2]All ages calibrated with Calib 7.10 using the IntCal13 northern hemisphere atmospheric for non-marine materials (Reimer et al. 2013).

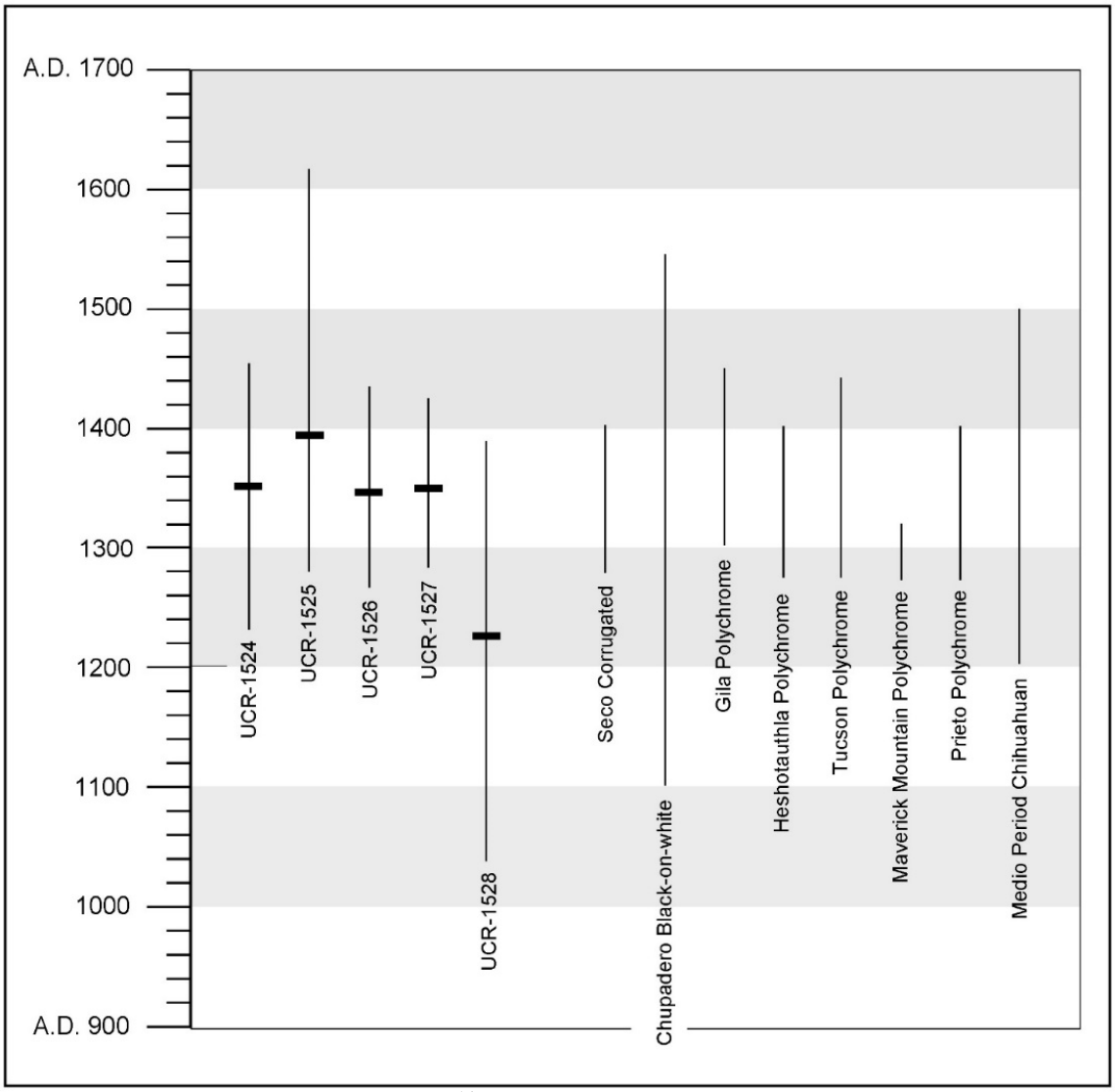

Figure 75. Graphic display of 2σ calibrated ^{14}C ages with median probability from La Cabraña and intrusive ceramic production dates ranges.

Although two barrow pit middens were identified, one of which was excavated, there was no evidence of extensive accumulations of trash (e.g., trash mounds or sheet trash) in proximity to the site that would suggest long term use of the site. The lack of such, however, is likely due to the extensive post occupational erosion and disturbance of the site area. Additionally, only a single human burial was recovered; this too is taken as a sign of a short occupation. Multiple researchers (e.g., O'Laughlin 2001a; Mauldin 1995; Miller and Graves 2009c) have noted the lack of burials in lowland Jornada pueblos and tied this to high residential mobility and short-term occupations of sites. No estimate of when the pueblo was abandoned is offered other than it was most likely abandoned by the early to mid A.D. 1400s. That said, it is postulated that the occupation of the pueblo was far less than 100 years.

One final observation regarding the occupation of the pueblo. As reported in Chapter 1, when Herbert W. Yeo (n.d.) first recorded the site, he suggested based on this identification of Mimbres Black-on-white, that the site could date as early as A.D. 1050 to circa 1350. He further suggested the possibility of two separate occupations: one around A.D. 1100 and another one around A.D. 1350. No evidence of an

occupation earlier than circa A.D. 1300 resulted from the La Cabraña excavations, and there is no evidence the site was a multicomponent site.

Biotic and Abiotic Resource Procurement

As has been detailed in previous chapters, a variety of wild and domestic biotic and abiotic resources were captured and used by the occupants of La Cabraña. To better understand the use of the local and adjacent environs by the La Cabraña occupants, following O'Laughlin (1980:14–19) and as discussed in Chapter 2, we divided the study area into six environmental zones.

La Cabraña is on the eastern edge of the Leeward Slope Zone and borders the Rio Grande floodplain. Today, a number of native plants and animals such as mesquite, grasses, yucca, four wing saltbush, jackrabbit, cottontail, reptiles, and rodents are available in this zone and many of these were represented in the prehistoric faunal and botanical remains at La Cabraña. The soils in this zone are sandy and gravelly with rapid permeability and low water holding capacity. Nevertheless, they are suitable for agriculture lending themselves to dry farming or rainfall runoff techniques that could have allowed the production of crops. Additionally, numerous shallow drainages run between the ridges and slopes of the area and these could have been planted as well to take advantage of rainfall runoff.

The Leeward Slope zone also contains a variety of lithic resources, most of which can be obtained in the arroyos and washes that cut through its surface. Small gravels and cobbles of the Santa Fe Group erode out of the deeper arroyos; exposed are varieties of rhyolites, quartzites, small cherts, obsidian nodules, and other lithic types. Clay beds are also found in portions of the zone and may have been used as sources for pottery clay or building material. La Cabraña is on a large clay deposit that extends to the edge of the zone and the Rio Grande floodplain.

The Riverine Zone, encompassing the Rio Grande and its floodplain, lies approximately 20 m to the east of the site. Prehistorically, a variety of wild plants that are of dietary and utilitarian potential would have been present. Tornillo, cattail, reed, amaranth, goosefoot, purse1ane, cottonwood, mesquite, and willow are present today and were all represented in the prehistoric botanical remains recovered. Animals present include cottontail, jackrabbit, various rodents, migratory waterfowl, other birds, turtles, and fish; many of these were represented in the site's prehistoric faunal assemblage. Although not found at La Cabraña, deer may also have frequented the river area on occasion.

A large amount of arable land was available within the Riverine Zone. The floodplain soils contain high concentrations of nutrients, most of which are replenished with the yearly floods. These loamy soils have a high-water holding capacity and are well suited for agriculture. Today, the water table here is high, about 3 to 5 m below the surface. The presence of a permanent water source nearby and the high-water table make it highly probable that agriculture was practiced in this zone. However, use of the floodplain would have been tempered by any annual and seasonal flooding that would have occurred.

It is possible that double cropping might have been practiced along the river. The growing season is long enough and water is generally plentiful. This practice too would have been subject to the whims of annual, and perhaps more importantly, seasonal flooding. Regardless, it is likely that the occupants of La Cabraña may have planted fields in both the Leeward Slope and the Riverine Zones as a strategy to insure successful food production. Additionally, the river's floodplain may have been of major importance during times of drought as the high-water table may have provided water even when the river was dry and plots placed to take advantage of runoff failed. Regardless, it is likely the Riverine Zone would have been the favored locale for agriculture.

Although its agricultural potential is high, there are few abiotic resources present within the Riverine Zone. The one exception appears to be the andesitic dike adjacent to the site. This dike is likely responsible for the high-water table north of the dike as well as being the source of much of the ground stone material at the site.

The West Mesa Zone, west of the Leeward Slope Zone, is characterized by sandy soils and coppice dunes. Mesquite and yucca may have been obtained here, as well as jackrabbit, some cottontail, and a variety of rodents and reptiles. Farming may have been practiced in this zone but probably occurred around small playas (O'Laughlin1980:11). Few lithic resources are available; however, caliche underlies the sandy soils and it may have been obtained for wall plastering and other tasks.

The Lower Bajada Zone on the eastern side of the Rio Grande is cut by deep arroyos and features some recent dune formation. To access this zone the occupants of La Cabraña would have had to cross the river, which would have been possible only at times of low flow or session of the flow during seasonal or prolonged droughts. Soils are primarily thick and gravelly. A variety of fauna and flora can be found here as well as on the dune areas and in the arroyos. Among the resources at La Cabraña that may have been obtained in this zone were mesquite. yucca, desert willow, prickly pear, four wing saltbush, cheno-ams, buffalo gourd, grasses, and sunflower along with rabbit, rodents, and reptiles. Numerous rock types are plentiful including cobbles of rhyolite, limestone, and quartzite, nodules of chert and obsidian, and sandstone. The deep arroyos expose the older river deposited gravels producing a great variety of rocks. Farming could have been practiced here although the soil is somewhat gravelly.

The Upper Bajada Zone east of the site contains thicker and more gravelly soils than the Lower Bajada Zone. Plants present in this zone are agave, prickly pear, datil, and sotol on its slopes, with mesquite, sumac, and Apache plume in the arroyos. Jackrabbit, cottontail, and rodents are common, as are a variety of reptiles. Cobbles of limestone, quartzite, rhyolite, and numerous other rock types are available in this zone. The alluvial gravels contain nodules of chert and obsidian and crystals of calcite, quartz, and possibly gypsum and muscovite. Fossils of Permian and Cretaceous age are also found in the gravels.

The Mountain Zone, the eastern most environmental zone in the project area, is a rockland area with steep slopes and large canyons. Vegetation is sparse and includes lechuguilla, prickly pear, cacti, sotol, and desert willow along with a few oak and juniper. Lower canyons of this zone feature vegetation like the Upper Bajada Zone. Animals such as cottontail, jackrabbit, rodents, birds, and reptiles occupy the zone today and large mammals such as deer and mountain sheep may have inhabited the area in the past. This zone also contains numerous outcrops of lithic types that were found at La Cabraña. Thunderbird Rhyolite, limestone, sandstone, andesite, quartzite, and granite are some of the more common ones. Minerals such as azurite, malachite, hematite, limonite, and copper ore are available as are crystals of calcite, quartz, fluorite, and gypsum. Deposits of limestone and shale contain Permian and Cretaceous age fossils which were found at La Cabraña.

In summary, both the material culture and environmental remains recovered from La Cabraña indicate, for the most part, a highly localized resource procurement pattern, a pattern which seems to typify El Paso phase pueblos in general (e.g., Brook 1966, 1980; Ford 1977; Green 1980; O'Laughlin personal communication 1983). In terms of subsistence, this is best seen in the dichotomy that exists between riverine sites where much use of aquatic species such as fish and turtles is evident and desert lowland and intermontane sites that lack such remains. Regarding lithic resource procurement, all sites exhibit exploitation and utilization of local lithic resources for both flaked and ground stone tool production. There is also evidence that the occupants of El Paso phase pueblos conducted logistical forays to the uplands and mountains of the area to hunt large game such as pronghorn and deer and collect fossils and minerals not readily available in proximity to the pueblos. Collection of various other resources may have been imbedded in such logistical forays. Additionally, La Cabraña and other El Paso phase pueblos

obtained and made use of an array of non-local raw materials and finished items, many of which functioned as personal adornment or were used for esoteric purposes.

Returning specifically to land-use patterns at La Cabraña, an estimated 74 percent of the resources present at the pueblo are available from the Riverine and Leeward Slope Zones. As described above, an array of native plants and animals are found within these zones. The area encompassed by a 1 km radius from the site is dominated by the Leeward Slope Zone and a small segment of the Riverine Zone. This area was likely the primary economic zone for the occupants of La Cabraña, it being the area most frequently used in daily activities. A gross estimation of agricultural productivity for this area was made following Hastorf (1980). Within a 1 km radius of La Cabraña, approximately 22,500 kg of corn could have been produced per year (with two-thirds of the land lying fallow). This would provide 2,100 calories per day for one year to about 11 people. Additional calories from hunting and gathering were not considered. Although the movement for daily subsistence at La Cabraña was probably not limited to the 1 km radius area, the area appears to contain much of the resources required to sustain the estimated 15 to 20 people that are projected to have occupied the site. It is important to note that resource availability and potential agricultural land with this 1 km zone would have varied seasonally and that flood events could have impacted access to resources and to agricultural land. Such events would have required exploitation of a broader area including other environmental zones.

Within a 5 km radius, a secondary economic zone, more area and thus potentially more biotic and well as lithic resources would have been available. On the west side of the river more of the Riverine and Leeward Zones were accessible as was a portion of the West Mesa Zone. On the east side of the river, additional areas of the Riverine Zone and well as portions of the Lower and Upper Bajada Zones occur. Although seemingly arbitrary, the 5 km radius encompasses the approximate distance ethnographic studies indicate agriculturalists cover during daily gathering trips (e.g., Bailey 2005; Vita-Finzi and Higgs 1970:16). Within this zone is the usual maximum distance, 3 to 4 km, agriculturalists travel to tend their fields (e.g., Chisholm 1968).

A tertiary economic zone encompassing an area 5 to 15 km or more beyond the site was probably exploited in a logistical manner, which would have required the expenditure of more energy and time for procurement of specific items (e.g., Binford 1981:7). This radius encompasses most of the Franklin Mountains, Mt. Cristo Rey, and the Lower Bajada, Upper Bajada, and Mountain Zones. Resources found in this tertiary economic zone account for approximately five percent of those documented at La Cabraña; these would not likely have been found or otherwise available in the primary and secondary economic zones.

Additionally, the afore mentioned small pueblos (Bob John, Anapra, and Country Club) as well at the possibly large Worley pueblo occur with this economic zone. It is of note that surveys to the north and northwest of La Cabraña as well as across the river on the western flanks of the Franklin Mountains have identified the abundant presence of campsites, resource procurement sites, limited activity sites associated with the preparation of foodstuff, and apparent seasonally occupied agricultural field houses (Camilli et al. 1988; Carmichael 1985; Kirkpatrick 2010; O'Laughlin 1980; O'Leary 1987; Ravesloot 1988). Although many of these loci and sites are of undetermined temporal or cultural affiliation, many of them have been assigned to the El Paso phase. Undoubtedly, these are associated with the occupations of the small El Paso pueblos of the area and are indicative of intensive land-use and resource exploitation during the pueblo period.

Finally, the La Cabraña data provide an example of patterns of land use and resource procurement for small riverine oriented late El Paso phase pueblos that encompassed a period of agricultural involvement along with considerable hunting and gathering activities. The arbitrarily defined economic zones for the La Cabraña Pueblo reflect ever widening areas of decreasing land use and resource exploitation with the

area in proximity to the site being the most heavily used and furnishing most of the subsistence remains identified.

Regional Exchange and Interaction

In addition to the local area biotic and abiotic resources exploited by the occupants of La Cabraña, a small number of non-local items and materials was recovered. These consist of vesicular basalt, turquoise, copper ore, marine shell, and ceramics. All indicate exchange relationships, directly or indirectly, with neighboring villages and widely spaced cultures elsewhere in New Mexico and northern Mexico. Such items are a common part of El Paso phase artifact assemblages. Nevertheless, the mechanisms involved in Jornada Mogollon El Paso phase acquisition of non-local and exotic raw and finished materials remains poorly understood. This is particularly true regarding the place of small El Paso phase pueblos like La Cabraña in local, regional, and pan regional exchange networks. Despite the ubiquity of such items in Jornada pueblos there has been little detailed study of El Paso phase exchange systems with only suggestions of the possible mechanisms involved. Reciprocal exchange, peer-prestige or peer-polity exchange, and long-distance exchange have been cited (e.g., Bradley 1996, 2000; Dolan et al. 2017; Miller and Graves 2009c). It is likely that at some level all the above resulted in the flow of both raw materials and finished products found in El Paso phase pueblos. A note to the obvious is that exchange between Jornada pueblos most certainly resulted in the acquisition of local resources such as minerals, fossils, and lithic materials, and perishable items such as hides, meat, and other foodstuffs not generally preserved in the archaeological record. Miller (2008; Miller and Graves 2009c) has alluded to this, noting further that discussions of Jornada pueblo exchange have long lived in the shadow of Casas Grandes as the driving social and economic force in the development of Jornada Mogollon society.

Most, if not all, of the non-local items recovered from La Cabraña appear to have come into the site as finished products. Although not to be precluded, no evidence of ceramic manufacturing, ground stone production, or ornament production was identified. Although we initially identified the vesicular basalt recovered as originating in the West Potrillo Mountains 50 km west, it is possible the material was from other sources in the general area.

Some of the turquoise recovered was sourced to the Jarilla Mountains approximately 75 km north-northeast of the site. While most of it was in the form of finished beads or pendants, some small, unmodified pieces were also recovered. It is possible some of these were intended to be modified into beads although some of these pieces were too small to have been so modified. Whether these can be taken as evidence as byproducts of ornament manufacture is unclear.

A small number of shell artifacts from marine shell from the Gulf of California, over 650 km to the southwest, were also recovered. These appear to have been brought into the area in finished form; there was no evidence to suggest shell working or bead manufacture. Most of the shell was *Olivella* whole shell beads. It is possible the shells could have been brought into the site unmodified as it would not take much effort to grind off the apex of the shell to make them into beads. The making of disk beads and *Glycymeris* bracelets is more involved (requiring specialized tool kits) and thus it is more likely they were brought into the site as finished items.

Sherds from variety of intrusive ceramics were recovered. The most abundant were those of Seco Corrugated, a utilitarian ceramic type derived from the Black Range-Rio Grande Valley area to the north of La Cabraña. Chupadero Black-on-white was the next most abundant. This type is found over a wide geographic area having originated in the Salinas and Sierra Blanca regions of New Mexico. Also represented was Gila Polychrome, a widely traded Salado ware that was produced in the Mogollon Highlands of eastern Arizona and western New Mexico. Heshotauthla Black-on-red/Polychrome is a

Zuni-Acoma Glaze ware of the Southern Cibola area of the Southern Colorado Plateau just below the Mogollon Highlands of west-central New Mexico and the Mogollon Rim in east-central Arizona.

Sherds of Tucson Polychrome, Maverick Mountain Polychrome, and Prieto Polychrome, types from the Maverick Mountain Series that originate in the Safford and Arivaipa valleys of Arizona and possibly the Cliff Valley of New Mexico, were also recovered along with Chihuahuan wares from the south. The latter consist of Ramos Polychrome, Ramos Black, and Playas Red. It is of note that studies indicate Playas Red was also produced in the Jornada area and that some of the Playas Red sherds from La Cabraña do not appear to have been from vessels imported from the Casas Grandes area.

Clearly, the occupants of La Cabraña had access to a variety of non-local raw material and finished products. Despite the variety of materials present, it does not appear that such items were brought into the site in quantities. Items imported include items of personal adornment, utilitarian function, and possibly items of prestige. Two of the ceramic types present, Maverick Mountain Polychrome and Prieto Polychrome, are represented by single sherds suggesting only a single vessel of each was present at the site. The other intrusive sherds are likely from multiple vessels, although it is not possible to estimate the number of vessels they represent; however, the number is suspected to be low. Most of the intrusive ceramics were being imported from areas to the north and northwest. Nevertheless, there does not appear to have been any substantial economic or trade relations with any specific area. There is no indication of substantial direct exchanges with the Casas Grandes area as has been suggested by some (e.g., Schaafsma 1979; Wimberly 1979:88). In other words, it is believed that most of the items were obtained indirectly from their source areas.

As discussed in Chapter 5, the small sample of El Paso Polychrome sherds subjected to XRF indicated the sources of the materials used in their making were not at the site or in its immediate proximity. This begs the question as to whether some or all the El Paso Polychrome vessels represented at La Cabraña were obtained through exchange with ceramic production sites. No evidence of ceramic kilns was identified, and tools associated with pottery making were few. Little in the way of pigments that could have been used to decorate pottery was found. The most obvious answers are that ceramic production was a household activity and that the clay and temper sources used were located offsite as were pottery making and firing loci. Nevertheless, it is possible if not likely that at least some of the El Paso Polychrome vessels represented were obtained through exchange.

In summary, the variety of non-local raw materials and finished products represented at La Cabraña indicates the occupants were participating in, at some level, both regional and inter-regional exchange for the acquisition of both utilitarian and ornamental items. It is highly unlikely that the La Cabraña occupants undertook long distance logistical forays to recover the raw materials to produce some of the items represented. It is postulated here that the occupants of La Cabraña participated in several levels of exchange that included reciprocal exchange for utilitarian items and well as exchange for items that reinforced social and ideological bonds with a larger segment of Jornada society as well as social differentiation within the La Cabraña community itself.

Ritual Termination and Abandonment of the La Cabraña Pueblo

Recently, Miller (2009d; Miller and Graves 2009c; see also Brook 1971; Creel and Anyon 2003; Jackson and Thompson 2005) in his study of Madera Quemada Pueblo has raised the specter that ritual termination of El Paso phase pueblos occurred in the Jornada Mogollon area. Specifically, the possibility that some of the de facto refuse found on the floors of habitation and communal rooms at Jornada pueblos was deliberately placed during ritual closure and abandonment of a pueblo (the ceremonial retirement of the pueblo). This ritual closure not only involved objects being deliberately placed on the floor, but also the burning of the pueblo's roof and collapsing of its walls to seal in place the ritually placed objects.

Miller (2009d:371–373) cites an array of ethnographic and archaeological literature noting a growing body of evidence as well as an evolution in interpretation for both ritual dedication and retirement of various architectural features. He notes that the possibility of such activities in the Jornada Mogollon not only has ramifications for better understanding the Jornada Mogollon, but the social and ritual complexity of the Puebloan cultures of the Southwest as a whole. See Miller (2009c:371–418) for the theoretical underpinnings and methods for his argument of a ritual termination of the occupation of Madera Quemada Pueblo.

As Miller cites La Cabraña as one of the possible examples of a ritually terminated pueblo, it warrants some discussion here, albeit brief. Obviously, the possibility of ritual termination at the site was not considered as one of the general research themes guiding the investigation of La Cabraña. As reported in Chapter 5, approximately 1,300 sherds were recovered from floor contexts, only a few of which appeared as remnants of pot breaks. No whole vessels were recovered from the floor and in general floor contact artifacts were not abundant. Whole items recovered from near-floor fill or floor contact were recovered, but it appears that the rooms were for the most part cleaned out before the pueblo burned. As Miller (2009:414c) notes, abundant burned floor assemblages that included perishable items (including vessels with charred food remains) have been found at the Jornada pueblos of Embree, Cox Ranch, Robledo, and Three Rivers suggesting rapid and unplanned abandonment of the pueblo; that is that a catastrophic burning event resulted in the rapid abandonment of these pueblos. This does not appear to be the case at La Cabraña. The lack of such floor assemblages at La Cabraña suggests an organized abandonment of the pueblo.

There is some evidence that could support a ritual termination of the La Cabraña Pueblo, although it is equivocal. To begin, the two large, probable communal rooms, Room 1 and Room 2 (assuming Room 2 is a room and that it is a communal room), both have features that are potential evidence of ritual termination. Room 1 contained the pile of broken, burned rock that appears to have been the remains of a collar for the room's hearth. Whether it was broken as a result of use and exposure to heat or whether it was deliberately or ritualistically broken and piled with the abandonment of the room and pueblo is not clear, although the latter is supported by the piling of the feature. In addition, an *Olivella* shell necklace with a small turquoise pendant was recovered from the floor of Room 1. It too may have been left as a termination offering.

The only thing of note in Room 2 was a carved gypsum pendant found on the floor of the room and the remnants of two partial pot breaks along the north wall of the room. The significance of these items, ritual or otherwise, is unclear. Two large andesite metates were left in Room 3. The most parsimonious explanation is that they were both too heavy to transport any great distance. It is also possible they were cached together for future recovery and use, perhaps in anticipation of a reoccupation of the pueblo. The question then becomes, why burn the pueblo if it was to be reoccupied. At a glance, the presence of the metates does not appear as typical of the types of items cited as termination objects by Miller.

During the excavation of Room 6, a sub-floor cist was identified. The feature appears to have functioned as a cache in that it contained artifacts layered throughout, including a projectile point, polishing stones, ochre, a possible palette, and three turquoise pendants, two of which were placed at the bottom of the cist. Clearly this pit and its contents represent a ritualistic act. The cist was identified by a slight discoloration in the surface of the floor; however, the discoloration was not sufficient to suggest the pit had been dug at the abandonment of the room. It is believed the pit was excavated with the objects being placed in the pit and then the pit was sealed during the occupation of the room. That said, the feature is similar to that described by Miller and Graves (2009b:122–124) as a storage pit that was subsequently filled with votive items and sealed. Miller (2009d:390) goes on to describe the contents and their significance as evidence of a ritual termination event. In the case of La Cabraña, the similarity between the cist in Room 6 and Feature RF 2.5 at Madera Quemada Pueblo is noteworthy; however, based on the available data from La

Cabraña it is not clear that the pit in Room 6 was filled and sealed as part of a ritual termination of the pueblo.

Room 7 at La Cabraña may provide the strongest evidence of ritual termination of the pueblo. Two clusters of fossils, rocks and minerals, including shaped and unshaped calcite, gypsum crystals, nodules of kaolin, hematite, malachite, limonite, copper ore, along with shell beads and a pendant, turquoise, pyrite, and carved stone shells were found on the floor. Many of the fossils and stones in this association exhibited numerous continuous and discontinuous bi-directional, V-shaped striations and grooves on their surfaces. Also found was a necklace consisting of *Olivella* shell and drilled crinoid stem beads, a turquoise bead, sandstone concretions, and a large rectangular fluorite pendant incised with zigzags and parallel lines and a figure resembling katsina-like motifs found on local rock art sites. As discussed in Chapter 5, similar deposits have been found at other Jornada pueblos and Paquimé. Per Miller's argument, considering the context of these finds and their perceived economic and ritualistic values, they may well have been left behind as part of the closing and termination of the pueblo. This can also be said of the necklace recovered from the floor of Room 1, and possibly some of the other whole artifacts found on the floors of other rooms at the pueblo.

The final component of the possible ritual termination of the La Cabraña Pueblo to be discussed here is the burning of the roof to collapse it on the floors thus sealing floor and subfloor deposits. Certainly, burned roof fall was present in the rooms a La Cabraña. Miller (2009d:397–398) notes that a variety of explanations ranging from accidental to raiding have been offered to explain burned roofs at Jornada pueblos. Further, Miller cites Wilshusen (1986, 1988:678) who has demonstrated igniting pithouse and pueblo roofs take a concerted effort and accidental burning is unlikely although not improbable. The lack of household artifact assemblages on the floors of the La Cabraña rooms suggests the rooms were cleaned out and thus the burning was not likely the result of a catastrophic event. Although there is some suggest of post occupational eolian and alluvial deposits in some of the rooms suggesting the rooms had been left open with the roofs intact after abandonment, it is ambiguous and most of the burned roof fall was in direct contact with the floor. Thus, the burning of the La Cabraña Pueblo may have been a deliberate act.

As a final act, Miller (2009d:398–399) discusses the possibility that the walls at Madera Quemada Pueblo had been deliberately collapsed inward to further seal the floor and subfloor deposits left as closing offerings. Although the evidence of such at La Cabraña was not obvious, it nevertheless remains a possibility.

Although Miller makes a persuasive argument for a ritual termination of the occupation of Madera Quemada Pueblo, the evidence of such at La Cabraña is equivocal. In part, this is due to the generally poor preservation of the pueblo and the less stringent excavation methods employed. Nevertheless, the possibility for the ritual termination of the occupation of La Cabraña serves to expand current understanding of Jornada Mogollon world view and ritual, and as an additional impetus for future research of Jornada Mogollon ritualism.

Summary

In summary, despite some 40 years on and the limits of our analyses, the excavations at La Cabraña have contributed significant information regarding subsistence and resource utilization at a Jornada Mogollon riverine site while expanding extant knowledge of El Paso phase architecture, material culture, exchange, and ritual. Much progress has been made in the study of the El Paso phase since the excavations at La Cabraña thanks to the investigations at sites such as Firecracker Pueblo and Madera Quemada Pueblo. These efforts have greatly expanded our understanding of El Paso phase site structure with the intensive investigations of extramural areas adjacent to the pueblos. The work at Madera Quemada Pueblo has also pursued questions regarding El Paso phase social organization and ritual that have previously received

only limited examination. A much fuller picture of the El Paso phase exists today because of these studies, yet, like all excavations those at La Cabraña and those at Firecracker Pueblo and Madera Quemada Pueblo have raised more questions than they have answered.

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APPENDIX A
RADIOCARBON ASSAY DATA AND REPORT

UNIVERSITY OF CALIFORNIA, RIVERSIDE

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DEPARTMENT OF ANTHROPOLOGY
RADIOCARBON LABORATORY

RIVERSIDE, CALIFORNIA 92521

August 30, 1982

Professor Michael S. Foster
Department of Sociology and Anthropology
University of Texas at El Paso
El Paso, Texas 79968

Dear Professor Foster:

Below is listed the results of the radiocarbon (^{14}C) analysis on your samples:

La Cabrana Pueblo Series

Samples from various structures at La Cabrana Pueblo (LA 1671), located on the first terrace on the west bank of the Rio Grande River just north of Anapra, New Mexico (106° 38' W, 31° 53' N). Submitted by M S Foster, University of Texas, El Paso.

UCR-1524 Room 7 — 600 ± 90

Grass and reed fragments collected from the floor in the southeast corner of Room 7. Coll 1982 by M Palmer (No. 1-FS:900).

UCR-1525 Room 4 — 530 ± 80

Mesquite from floor contact in the southeast quarter of Room 4. Coll 1982 by M Klien (No. 2-FS:910).

UCR-1526 Room 3, Southwestern Quarter — 620 ± 80

Mesquite from floor contact in the southwestern quarter of Room 3. Coll 1982 by M Bell (No. 3-FS:895).

UCR-1527 Room 1 — 600 ± 70

Grass from floor contact, southeastern quarter of Room 1. Coll 1982 by M Bell (No. 4-FS:888).

UCR-1528 Room 3, Northeast Quarter — 780 ± 80

Mesquite from floor contact in the northeastern quarter of Room 3. Coll 1982 by M Bell (No. 5-FS:896)

The ^{14}C values listed above are expressed in ^{14}C years B.P., with 0.95 NBS oxalic acid employed as the contemporary standard, 5568 years used as the ^{14}C half-life, and A.D. 1950=0 B.P. These are the generally-accepted parameters employed by ^{14}C laboratories around the world as summerized by M. Stuiver and H.S. Polach in the journal Radiocarbon (Vol. 19, No. 3, pp. 355-

363). The ^{14}C values cited above have not been normalized in terms of their stable isotope ($^{13}C/^{12}C$) ratio since we are awaiting this data from another laboratory. The final ^{14}Cdata cited in the UCR datelist to be published in Radiocarbon will reflect the normalized values. However, adjustments due to the stable isotope values are typically minor. For these types of samples, it generally does not exceed 10 years. Thus the accuracy of the results given above will not be affected in any significant manner. Other calibration correction procedures can be applied to ^{14}C determinations when large numbers of ^{14}C values are intercompared. If you are in an area with dendrological-based chronologies, you may wish to calibrate these ^{14}C values. Please let me know if I can help in any way.

If you have any questions concerning the results of the analysis, please feel free to contact me.

Yours truly,

R. E. Taylor
Professor
Director, Radiocarbon Laboratory

RET:gm