

MUSEUM OF NEW MEXICO

OFFICE OF ARCHAEOLOGICAL STUDIES

AN ARCHAEOLOGICAL TREATMENT PLAN FOR A CLASSIC PERIOD SITE,
LA 98688, IN ESTATES VII, UNIT 4, LAS CAMPANAS DE SANTA FE,
SANTA FE COUNTY, NEW MEXICO

by
Stephen S. Post

Submitted by
Timothy D. Maxwell
Principal Investigator

ARCHAEOLOGY NOTES 157

ADMINISTRATIVE SUMMARY

This report contains an archaeological data recovery plan for one site, LA 98688, located in Estates VII, Unit 4, of Las Campanas de Santa Fe, in Santa Fe County, New Mexico. Las Campanas de Santa Fe is a 4,800 acre resort development west of Santa Fe, New Mexico. The Museum of New Mexico, Office of Archaeological Studies, has been conducting an ongoing archaeological project for Las Campanas de Santa Fe in compliance with Santa Fe County Ordinance 1988-8.

LA 98688 is late Developmental to late Classic period site that was reoccupied numerous times. It was recorded during the final phase of archaeological survey at Las Campanas de Santa Fe (Post 1992). No testing was conducted at the site, but its size and spatial patterning, suggesting discrete activity areas, indicates that it has potential to increase our understanding of Classic period economic systems along the Santa Fe River Valley. LA 98688 was recommended as significant according to criteria outlined in Santa Fe County Ordinance 1988-8.

A treatment plan is provided that outlines research questions, data needs, and field and laboratory methods. The treatment plan was prepared in accordance with guidelines in Santa Fe County Ordinance 1988-8.

MNM Project 41.547C
Santa Fe County Ordinance 1988-8

CONTENTS

<i>Administrative Summary</i>	<i>ii</i>
INTRODUCTION	1
CONTEMPORARY ENVIRONMENT	3
ARCHAEOLOGICAL BACKGROUND	5
LA 98688 SITE DESCRIPTION	11
A TREATMENT PLAN FOR LA 98688	15
FIELD AND LABORATORY METHODS	20
Field Methods	20
Laboratory Methods	22
Research Results	23
REFERENCES CITED	24
APPENDIX 1. Site Location Map	30

Figures

1. Project vicinity map	2
2. LA 98688, site map	12
3. Site location map (removed from copies in general circulation)	30

Tables

1. All sites by project and period	5
2. Pottery types within the 5-m-radius collection unit, LA 98688	13

INTRODUCTION

The Office of Archaeological Studies (OAS), Museum of New Mexico, has been conducting an archaeological project at the request of Las Campanas de Santa Fe since 1992 in compliance with Santa Fe County Ordinance 1988-8. In September and October 1992, the OAS completed an archaeological inventory of 1,200 acres in the south and west portions of the Las Campanas de Santa Fe property (Post 1992). Seventeen archaeological sites were identified. Sixteen of the sites have been treated through test excavations or data recovery efforts. One site, LA 98688, was in a portion of the property that had not been scheduled for development as of January 1993. It was avoided during the construction of the Las Campanas Parkway and is now included in the Estates VII, Unit 4 subdivision. A treatment plan for LA 98688 is provided in compliance with Santa Fe County Ordinance 1988-8.

LA 98688 is located within Estates VII, Unit 4. Site location is shown in Appendix 1 (removed from copies in general circulation). The project vicinity is shown in Figure 1. Site legal description and UTM location are on file at the Archeological Records Management Section, State Historic Preservation Division, Santa Fe, New Mexico.

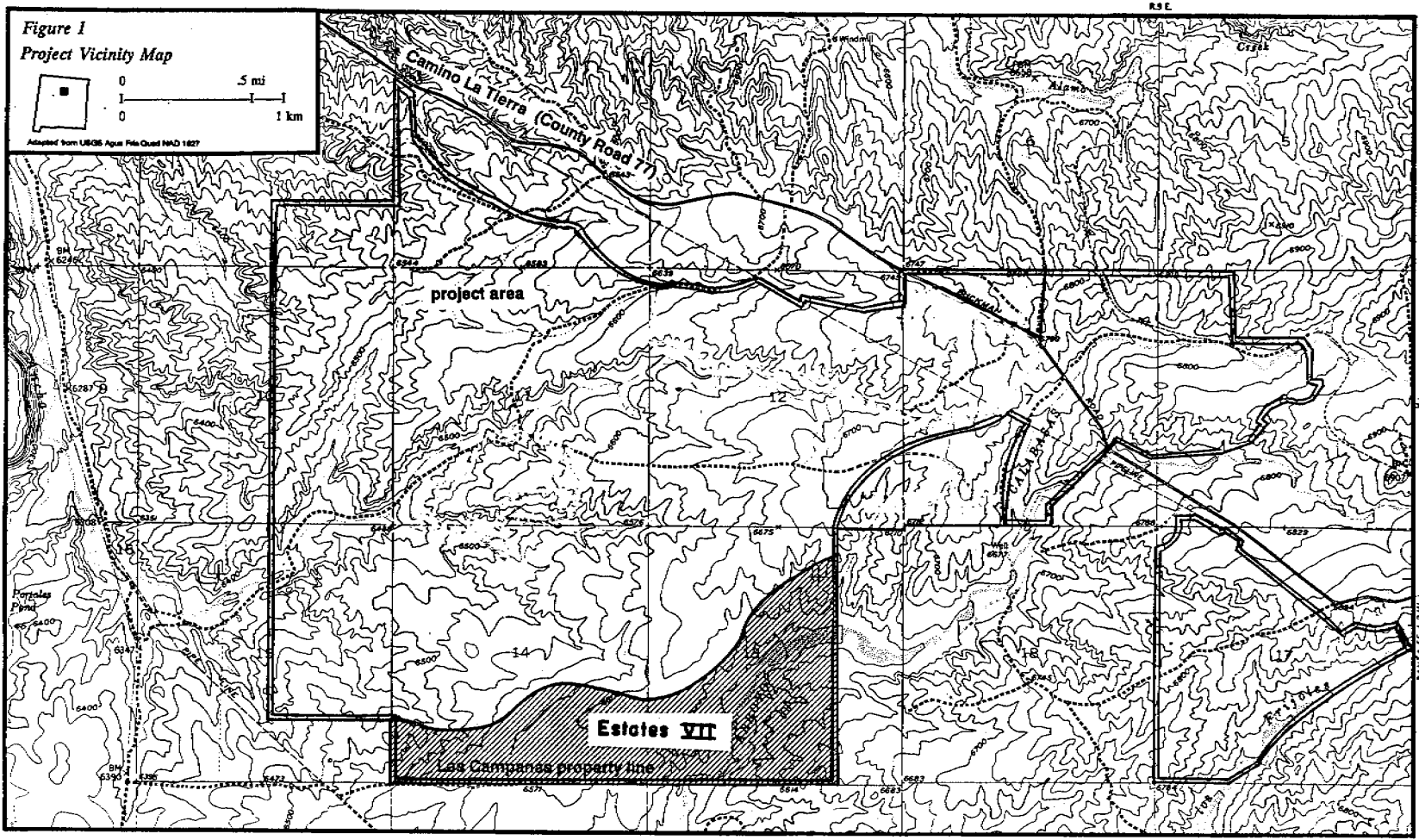
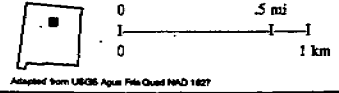


Figure 1
Project Vicinity Map



Adapted from USGS Aquatic File Quad NAD 1983

CONTEMPORARY ENVIRONMENT

The contemporary environment of the Santa Fe Basin has been thoroughly reviewed in a study by Kelley (1980) as part of the Arroyo Hondo Archaeological Project. The reader is referred to this monograph for the wealth of detail it contains. Maxwell (1988) and Scheick and Viklund (1992) concisely summarize the contemporary environment for the northwest Santa Fe and Las Campanas area.

The project area is within a structural subdivision of the Southern Rocky Mountain physiographic zone (Folks 1975:110). The basin is bounded on the west by the Jemez Mountains and to the east by the Sangre de Cristo Mountains. An alluvial plain, dissected by many arroyos, stretches westward from the foothills at the base of the Sangre de Cristos. Elevation in the project area ranges from 1,910 m to 2,252 m.

Local topography alternates among nearly level plains, rolling terraces, and steep, rocky slopes. The major drainage is the Santa Fe River, however the Arroyo Calabazas drains much of the eastern half of the Las Campanas area. The western half of the Las Campanas area drains into a series of medium-sized tributaries of Cañada Ancha. Smaller tributary arroyos have cut deeply into the alluvial plain forming steeply sided valleys. The Rio Grande is 10 km to the east of the project area.

Alluvial materials of ancient and modern gravel are found in all the arroyos and in slope wash and terrace deposits. Tertiary volcanic deposits, Cenozoic sediments, and Precambrian rock are exposed in surrounding areas and, combined with local alluvium, provide most of the materials needed for prehistoric lithic artifact production. In particular, chert is available in the Ancha formation (Kelley 1980:11-12), whereas sandstone, siltstone, andesite, basalt, and silicified wood occur in nearby formations (Hannaford 1986:4). Local chert and quartzite are the primary lithic raw materials found on Las Campanas sites. Small amounts of obsidian are found scattered along the basalt-capped mesas to the west (Kelley 1980:12). The primary obsidian source for the study area was probably the Jemez Mountains.

The flora and fauna of the area are typical of Upper Sonoran grasslands. The piñon-juniper community thins as it descends from the Sangre de Cristo foothills. The piñon-woodland grades into shortgrass plains with scattered juniper about midway between the foothills and the Santa Fe River (Kelley 1980:61-62). The open, grass-covered valleys contain grama grass, muhly, Indian ricegrass, galleta grass, soapweed yucca, one-seed juniper, Colorado piñon, occasional Gambel's oak, and small stands of mountain mahogany. The arroyo bottoms contain various shrubs such as fourwing saltbush, Apache plume, rabbitbrush, big sagebrush, and wolfberry. Regional fauna include desert cottontail, black-tailed jackrabbit, and Gunnison's prairie dog. A complete list of flora and fauna found in the area is in Kelley (1980).

The area has a semiarid climate. Most of the local precipitation occurs as intense summer thunderstorms that produce severe runoff and reduce usable moisture. The area receives an average of 229 to 254 mm of precipitation per year and a mean snowfall of 356 mm (Kelley 1980:112). The growing season ranges from 130 to 220 days and averages 170 days. The last spring frost usually occurs in the first week of May and the first fall frost occurs around the

middle of October. The mean yearly temperature is 10.5 degrees C.

LA 98688 is located near the headwaters of major tributaries or along the margin of Arroyo Calabasas. It is at the boundary between grassy table land and highly dissected gravel ridges and terraces. These areas have a sandy, loamy, gravelly top soil that is highly erodible. The site soils range from well stabilized (by grama grass) to barren, sandy soils that are recently eroded and cut by erosion channels. The vegetation is typical of piñon-juniper woodland or scrubland.

ARCHAEOLOGICAL BACKGROUND

This section provides an archaeological background for LA 98688, which dates from the late Developmental to the late Classic period of the Rio Grande sequence as outlined by Wendorf and Reed (1955). The period summaries are derived from regional syntheses of the upper Middle Rio Grande Valley culture history (Cordell 1979; Stuart and Gauthier 1981; Biella and Chapman 1979; Lang and Scheick 1989; McNutt 1969; Stubbs and Stallings 1990) and recent survey and excavation reports from the Las Campanas area (Viklund 1990; Scheick and Viklund 1991, 1992; Scheick 1991, 1992; Lang and Scheick 1991; Post 1992). Site frequency by period for the Las Campanas project is presented in Table 1.

Table 1. All Sites by Project and Period

	E. Golf	W. Golf	Estate I	Estate II	Estate III	OAS Survey	Total
Archaic		4		1			5
Developmental							
Early-Middle				3	1		4
Late					1		1
Coalition							
Early		9		4	4	5	22
Late			3	1			4
Classic							
Early		4		6		2	12
Late		1					1
Historic							
Protohistoric		1	1		2		4
Spanish Colonial			1			1	2
Territorial		1	1	2			4
Statehood to present	1	7	1	2			11
Unknown	3	26	23	92	28	8	180
Total	4	53	30	110	36	17	255

Developmental Period (A.D. 600-1200)

The Developmental period (Wendorf and Reed 1955) is divided into early (A.D. 600 to 900), middle (A.D. 900-1000), and late (A.D. 1000 to 1200) subperiods. This temporal framework roughly corresponds to the Pecos Classification system developed by Kidder (1924).

Early Developmental period sites are uncommon in the northern Rio Grande (Wendorf and Reed 1955:138). Archaeological survey at Cochiti Reservoir found only 12 sites that could be assigned to this period (Biella and Chapman 1977:203). McNutt (1969:70) located no early Developmental period components north of La Bajada and White Rock Canyon. In the eastern Galisteo Basin only five components may date to this period (Lang 1977; Scheick and Viklund 1989). The lack of evidence for sedentism suggests that there was a long-term pattern of hunting and gathering in the Northern Rio Grande. This continued focus on hunting and gathering may be in part attributed to the rich resource diversity of the Northern Rio Grande Valley, forestalling an early reliance on small-scale farming (Cordell 1979:2).

During the middle Developmental period (A.D. 900 to 1000), site frequency increased in the Northern Rio Grande area. Excavations in the Santa Fe and Tesuque river valleys revealed pithouses associated with contiguous surface rooms, and perhaps a kiva (Honea 1971; McNutt 1969:58). The pottery was mineral painted in the Red Mesa style and neckbanded utility wares occurred. The appearance of these sites does not necessarily suggest that population increased. Instead, the settlement and subsistence pattern had shifted from one of mobility, which left ephemeral archaeological remains, to a more sedentary lifestyle, which left more structural remains and artifact accumulations. The general pattern was still one of low population density.

During the late Developmental period (A.D. 1000 to 1200), the first population increase occurred in the Santa Fe area, as inferred from increased site numbers and size (Wendorf and Reed 1955:140-41; Stuart and Gauthier 1981). Larger village size suggests year-round residential occupation. The predominant pottery was Kwahe'e Black-on-white, originally identified by Mera (1935) as a local Rio Grande variant of Chaco-style pottery. Occurrence of this pottery style coincided with the growth of the Chaco system in the San Juan Basin in northwestern New Mexico. Site size in the Northern Rio Grande area ranges from 1 to 100 rooms. Known sites along the Santa Fe River Valley include LA 114 (Arroyo Negro), LA 15969 (Wiseman 1978), and a minor component at Pindi Pueblo (LA 1; Stubbs and Stallings 1953). The Pindi Pueblo component is below the first Coalition period occupation and demonstrates the origin of some large Coalition period sites during the late Developmental period (Stubbs and Stallings 1953:14-15).

Arroyo Negro (LA 114) was originally recorded by Mera in the 1920s. It has seven small (less than 10 rooms) to medium (11-25) room blocks constructed of adobe with cobble foundations (Peckham 1974, NMCRIS file). In 1934, W. S. Stallings collected 95 tree-ring samples from pothunted rooms and four kivas (Smiley et al. 1953:27-29). The tree-ring dates indicate an occupation span between A.D. 1050 and 1150, with less reliable A.D. 950 to 1000 dates for Kiva C. Two construction episodes occurred between the A.D. 1050s and A.D. 1130 to 1145 (Smiley et al. 1953:29). Identified pottery types at LA 114 included Kwahe'e Black-on-white, Santa Fe Black-on-white, Socorro Black-on-white, and Wingate Black-on-red.

LA 15969 was identified by Wiseman (1978:8) on top of the gravel terrace overlooking the north prehistoric floodplain of the Santa Fe River. The site included a U-shaped 14-room structure with a kiva. It may have been contemporaneous with LA 114 with estimated occupation dates between A.D. 1100 and 1150. The main decorated pottery type is Kwahe'e Black-on-white.

The late Developmental component at Pindi Pueblo (LA 1) had two jacal structural remnants, a pithouse, and sparse refuse (Stubbs and Stallings 1953:9). The refuse was in the central portion of the site on a knoll. Identified pottery types included Red Mesa Black-on-white, Kwahe'e Black-on-white, and Puerco and Wingate Black-on-red (Stubbs and Stallings 1953:14). Stubbs and Stallings observed that the pre-Pindi material was very sparse and the deposit ranged from 2 to 50 cm deep (1953:15). These deposits were underneath the later Coalition period occupation.

Las Campanas Sites

Late Developmental period occupation in the Las Campanas area is evidenced by five sites that were recorded in Estates II (Scheick 1992; Lang and Scheick 1991) and Estates III (Scheick and Viklund 1992). One site, LA 86147, is a dispersed artifact scatter that covers over 3,600 sq m. This site is similar to the late Archaic period sites, except that it has Kwahe'e Black-on-white pottery and utility wares. Test excavation at LA 86147 yielded no significant cultural deposits. The site may have been an ephemeral foraging camp with the dispersed artifact distribution reflecting more than one occupation episode (Post 1993:32).

The other three Developmental period sites each have part of a single vessel and less than 20 core flakes of local material. These three sites are in the Estates II area, which has a dense complex of limited activity sites. Single episodes of core reduction and material testing occurred at most of the Estates II sites. This suggests that lithic flakes were produced as needed during resource extraction. Kwahe'e Black-on-white sherds occur in the project areas between 1 and 16 percent of the isolated sherd assemblage. These percentages reflect the limited evidence of Developmental period use of the Las Campanas area and the relatively low population levels along the Santa Fe River Valley.

Coalition Period (A.D. 1200-1325)

The Coalition period is marked by three major changes in the archaeological record in the Northern Rio Grande: (1) a significant increase in the size and numbers of sites, suggesting an increase in population and an extension of the early village level organization noted in the late Developmental period; (2) pithouses as domiciles were replaced by contiguous arrangements of adobe and masonry surface rooms; and (3) a change in pottery-making technology from mineral paint to organic-based painted pottery. These changes were sufficiently important to warrant a new period in the Northern Rio Grande cultural sequence that was divided into two phases: Pindi (A.D. 1220-1300) and Galisteo (A.D. 1300-1325) (Wendorf and Reed 1955). The decorated pottery was divided into Santa Fe Black-on-white and all its local variants (Stubbs and Stallings 1953) for the Pindi phase and Galisteo Black-on-white (Mera 1935) for the later phase. Most of the large sites were established during the Pindi phase. The largest sites continued to grow into the Galisteo phase, anticipating the large villages of the Classic period. Site sizes ranged from

2 to 200 rooms; 15 to 30 rooms was the most frequent size (Stuart and Gauthier 1981:51). Site frequencies in all areas of the Northern Rio Grande increased enormously at this time (Biella and Chapman 1977:203; Orcutt 1991; McNutt 1969; Lang 1977).

In the Santa Fe River Valley large villages on the prehistoric floodplain near the river channel were established during the early Coalition period. The only reported excavations are at Pindi Pueblo (LA 1; Stubbs and Stallings 1953) and the Agua Fria Schoolhouse site (LA 2; Lang and Scheick 1989). LA 1, LA 2, LA 109, LA 117, LA 118, and LA 119 have Santa Fe and Galisteo Black-on-white pottery and a small amount of glaze-paint pottery suggesting that all six sites are roughly contemporaneous. These villages formed a large continuous community that was 3.2 km (2 miles) long. LA 1 (Pindi Pueblo) and LA 2 (Agua Fria Schoolhouse) were primary villages within the community. Carter and Reiter (1933) originally recorded them as historic period sites. Sites in the Santa Fe River Valley recorded by Carter and Reiter (1933), but not by Mera, include CR (Carter-Reiter) 178, 180, 182, 183 and 185. These were reported as Historic period sites but they may have had Coalition and early Classic period components.

Site data for the late Coalition period show an extensive community along the Santa Fe River (Post and Snow 1992:17). Farming along the Santa Fe River, the presence of fresh water springs, and the access to diverse environments for subsistence items and raw material all contributed to relatively long-term settlement. While the communities of the Four Corners area of the American Southwest were declining, the Santa Fe River community was growing.

The Las Campanas Sites

Through numbers of sites and isolated artifacts, the Coalition period is best represented in the Las Campanas area. The tabulation in Table 1 includes sites that have ceramic assemblages of Santa Fe, Galisteo, or Wiyo Black-on-white pottery in the Coalition period. Twenty-one sites date between A.D. 1200 and 1325. Furthermore, about 40 percent of the isolated sherds from all periods date to the Coalition period. This fact would imply that the project area was most intensively used during the Coalition period. The greatest number of Coalition period sites are in the Estates III/West Golf Course area (Scheick and Viklund 1992). These are middle or late Coalition period sites, as defined by the presence of Santa Fe Black-on-white, Galisteo Black-on-white, and Wiyo Black-on-white pottery. Generally, the Coalition period sites range from 300 to 2,800 sq m in area with two sites extending over more than 10,000 sq m. The lithic artifacts are mostly core reduction flakes. Groundstone and bifaces are occasionally present. Some of these sites, especially from Estates III/West Golf Course, are multicomponent and have later occupations. The low frequency of bifacial tools and ground stone at these sites suggest that they were resource extraction loci with processing or consumption occurring at the residence. Hunting may have been staged from these sites but there is very little evidence of tool production or maintenance on these sites. Basically, the Coalition period sites look very similar to the earlier Developmental period sites except that they are more numerous.

Classic Period (A.D. 1325-1600)

Wendorf and Reed (1955) mark the beginning of this period (A.D. 1325-1600) by the appearance of Glaze A and locally manufactured red slipped pottery (see also Mera 1935; Warren 1979). Characterized by Wendorf and Reed as a "time of general cultural florescence," regional populations reached their maximum size and large communities with multiple plaza and room block complexes were established. Although the reasons for the appearance and proliferation of the glaze wares are debatable, many researchers, including Eggan (1950), Hewett (1953), Mera (1935, 1940), Reed (1949), Stubbs and Stallings (1953), and Wendorf and Reed (1955), believe that the similarity of the new pottery to White Mountain Redware is evidence for large-scale immigration into the area from the San Juan Basin and Zuni region. Steen (1977) argues, however, that the changes seen during this period resulted from rapid indigenous population growth. Steen believes that the population growth was enabled by favorable climatic conditions that allowed Rio Grande populations to practice dry farming in previously unusable areas. Steen also suggests that there was "free and open" trade between the Northern Rio Grande region and other areas, accounting for the observed changes in Classic period material culture.

It is therefore unclear how much of the population increase during this period resulted from immigration or from intrinsic growth. Besides populations migrating from the west, it has also been suggested that some population growth was due to the arrival of people from the Jornada branch of the Mogollon to the south, and perhaps from northern Mexico (Schaafsma and Schaafsma 1974).

Large villages of this period found in the Santa Fe vicinity include the Agua Fria Schoolhouse site (LA 2), Arroyo Hondo (LA 12), Cieneguilla (LA 16), LA 118, and LA 119. When Glaze B pottery appeared (ca. A.D. 1425), however, only Cieneguilla was still occupied by a large population. Dickson (1979) believes that abandonment of the large villages was due to the drought conditions revealed by tree-ring studies (Fritts 1965; Rose et al. 1981) and subsequent agricultural failure.

LA 1 and LA 2 are the best known Classic period sites and are located in the Santa Fe River Valley south of the project area, LA 1 and LA 2 are the best known Classic period sites. LA 1 was occupied during the early Classic period, A.D. 1325 and 1350 (Stubbs and Stallings 1953:155). This may have been a time of population movement and village reorganization. Pindi Pueblo experienced a short interlude of decreased occupation before A.D. 1325, but by A.D. 1330 new building and renewed use of older parts of the pueblo occurred (Stubbs and Stallings 1953:14; Ahlstrom 1989). A similar pattern was suggested for LA 12 (Arroyo Hondo Pueblo) (Lang and Scheick 1989:196; Creamer 1993). A change in kiva function may be indicated by a change in kiva frequency (from four to two) within villages and a change in location from subterranean to surface placement. Perhaps, as kiva function became more specialized the number decreased. Plazas were more conspicuous at this time suggesting a more centralized social organization that may have required larger community areas for social or ceremonial functions. It is known that the large villages of the Galisteo Basin, the Rio Grande, and the Rio Chama showed the same trends in the construction of fewer kivas and use of larger, more centrally located community space, as did the early Classic period Pindi Pueblo. The full florescence of the Classic period was not realized at Pindi Pueblo because it was abandoned in A.D. 1350, just as the larger villages were being established.

The limited excavation data for LA 2 suggests an occupation that lasted until A.D. 1420 which corresponds with the abandonment of Arroyo Hondo Pueblo and the growth of La Cieneguilla. Little is known about the early Classic period at LA 2. The abundance of Glaze A pottery suggests that the residents were engaged in regular social or economic interaction with the more southern Classic period villages (Lang and Scheick 1989). Lang and Scheick (1989:195) surmise that LA 2 was the largest village in the Santa Fe River Valley until A.D. 1420. If the village did house between 1,000 and 2,000 people as suggested by Lang and Scheick (1989:196), then the smaller surrounding villages (LA 117, LA 118, and LA 119) may have been abandoned by A.D. 1350 with the local population coalescing at LA 2. An untested hypothesis suggests that this coalescence may have been brought on by a change in social organization and not environmental conditions. The resources of the Santa Fe River could have been successfully exploited by many little villages. Success notwithstanding, sometime after A.D. 1350, everybody may have moved into one large village. If economic resources were equally available to all, then there must have been other social or religious factors that contributed heavily to population aggregation (Cordell 1979:58).

After A.D. 1420, the Santa Fe River Valley east of Agua Fria was mostly abandoned. The large settlement at La Cieneguilla increased in size and was still occupied by Native Americans until the Pueblo Revolt in A.D. 1680. The settlement pattern that prevailed throughout the Rio Grande, Rio Chama, and Galisteo Basin was a decrease in small villages or large farmsteads. The remaining large villages dramatically increased in size (Stuart and Gauthier 1981). Presumably these large villages had extensive subsistence catchment basins and extensive networks of social and economic interaction. The pattern of few or no Native American sites dating between A.D. 1420 and 1680 is graphically reflected in the survey results from large parcels near the Santa Fe River Valley (Hannaford 1986; Maxwell 1988; Wiseman 1978; Gossett and Gossett 1989; Lang 1980).

The Las Campanas Sites

The Classic period, which is recognized by single or combinations of pottery types that include the Rio Grande Glaze Ware series and Abiquiu and Bandelier Black-on-gray, was assigned to 13 sites. The Classic period sites are concentrated in the Estates III/West Golf Course (Scheick and Viklund 1992) and Estates II (Lang and Scheick 1991; Scheick 1992). The Classic period sites range between 500 and 11,000 sq m in size. They are primarily small concentrations of sherds and lithic artifacts with a dispersed overlay of core flakes from local lithic material. Most of these sites exhibit evidence of core reduction and occasional utilized flakes or biface fragments. These sites essentially show little change from the preceding period except that the artifact scatters tend to be smaller and the pottery types are different.

The largest Classic period site, LA 98688, reflects occupation by a larger group and repeated occupations over a long period of time. The bulk of the occupation occurred between A.D. 1315 and 1425 when Cieneguilla Glaze-on-yellow and Agua Fria Glaze-on-red pottery were common. These two pottery types occurred in low numbers in the late component from Pindi Pueblo (Stubbs and Stallings 1953:16-17) and may be common in late fourteenth- and early fifteenth-century deposits from Agua Fria Schoolhouse Pueblo (Lang and Scheick 1989:195). Similarities in paste and temper suggest that LA 98688 was used by people living in the Santa Fe River Valley.

LA 98688 SITE DESCRIPTION

Survey Designation: LC-11 (Post 1992:57-60).

Site Type: Sherd and lithic artifact concentration/scatter.

Cultural/Temporal Affiliation: Anasazi/Developmental to Protohistoric period (A.D. 1050 to 1500).

Size: 182 by 67 m.

Setting: LA 98688 is at an elevation of 2,015 m (6,610 ft) on a flat plain. The site area is on flat to gently sloping tableland that covers the bulk of the project area along the south property boundary. This tableland is covered by intermittent blue and sideoats grama grassland and piñon-juniper woodland. The soils are deep, fine clay sand mixed with occasional gravel. The site is slightly deflated with the grassy ground cover ranging from patchy to 100 percent.

Description: LA 98688 is a large multicomponent sherd and lithic artifact concentration/scatter. The site covers 12,200 sq m or 1.2 ha (3 acres). The artifact scatter has a linear distribution with a light scatter of sherds paralleling a pair of tire tracks (Fig. 2). The sherds total between 300 and 500. Most of the sherds are in three concentrations. The lithic artifacts are more diffusely scattered and total between 50 and 100. Most of the sherds are from pottery types that date from A.D. 1325 to 1415 with a few pottery types that date from A.D. 1400 to 1500 and A.D. 1050 to 1150.

Two possible features were observed during a recent visit to the site. An ash stain is located about 40 m to the north of the main artifact concentration. No artifacts are directly associated with the stain. Cultural affiliation and temporal determination could not be made from the surface evidence. A cobble alignment is located 15 m east of the main artifact concentration. The alignment is roughly L-shaped with each alignment 1.5 to 2 m long. No artifacts are directly associated with the alignment and it does not have intramural divisions visible on the surface.

Artifact Assemblage: During the survey a 5 m radius recording unit was placed in the largest concentration. This concentration is about 15 m in diameter with 100 sherds and lithic artifacts. The other two concentrations are about 7 m in diameter and contain between 10 and 20 artifacts each.

Table 2 shows the pottery types and counts from within the main concentration. The most common type is Cieneguilla Glaze-on-yellow and plain body sherds from glaze-on-yellow vessels. Unlike other pottery assemblages from the project area, LA 98688 has jars and bowls and micaceous and smeared indented corrugated utility wares.

Other pottery types from the general site scatter, but not included in the tabulations, were Kwahe'e Black-on-white, Bandelier Black-on-gray, and Glaze C. There were less than 20 sherds of these types.

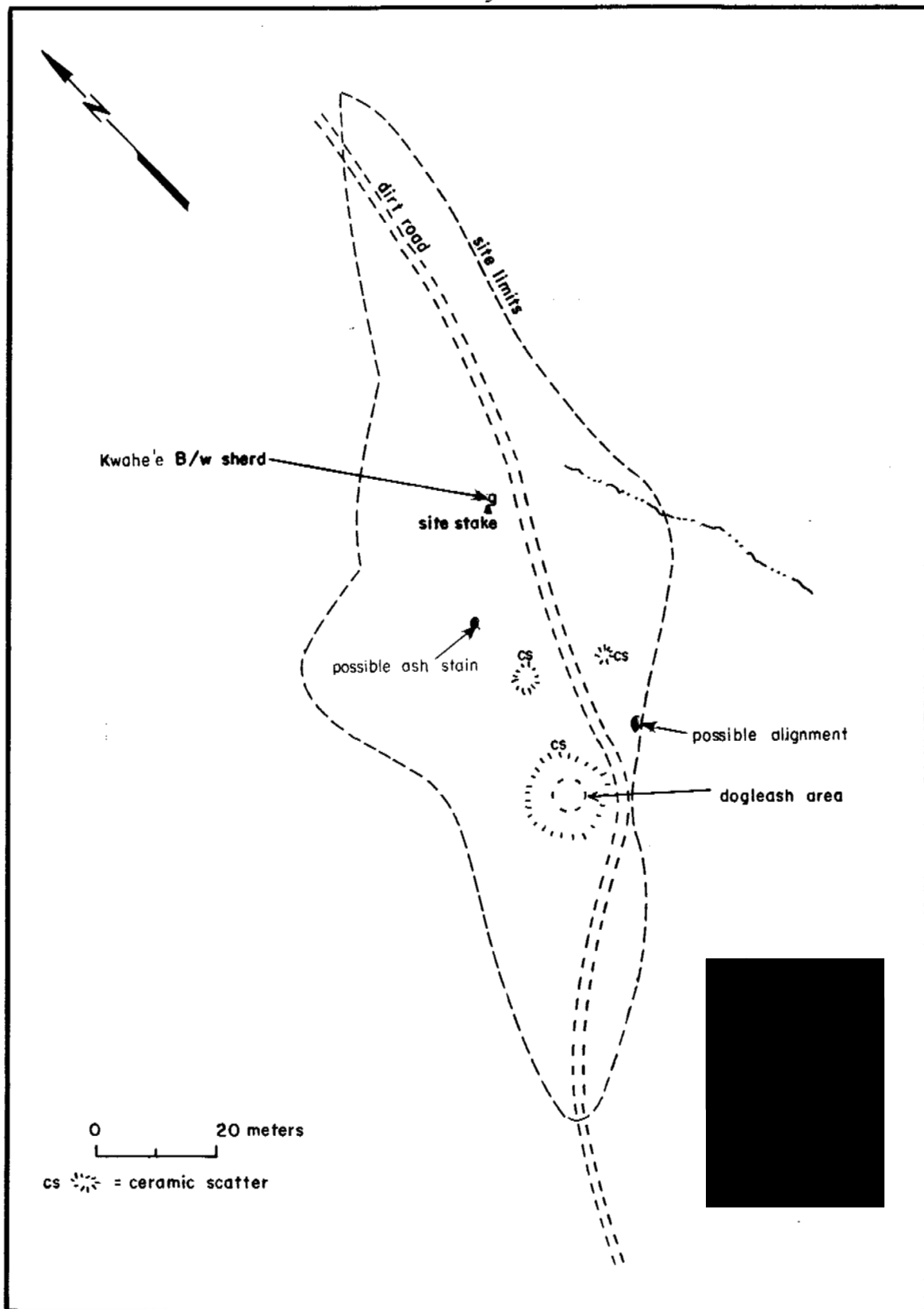


Figure 2. LA 98688, site map.

Table 2. Pottery Types within the 5-m-radius Recording Unit, LA 98688

Type	Bowl	Jar	Total
Pueblo II mineral white	1		1
Abiquiu Black-on-gray	2		2
Wiyo Black-on-white	1		1
Undiff. polished white ware	4		4
Undiff. Glaze-on-red		1	1
Undiff. polished red	8	4	12
Cieneguilla Glaze-on-yellow	4	3	7
Undiff. Glaze-on-yellow	3	2	5
Undiff. polished yellow	6	5	11
Sankawi Black-on-cream	2		2
Smearred indented corrugated gray ware		6	6
Micaceous utility ware		2	2
Total	31	23	54

Eight lithic artifacts were recorded within the 5-m-radius recording unit. Eight of the artifacts were locally available chert and one was quartzite. There are four core flakes and four pieces of angular debris. Cortex was present on one piece of angular debris and on one core flake. Debitage size was small to medium with maximum dimension ranging between 14 and 36 mm. Less than 10 pieces of obsidian debitage were observed in the general site scatter.

Interpretation: LA 98688 is a large sherd and lithic artifact scatter. The surface artifact count is between 500 and 600 with most of the artifacts in three concentrations. Pottery types were made from A.D. 1050 to 1500. These dates indicate that the site is multicomponent. The pottery assemblage has both decorated jar and bowl sherds and utility wares. The range of vessel forms would be expected at a fieldhouse or temporary residence, but there were no surface indications of architectural or processing features. Most of the sherds are small and may represent an assemblage of less than 20 vessels.

LA 98688 was repeatedly occupied over the 500-year span indicated by the pottery manufacture dates. The typical pattern observed for small sites in the Las Campanas area is of brief occupation for resource gathering and small-scale processing. Brief occupation and small-scale processing mostly are inferred from the low frequency and diversity of tools, containers,

and features. The low frequency of pottery types and vessels from the A.D. 1000 to 1200 and A.D. 1450 to 1600 periods probably reflects the greater Las Campanas occupation pattern.

The high frequency, relative diversity of vessel forms, and spatial concentration of pottery types from the A.D. 1325 to 1450 period may indicate a domestic occupation associated with agricultural activities along the Arroyo Calabasas. It is also possible that the pottery concentration and relatively higher vessel form diversity and frequency for the A.D. 1325 to 1450 period results from a longer occupation by a larger group for resource collecting and processing. Most of the sherds are from the Rio Grande Classic period; a time when the largest villages were occupied. Hunting and gathering forays may have been organized beyond the nuclear family in order to exploit resource lands such as the piñon-juniper woodlands between the Santa Fe River and the Rio Grande. Larger group size may have been necessary to more efficiently gather the resources necessary to support a large population.

A TREATMENT PLAN FOR LA 98688

The data recovery plan is submitted in compliance with Santa Fe County Ordinance 1988-8. This data recovery plan will be divided into research questions, data needs, and specific field and laboratory methods.

Research Questions

LA 98688 presents a number of problems for addressing significant research questions. These problems stem from the evidence for more than one temporal component, the probable lack of stratified subsurface deposits, and the potential for masking of ephemeral early and late components by the more abundant deposits of the middle temporal component.

The LA 98688 pottery assemblage has manufacturing dates between A.D. 1000 and A.D. 1600. The earliest pottery type is Kwahe'e Black-on-white (A.D. 950 to 1225, best dated between A.D. 1100 and 1200 [Warren in Chapman and Enloe 1977:188; Mera 1935; Breternitz 1966:81; Wiseman 1989:139]). The latest pottery type is Sankawi Black-on-cream (A.D. 1500 to 1600 [Breternitz 1966:95; Warren in Chapman and Enloe 1977:187]). Components that date between A.D. 1000 and 1200 and A.D. 1500 and 1600 are rare in the Las Campanas site assemblage. The small number of sherds from these periods suggest short occupations that left limited evidence. The majority of the pottery types have manufacture dates between A.D. 1300 and 1450. These types include Wiyó Black-on-white, Abiquiu Black-on-gray, Agua Fria Glaze-on-red, and Cieneguilla Glaze-on-yellow. From the predominance of these pottery types it can be inferred that the bulk of the occupation occurred sometime between A.D. 1300 and 1450.

The nature of the occupations that have resulted in the apparent time depth represented by the pottery manufacture dates may be difficult to determine and interpret. The cultural deposits are probably shallow and the predominance of the middle component may mask the early and late components. These conditions would limit the scope of the research and potential results from the study of the early and late components. Therefore, this research design will focus on the middle temporal component of A.D. 1300 to 1450.

During what portion of the early Classic period of the Rio Grande sequence was LA 98688 occupied?

Based on the ceramic assemblage, it is expected that LA 98688 dates to the latter portion of the early Classic period (A.D. 1370 to 1425). This assumption is based on the predominance of glaze paint pottery. The occupation span during the Classic period is important to establish because it has implications for study and interpretation of the social and economic behaviors that contributed to the formation of the archaeological deposit. This question can be addressed partly by examining the relative frequencies of glaze paint pottery to other decorated pottery types within assemblages from the Santa Fe River villages and Cochiti Dam sites including Agua Fria

Schoolhouse Pueblo, Pindi Pueblo, and Cieneguilla Pueblo, and Los Aguajes and Arroyo Hondo Pueblo south of the Santa Fe River.

The presence of glaze paint pottery is an important characteristic of the Classic period of the Rio Grande sequence. Glaze paint pottery occurs in small numbers within the late component of Pindi Pueblo and is a common component of the late fourteenth- and early fifteenth-century assemblages of Arroyo Hondo and Agua Fria Schoolhouse pueblos (Habicht-Mauche 1993; Lang and Scheick 1989). However glaze-paint pottery is not common in the Las Campanas area. Classic period sites comprise 23 percent of the dated sites. Glaze paint pottery comprises 5 percent of the pottery that was identified as isolated occurrences. Even though Classic period sites are the second most common in the Las Campanas area, the low frequency of sites and isolated occurrences with glaze paint pottery suggests minimal use of the Las Campanas area from A.D. 1370 to 1600.

Within the general context of the low frequency of glaze paint pottery on Classic period sites and as isolated occurrences, LA 98688 is unusual. Thirty-six of the 54 sherds recorded in the 5-m-radius collection area were glaze paint pottery. This would suggest that LA 98688 was occupied when glaze paint pottery was abundant. Glaze paint pottery is suggested to be an important part of the Component III assemblage from the Agua Fria Schoolhouse Pueblo (Lang and Scheick 1989:194-195) and it is abundant in the Cochiti Reservoir Classic period site assemblages. It is unknown how abundant glaze paint pottery was at Cieneguilla Pueblo, but it is likely that it was a main contributor since the village was occupied throughout the glaze paint sequence and into the early historic period (Schroeder 1984).

If LA 98688 glaze paint pottery is similar in paste and temper to the Agua Fria Schoolhouse Pueblo Component III assemblage, then LA 98688 may represent an element of a changing late fourteenth- and early fifteenth-century subsistence system. Lang and Scheick (1989:195) suggest that during the late fourteenth and early fifteenth century, Agua Fria Schoolhouse Pueblo may have been as large as the Component I occupation at Arroyo Hondo Pueblo, which is estimated to have housed 500 to 2,000 people (Wetterstrom 1986). With this aggregation of the Santa Fe River population, the subsistence system for Agua Fria Schoolhouse Pueblo villagers may have undergone changes that might be evidenced in the site types and distribution in the piñon-juniper piedmont north of the river.

If the glaze paint pottery is different from the Agua Fria Schoolhouse assemblage, but similar to the Cieneguilla and Los Aguajes pottery assemblages, then the deposit at LA 98688 may represent an attempt at long-distance exploitation of the resources of the Arroyo Calabasas. If LA 98688 is part of a long-distance subsistence strategy, then the artifact assemblages should reflect the tools that were necessary to support that effort.

Data Needs. To address this research problem, assemblage data from LA 98688, LA 2, LA 16, and LA 6 will be needed, if they are available. The data will be in the form of frequency distributions of paste and temper types within and between assemblages.

A major goal of the data recovery effort will be to recover a substantial portion of the glaze ware pottery and associated assemblage from the main site concentration. Currently, the main concentration has been delimited within a 30-by-25-m area. At least 50 percent of this area will be excavated based on surface distribution and field assessment of subsurface artifact

distributions.

Temper and paste attributes of pottery from LA 2, LA 5, LA 16, and Cochiti Dam sites will be compared with LA 98688. This comparison will be used to establish a tenuous temporal and cultural link between LA 98688 and the large village sites. Detailed pottery analysis of the glaze paint sherds recovered from LA 2 (Lang and Scheick 1989) and the Cochiti Dam (Warren 1979) Classic period sites have been completed and those data should be available for this study. Minimal detailed paste and temper analysis have been completed for the LA 5 and LA 16 pottery assemblages. Part of this study will be to determine the availability of pottery from LA 5 and LA 16 and, if possible, select a representative comparative sample.

The attempt to assign the LA 98688 occupation to the latter portion of the early Classic period by examining ceramic paste and temper will be supplemented by chronometric samples. Carbon-14, obsidian hydration, dendrochronological, and archaeomagnetic samples will be collected from appropriate contexts. Each chronometric dating method has its own set of advantages and problems (Blinman 1990; Smiley 1985). To date, Las Campanas site excavations have yielded few or no chronometric samples. Expectations for recovery of chronometric samples also are low for this effort.

What function did LA 98688 have in the economic system of the Santa Fe River community or the more distant villages of LA 16 or LA 5?

LA 98688 is 5.5 km from Agua Fria Schoolhouse, which may have been the last of the Santa Fe River villages occupied at the end of the early Classic period. LA 98688 is similar in size and artifact abundance to larger, reoccupied or reused late Coalition-early Classic period sites that had Santa Fe Black-on-white pottery. However, differences exist between LA 98688 and the earlier Santa Fe Black-on-white sites (LA 86159, LA 98690, and LA 86150) that suggest LA 98688 functioned differently in the local economic system between A.D. 1370 and A.D. 1425.

A major difference between LA 98688 and the large Santa Fe Black-on-white sites is the presence of utility and decorated ware jar sherds. The large Santa Fe Black-on-white sites yielded less than ten jar sherds from all three sites reflecting the overall Las Campanas pattern of a low occurrence of jar sherds (19 percent of isolated occurrence vessel forms were jars). LA 98688 had 43 percent jar sherds recovered within the 5-m collection radius. Utility wares and decorated pottery rarely occur on the same site from any period between A.D. 1000 and 1600. Utility wares only occur as 8 percent of the isolated sherds for the whole project. LA 98688 had 15 percent utility wares recovered from the 5-m collection radius.

Another difference between LA 98688 and the large, late Coalition-early Classic period sites is that the majority of the sherds occur within a single concentration. Utility and decorated wares co-occur in the same concentration at LA 98688. This would suggest that they were deposited at the same time and resulted from a related set of activities. The pottery assemblage is similar to domestic refuse and less similar to the small, bowl dominated assemblages of the large, late Coalition-early Classic period sites.

Based on differences in the content and distribution of the pottery assemblage it can be suggested that LA 98688 may have had a different function than the reoccupied or reused, large

late Coalition-early Classic period sites. These differences suggest that LA 98688 may have been a fieldhouse rather than a foraging camp. Criteria to be used as a guideline for inferring site function are outlined below. Criteria for fieldhouses are derived from B. Moore (1979) and J. Moore (1989). The utility of these criteria for evaluating site function will be conditioned by the amount and kinds of remains that are found.

1. Structure. One to three rooms may be present, with one room large enough to permit occupation by one adult. Floor area may be consistent with the average for contemporaneous habitation/village sites within the same settlement system or cultural tradition.

2. Site location. Land potentially suitable for agriculture should be near the site. Such land should be in a direct line of sight with the structure.

3. Pattern of use. Three limited-use patterns are proposed. A daily-use pattern, with overnight stays restricted to preharvest and harvest conditions, should produce the sparsest remains. Tools and containers used in food procurement, preparation, and consumption may be present, with processing tools rare or in low frequencies. Hearths, if present, should be exterior, used for food preparation rather than heat. Repeated use over a long period of time may result in greater artifact frequencies and difficulty in segregating daily use from biseasonal use.

Biseasonal use with continual occupancy during the growing season will be difficult to distinguish from year-round occupation. An artifact assemblage reflecting nearly a full range of food preparation, tool production, and maintenance activities should be present. Characteristics of full-time residency, which should not be present, are interior hearths for heating and cooking; ritual features, such as kivas; stratified midden deposits; and other features from which evidence of nonseasonal occupation may be derived.

Occasional use by travelers or wayfarers might not be distinguishable from other uses. Use of existing hearths, tools, and containers is likely, and introduced objects may not be distinguishable from existing items.

Gathering sites, when used only for that purpose, may have characteristics that are different from those of fieldhouses. These characteristics are mostly derived from attributes of Archaic period sites and from studies that included so-called gathering sites (Sebastian 1983; Reher 1977; Moore and Winter 1980).

1. Structure. Structural evidence may be absent, or if it is present, it should be insubstantial. Examples of insubstantial structures are lean-tos or wickiups. Evidence of these structures may include shallow, saucer-shaped depressions and/or postholes. Structures would be used primarily for shelter against wind and rain and for very temporary seasonal use.

2. Site location. Gathering sites should be located in environmental transition zones where plant diversity may be high, allowing for exploitation of a wide range of plant species. Alternatively, site locations may be near an area where one seasonal plant could be harvested in abundance. Sites may or may not be located near potentially arable land.

3. Pattern of use. Use should be seasonal and short term. Overnight stays are implied, and the length of stay corresponds to the amount of time it takes to collect a sufficient supply. Depending

on the distance from the habitation, the length of stay may include processing time. Features may include interior and exterior hearths, and fire-cracked rock discard piles or scatters. Artifact assemblages would reflect a focus on processing, including grinding implements, scrapers, and hammerstones. The types of seeds or nuts gathered would dictate the types of grinding implements. Diversity in ground stone may be expected when transitional zones are exploited. A more restricted tool kit should occur with single or limited resource procurement. Small numbers of vessels for consumption and processing and short-term storage vessels would be expected. Reworked vessel fragments used as scoops or plates may also be present.

Data Needs. Excavation and recording of structural and feature remains should provide information about the structural forms and the relationship of extramural features to the structures. By analyzing the surrounding area for agricultural potential it should be possible to assess the spatial relationship of the site to potential fields or gathering resource areas. Recovery of floral and faunal remains from features and trash deposits should provide information about the range of activities performed at the sites. Indexes of seasonality using plant remains may be developed. Recovery and analysis of artifacts will also provide information about the activities performed, and artifact distributions may lead to inferences about intensity of occupations and potential for repeated occupations.

FIELD AND LABORATORY METHODS

Field Methods

1. The site surface will be re-examined and the concentrations, artifact scatters, features, and site limits will be pinflagged.
2. A 1-by-1-m grid system will be superimposed within the limits of the activity areas or artifact concentrations. Each 1-by-1-m collection unit will have a north and east designation. The signature corner will be the northeast corner.
3. Surface artifacts within the excavation areas will be collected in 1-by-1-m units. Temporally diagnostic artifacts located outside excavation areas will be piece-plotted. Piece-plotted artifacts will be assigned consecutive numbers and will be integrated into the grid system in the lab using a computer mapping program. Artifacts outside the excavation areas will be field recorded using the laboratory analysis formats.
4. Excavation of activity areas and artifact concentrations will emphasize data collection from contiguous units to support site structure analysis. The excavation will include a combination of surface stripping and subsurface grid excavation.

A 20-by-20-m area will be selected for investigation based on artifact density and diversity. Ten units will be excavated into a noncultural material-bearing stratum to assess the potential for subsurface cultural deposits. Stratigraphic information collected from these units will determine the depth of subsequent excavation within the concentration. The remaining units will be surface stripped after the depth of the cultural deposit is determined.

Within the 20-by-20-m area, a 5 percent sample or 20 1-by-1-m units will be excavated into non-cultural deposits. This sample will include the 10 units that initially were excavated to determine the site depth. All surface stripping and 10 percent subsurface excavation area will be by hand and the backdirt will be screened. The locations of features and surrounding artifacts, stains, and discard areas will be mapped using the grid system. If a thermal or architectural feature is encountered, then an area sufficient to expose it and associated cultural remains or deposits will be excavated. The additional feature area excavation will not be used as part of the 10 percent sample to insure adequate sampling of the artifact concentration. Auger tests will be placed in the bottom of each unit to insure that a noncultural material-bearing stratum had been reached.

The ash stain and two other small artifact concentrations will be investigated. A 4-by-4-m excavation area will be placed at the ash stain and the small artifact concentrations. These excavation areas will be surface stripped. If features are encountered, then the feature and the immediate area will be excavated to expose the occupation surface and associated artifacts. The size of the excavation will depend on the extent of the feature and associated cultural deposit. If no features are encountered, then three 1-by-1-m units will be excavated until noncultural strata are reached. Auger tests will be placed in the bottom of each unit to insure that a noncultural material-bearing stratum had been reached.

A cobble alignment was identified during a recent visit to the site. A 1-by-3-m unit will be placed within the alignment to determine its nature. If it is a cultural feature then it will be completely excavated. If this feature is a structural foundation it would represent the only Pueblo period architectural remains excavated during the Las Campanas project.

5. Activity area excavation will be by hand, using standard archaeological hand tools. All fill will be screened, with the mesh size determined by the excavation context. Screen mesh no larger than ¼-inch will be used. All 1-by-1-m excavation units will be excavated in 10-cm levels. If cultural strata are encountered, they will become the excavation control unit. Within these strata, 10-cm excavation levels will be used to provide finer control of artifact locations. The 10 cm levels will allow comparisons between excavation units using density and volume measures.

As excavation proceeds, diagnostic and large artifacts or potential structural components of features will be mapped using the closest set point. Mapping of large artifacts or disarticulated feature components will aid in the identification of occupation levels or surfaces. Excavation will continue until noncultural material-bearing soils are encountered.

Excavation documentation will consist of field notes and grid forms compiled by the excavator. The forms will contain locational, dimensional, stratigraphic, and contextual information. General notes outlining excavation strategy and rationale, field interpretations, and decisions will be kept by the project director and site assistants.

6. Feature excavation will proceed by exposing the top of the feature and the area immediately surrounding it. The stain or soil change will be mapped and photographed (if appropriate). The feature will be excavated in cross section in 5-cm levels, exposing the natural stratigraphy. Exposed artifacts or components will be located as described above. Artifacts that are noticed within each level will be bagged separately and added to the artifacts recovered by water screening (see below). The exposed cross section will be profiled and the soil levels described using a Munsell Color Chart and standard geomorphological terms. The second half of the feature will be excavated in natural levels or 5-cm arbitrary levels. At least 3 liters will be collected from each 5 cm level or natural level for water-screening and ethnobotanical analysis.

Once the feature is completely excavated, feature maps and profiles will be drawn and tied into the grid system and site elevations. Drawings will include a scale, north arrow, and key to abbreviations and symbols. Written description will be on standard forms that will include provenience, dimensions, soil matrix, artifact, construction, time frame, excavation technique, and other data. Photographs will record the feature excavation progress and the final excavated form. Photographs will include a metric scale, north arrow, and mug board with the L.A., feature number, and date. All photographs will be recorded on a photo data sheet.

Artifacts recovered from each provenience will be bagged and labeled by unit, stratigraphic or arbitrary level, date, and excavator's name. A specimen number will be assigned to all bags by provenience and a running field artifact catalogue maintained for each site. Materials necessary for immediate preservation of fragmentary and unstable faunal and ethnobotanical remains will be used. Large lithic artifacts will be bagged separately to minimize bag wear. Very small flakes and angular debris will be placed in vials or bags within the artifact bag so they are not lost during cleaning.

7. C-14 samples will be collected from features and other possible cultural contexts. Samples will be ranked according to their context and data potential. Preferred samples should lack sources of potential contamination from burrows and nests, prolonged exposure during excavation, and proximity to modern surfaces or disturbance. First priority samples will be taken from lower strata and feature floors and interiors. Second priority samples will come from upper feature fill or proveniences that exhibit limited evidence of disturbance. If first and second priority sample proveniences are absent, the third priority samples from disturbed or less intact contexts will be collected.

After the hearths, roasting pits, or other pit features are cross sectioned, the ethnobotanical sample potential will be assessed. If deep features are encountered, then pollen samples may be collected separately from the soil that will be water screened. For pollen samples, 2 tbsp will be collected from the best strata. The samples will be put into plastic bags that have been kept sealed. If burned seeds or wood are encountered, up to 20 g will be collected for radiocarbon analysis. All samples will be collected with a dry, clean, trowel or tweezers and placed immediately into a bag or tin foil. Carbon samples will only be collected from first- and second-priority contexts, unless third-priority contexts are all that are available. Archaeomagnetic samples will be collected according to the processing laboratory standards.

Sample locations will be plotted on plan and profile drawings of features and proveniences. The sample bags will be labeled with the provenience designation, feature number, location within the feature, and stratigraphic position. The samples will also be recorded on specimen forms with labeling information, environmental data, contextual information, and any other comments that may be useful to the laboratory analyst.

8. An updated transit map of the site will be made. The map will include feature and artifact locations, excavation areas, and relevant topographic features.

Laboratory Methods

Before artifact analysis, all recovered materials will be cleaned, and any materials requiring conservation will be treated. Collected samples of charcoal and ethnobotanical remains will be processed and prepared for shipment to the appropriate laboratory. The specialists will be consulted for special preparations required before shipment. Working copies of field maps and feature drawings will be prepared and made available to the special analysts.

The lithic artifact analysis will follow the guidelines of the Office of Archaeological Studies Lithic Artifact Analysis Manual. The lithic analysis is particularly suited to monitoring technological organization. Morphological and functional attributes emphasize reduction stage, manufacture and maintenance, and tool use and discard. These are the main foci of the research orientation and implementation.

The ceramics will be identified according to existing regional typologies for the Middle and Northern Rio Grande. Sources of information may include Stubbs and Stallings (1953), Lang and Scheick (1989), Mera (1935), and Chapman and Enloe (1977). The primary foci of the ceramic analysis will be dating, function, use-life, and source of manufacture.

Faunal remains will be analyzed in the OAS Laboratory by Linda Mick-O'Hara. Depending of the size, condition, and preservation of the specimens, they will be monitored for species, sex, age, portion, condition, evidence of butchering, and evidence of taphonomic processes. Faunal remains are important indicators of subsistence strategy and site formation. The detail of the analysis will be tempered by the abundance and condition of the faunal remains.

Upon completion of the attribute identification, the coded data will be entered into a DBase III or Statistical Package for the Social Sciences (SPSS) data entry program. Statistical manipulation of the data base will be performed using SPSS PC + Version 3. Statistical tests will be geared towards examining patterns in artifact distribution that reflect technological organization. Tests and analytical techniques that may be used include Chi-square tests for independence, correspondence, and cluster analysis to identify similar assemblages within the Las Campanas area. Results of the tests will be illustrated with graphs, tables, charts, and distribution maps. The computerized data base may be used to generate a project artifact catalogue. Artifacts with attributes important to analysis and site interpretation will be illustrated for the report.

Laboratory analysis of collected pollen samples will be conducted by a professionally recognized independent consultant. The flotation and macrobotanical remains will be analyzed at the Office of Archaeological Studies by the staff ethnobotanist. The analyses will identify plant resources that were used prehistorically.

Carbon-14 dating will be conducted by Beta Analytic, Inc., of Coral Gables, Florida. Archaeomagnetic analysis will be conducted by Dr. Daniel Wolfman, on staff at the Office of Archaeological Studies. The purpose of these analyses will be to obtain the most accurate range of dates possible for cultural strata and features.

Research Results

The final report will be published in the Office of Archaeological Studies' *Archaeology Note* series. The report will present all important excavation, analysis, and interpretive results. Included will be photographs, maps, and tables. Raw data such as field notes, maps, photographs, and artifact catalogues will be given to the State Historic Preservation Division, Archeological Records Management Section, currently located in the Laboratory of Anthropology in Santa Fe. The artifact collection will be curated in the Museum of New Mexico's Archaeological Research Collections or a facility of Las Campanas's choice.

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