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Excavation at Tres Bobos Hamlet, (Site 5MT4545),

A Basketmaker III Habitation

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16. Abstract

Tres Bobos, Site 5MT4545, is a small Basketmaker III habitation in extreme southwestern Colorado, near the present town of Dolores. Excavations discovered one pithouse, 14 noncontiguous surface rooms, and numerous ancillary features. The number and spatial distribution of the surface rooms in two discreet areas around the single pithouse indicate that there were two occupations centered around the pithouse. The differential spatial configuration of these room sets and the well-developed antechamber of the pithouse reflect the transition from late Basketmaker to early Pueblo times, a period associated with a dependency on agriculture. This spatial configuration of rooms, the architectural style, and the ceramics collected at the site indicate Tres Bobos was occupied during an early portion of the Sagehen Phase (A.D. 600-850, according to Dolores Archaeological Program temporal designations).

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ABSTRACT

Tres Bobos, Site 5MT4545, is a small Basketmaker III habitation in extreme southwestern Colorado, near the present town of Dolores. Excavations discovered one pithouse, 14 noncontiguous surface rooms, and numerous ancillary features. The number and spatial distribution of the surface rooms in two discreet areas around the single pithouse indicate that there were two occupations centered around the pithouse. The differential spatial configuration of these room sets and the well-developed antechamber of the pithouse reflect the transition from late Basketmaker to early Pueblo times, a period associated with a dependency on agriculture. This spatial configuration of rooms, the architectural style, and the ceramics collected at the site indicate Tres Bobos was occupied during an early portion of the Sagehen Phase (A.D. 600-850, according to Dolores Archaeological Program temporal designations).

INTRODUCTION

Acknowledgments

This report is the culmination of efforts of the entire Dolores Archaeological Program (D.A.P.). The collection of data in the field was supervised by J. Brisbin, crew chief, and N. Morris, assistant crew chief. Crew members included R. Deal, D. Harriman, P. Hauser, B. King, R. Rankin, J. Schwenn, A. Stuart, M. Varien, and R. Walkenhorst. Excavations at Tres Bobos began on 29 June 1979 and were completed on 31 August 1979.

Location

Tres Bobos (Site 5MT4545) was first recorded during survey operations conducted by the D.A.P. in June 1978 (Dykeman et al. [1]). Located in Montezuma County, Colorado, the site can be found on the Trimble Point Quadrangle, Colorado, U.S.G.S., 7.5 Minutes Series 1965 Topographic Map. More specifically, it is in the Northeast Quarter of the Northeast Quarter of Sec 35, T38N, R16W. In terms of the Universal Transverse Mercator grid system, the site is located in Zone 12, 714,340 mE and 4,154,200 mN. The site is approximately 8 km northwest of the town of Dolores, Colorado.

ENVIRONMENTAL SETTING

The environmental descriptions which follow are based on observations made at the time of excavation. The conditions observed do not necessarily reflect those that occurred prehistorically. The Sagehen Flats Locality Report (Greenwald [2]) discusses the relationship between environmental processes and resource availability, both past and present. When reference is made to the use of a particular resource, it is assumed that the processes in effect today also took place prehistorically, such that the resource was available. Figure 2.1 shows the environmental setting of Tres Bobos.

Climate

The contemporary climate in the Sagehen Flats Locality is essentially semiarid; however, as a result of diverse topography the climate can exhibit large variations within short distances. In general, the climate is characterized by low precipitation and low humidity, a wide daily temperature range, abundant sunshine, and moderate westerly winds. The United States Weather Bureau (U.S.W.B.) in Dolores, located 6.4 km southeast of the Sagehen Flats Locality, has recorded a mean July temperature of 19.7° C and a mean January temperature of -3.1° C. Precipitation occurs predominantly in the winter months and in the late summer and early autumn. Summer precipitation usually occurs as isolated thunderstorms which can often be quite severe. The mean annual rainfall recorded at the U.S.W.B. in Dolores is 460.5 mm. At the U.S.W.B. in Yellowjacket, 13.7 km west of Tres Bobos, an annual average of 126 frost-free days has been recorded.

Figure 2.1 Photograph of Tres Bobos Hamlet prior to field investigations.

Flora

The following list of flora is based on collections made and identified by a project field botanist in the Sagehen Flats Locality during the summer of 1979. The tree layer includes cottonwood (Populus sp.), pinyon (Pinus edulis), and willow (Salix sp.). The shrub layer includes fendlerbush (Fendlera rupicola), Woods' rose (Rosa woodsii), and Utah serviceberry (Amelanchier utahensis). The herb layer consists of aster (Aster sp.), buttercup (Ranunculus sp.), evening primrose (Oenothera caespitosa), flax (Linum sp.), fleabane (Erigeron coulteri), globe mallow (Sphaeralcea coccinea), Indian paintbrush (Castilleja chromosa), lupine (Lupinus sp.), mariposa lily (Calochortus gunnisonii), miner's candle (Cryptantha bakerii), tumble mustard (Sisymbrium sp.), prickly pear (Opuntia sp.), rabbitbrush (Chrysothamnus nauseosus), big sagebrush (Artemisia tridentata), sweetclover (Melilotus officinalis), milk vetch (Astragalus sp.), wild buckwheat (Eriogonum heracleoides), and yarrow (Achillea millifolium ssp. lanulosa). The grass layer consists of cheat grass (Bromus tectorum), crested wheatgrass (Agropyron desertorum), Indian rice grass (Oryzopsis hymenoides), foxtail barley (Hordeum jubatum), and western wheatgrass (Agropyron smithii).

Fauna

A variety of faunal species subsist in the Sagehen Flats Locality. The following list is based on observations of animals, their tracks, and their scat on or near the site during the summer of 1979: American elk (Cervus canadensis), badger (Taxidea taxus), black-tailed jackrabbit (Lepus californicus), Colorado chipmunk (Eutamias quadrivittatus), cottontail rabbit (Sylvilagus sp.), coyote (Canus latrans), mule deer

odocoileus hemionus), porcupine (Erethizon dorsatum), raccoon (Procyon lotor), rock squirrel (Spermophilus variegatus), striped skunk (Mephitis mephitis), mouse (Peromyscus sp.), and white-tailed prairie dog (Cyonomys gunnisoni). Avifauna observed include bald eagle (Haliaeetus leucocephalus), black-billed magpie (Pica pica), common flicker (Colaptes auratus cafer), common raven (Corvus corax), golden eagle (Aquila chrysaetos), marsh hawk (Circus cyaneus), mountain bluebird (Sialia currucoides), mourning dove (Zenaidura macroura), nighthawk (Chordeiles sp.), red-tailed hawk (Buteo jamaicensis), scrub jay (Aphelocoma coerulescens), sparrow hawk (Falco sparverius), and turkey vulture (Cathartes aura).

Geology and Soils

Tres Bobos is located at the southern end of a dip slope on a system of north-south oriented ridges and knolls. These ridges rise out of a low marshy basin approximately 250 m to the south, which drains into the Dolores River 3 km to the east. The site is located on the southeast face of a low-profile hillock incorporated into this larger system of ridges. Located at 2110 m above sea level (Figure 2.2) the site is 40 m higher than the Dolores River. This location might have been selected in part as a compromise between the need for a steady water source and the desire to avoid the colder temperatures of the lower floodplain.

The system of ridges results from, and now facilitates, arroyo cutting which drains the uplands on the north into the marshy basin to the south. These arroyos channel water during periods of heavy runoff. During the summer there is no flowing water, but the arroyo bottoms often remain damp.

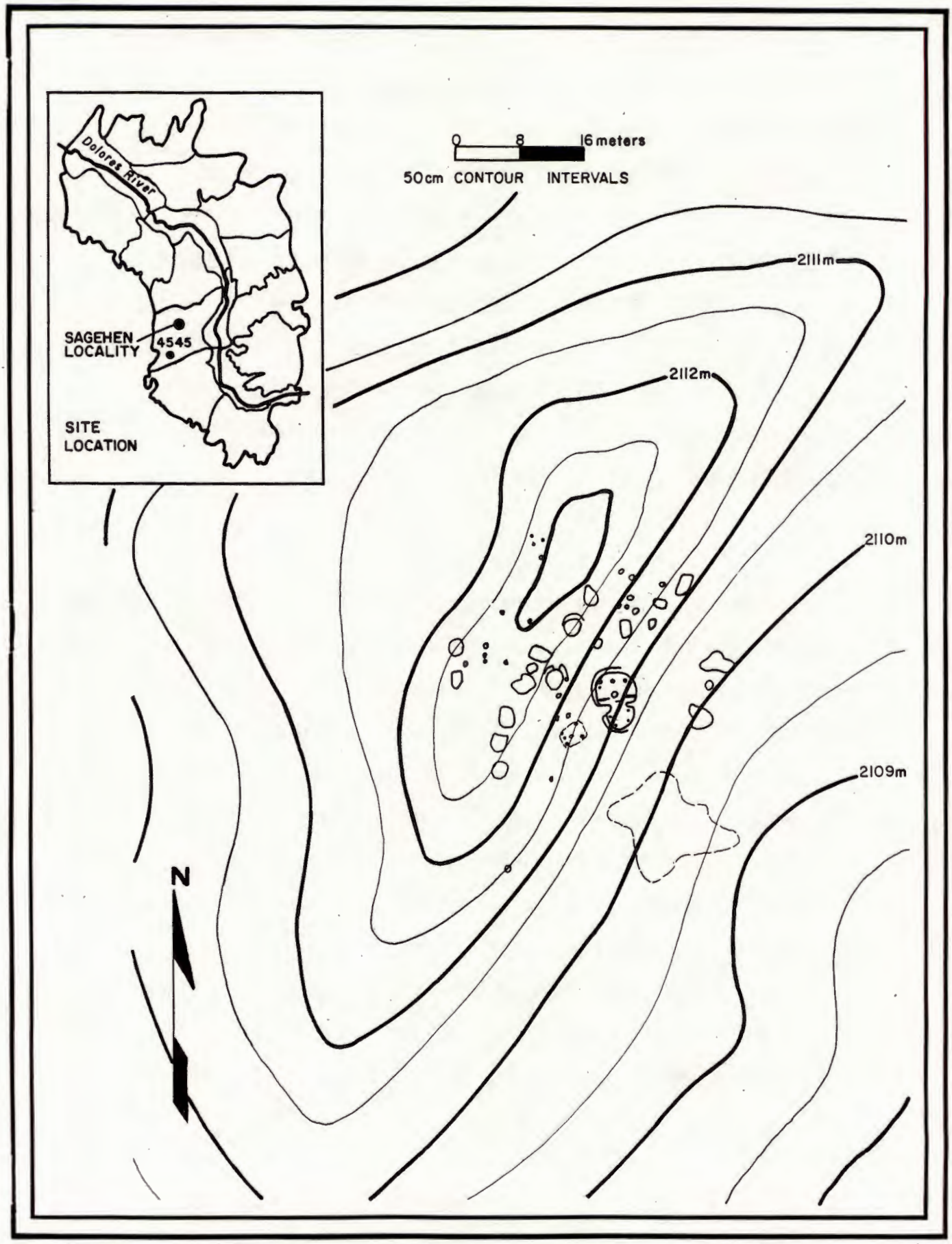

Figure 2.2. Topographic view of Tres Bobos Hamlet.

The drainages in this area are ideal for floodwater irrigation, i.e., planting in moist areas such as drainages. Floodwater irrigation is a relatively simple means of water control and its implementation does not require a large or complex social organization. If this method of irrigation was employed prehistorically, spring runoff might have been used to provide the preplanting and early postplanting irrigation that would have been crucial to a successful harvest in a semiarid region characterized by dry summers with minimal rainfall. However, it is not known if the prehistoric groups in this area engaged in such practices.

The geology and soils in the area of Site 5MT4545 are described in greater detail in Appendix 1.

Historic Land Use

Although the land to the north of Tres Bobos is currently under intensive cultivation in wheat and beans, the system of ridges has received limited agricultural use. In approximately 1935, the area was cleared of sagebrush and seeded in preparation for grazing. For the last 30 years the area has been used for lambing and winter grazing of sheep (D. Duranceau, personal communication). An abandoned historic homestead (Site 5MT4562), a sheepherder's camp, and sheep pens are located in the immediate vicinity of Tres Bobos. The cultivation and grazing have retarded the growth of climax species in the area, which would otherwise include big sagebrush and scattered pinyon and juniper (*Juniperus osteosperma*).

Plow scars visible at the contact between the Ap and B soil horizons indicate that the site was plowed only once. The plow scars were oriented southeast to northwest across the areas of the site exposed by excavation.

The scars were parallel and evenly spaced, indicating that a single plow was used.

Local Resources

Of the resources available within a 5 km radius of Tres Bobos, Dakota Sandstone is most abundant. This formation outcrops in the arroyo cuts and occasionally on the sides of the ridges. At Tres Bobos, Dakota Sandstone was found in every surface collection unit and in much of the cultural fill excavated from rooms and features. The sandstone was usually unworked, with only an occasional piece scabbled on the edges to produce a more regular shape. Excluding the wingwall and deflector in the main pitstructure, no shaped slabs of sandstone were found in situ. Many of the tabular pieces that were recovered might have been incorporated into the superstructure of the surface rooms to the north and west of the main pitstructure. Smaller pieces of sandstone that show signs of burning were found in situ in many of the features at the site.

Outcrops of lithic material suitable for chipped stone tools are available in the project area, but not within the immediate catchment area of Tres Bobos. Clay resources are common; for example, Mancos Shale, found nearby, contains clays suitable for pottery manufacturing (W. Lucius, personal communication). Quarry sites have not been identified, however.

SOCIAL SETTING

Tres Bobos has been assigned to the Sagehill Subphase (A.D. 600-760) of the Sagehen Phase of the Anasazi Tradition (Kane [3]). The Sagehen Phase correlates approximately with the Pecos Classification Basketmaker III period (Kane [4]).

Various sites associated with either the Basketmaker III period or the Sagehen Phase exist within a 3 km radius of Site 5MT4545 (Figure 2.3). These include the following:

Site Number	Distance from Tres Bobos
5MT4652	0.5 km north
5MT2200	0.5 km west-northwest
5MT2162, Element 1	0.1 km northwest
5MT4684	2.5 km east

Both Site 5MT4652 (Dykeman et al. [1]) and Site 5MT2200 (Breternitz and Martin [5]) have been documented as having lithic and ceramic surface scatters and rubble concentrations which are indicative of Sagehen Phase/Basketmaker III period habitations. It is possible that these sites were contemporaneous with Tres Bobos.

Element 1 at Site 5MT2162 (Greenwald [6]) might also have been occupied around the same time as Tres Bobos. Dendrochronological dates for this site indicate a Basketmaker III habitation. Site 5MT4684 (Tucker [7]) is another habitation which can be assigned to the Basketmaker III period based on dendrochronological dating. Both of these sites have noncontiguous surface rooms similar to the rooms of Element 1 at Site 5MT4545.

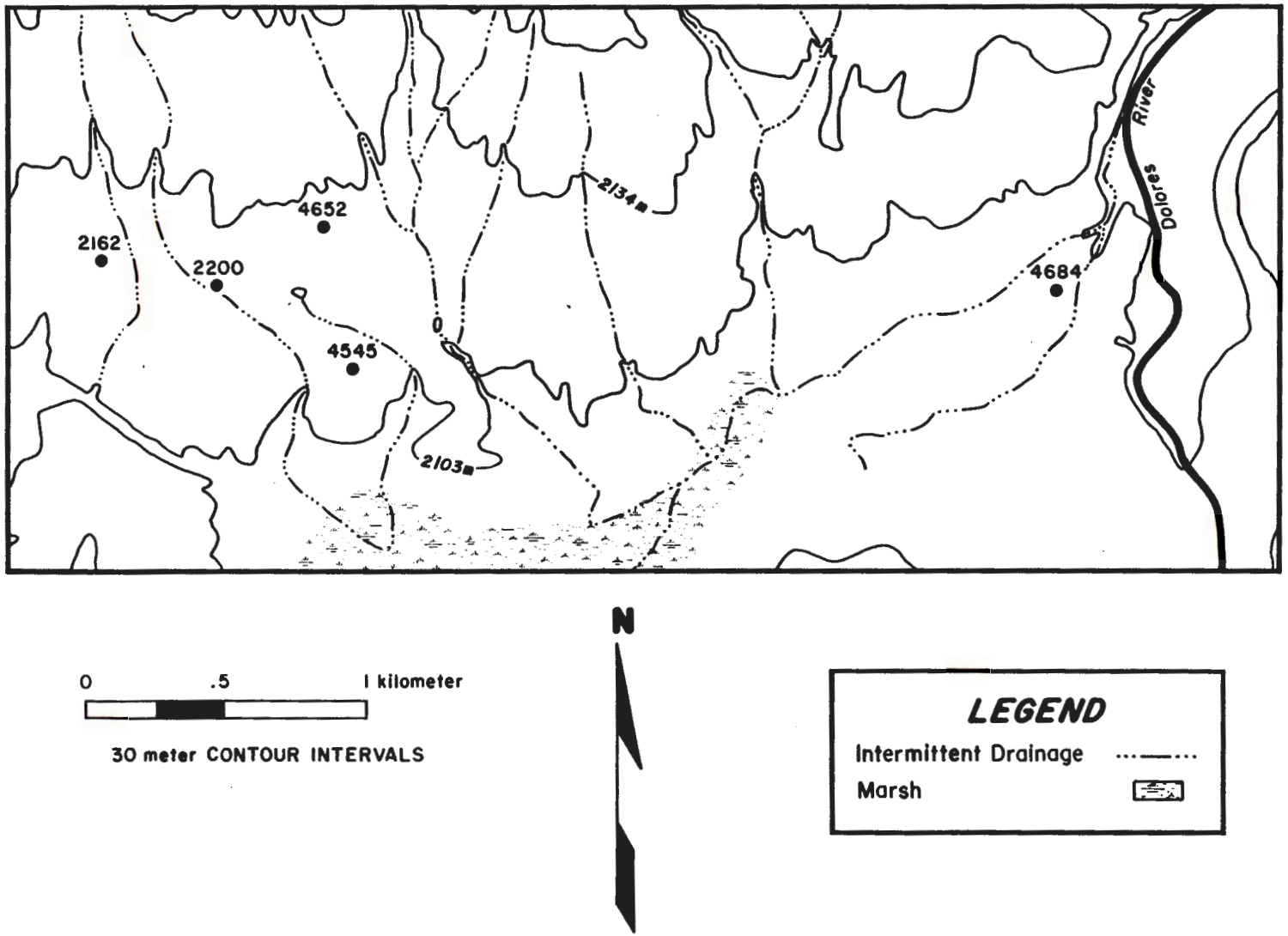

Figure 2.3 Locations of selected sites contemporaneous with Tres Bobos Hamlet.

SURFACE EVIDENCE

Magnetometer Survey

Tres Bobos was surveyed by a magnetometer crew on 19, 20, and 21 September 1978. Four contiguous 20 by 20 m blocks were surveyed (Figure 2.4) and nine anomalies were recommended for testing (R. Huggins, personal communication). The 1978 Magnetometer Report (Huggins and Weymouth [8]) presents background information on magnetometer studies as well as information specific to Site 5MT4545.

Surface Collection

When Tres Bobos was first recorded in 1978, the site was defined by a dense lithic and ceramic scatter. A 25 percent grab sample was collected at that time, and a sparse amount of sandstone rubble was noted in the northwest corner of the site. The sandstone observed on the surface included only undressed tabular blocks. A few river cobbles and a small number of ground stone artifacts were also present.

A 4 by 4 m grid was established over an area measuring 56 m east-west and 48 m north-south, an extension of the magnetometer grid by an 8 m strip to the north and by 16 m to the west. For the surface collection, the 016E line was considered to be the actual western boundary of the site, so that an area 48 by 40 m was collected. Distributions of ceramic, flaked lithic, and nonflaked lithic artifacts are illustrated in Figures 2.5, 2.6, and 2.7, respectively. When a map of the major architectural units is overlaid on these distribution maps, some very noticeable patterns emerge, as represented in Figure 2.8. The southeastern portion of the site had the highest artifact density when compared to other areas of

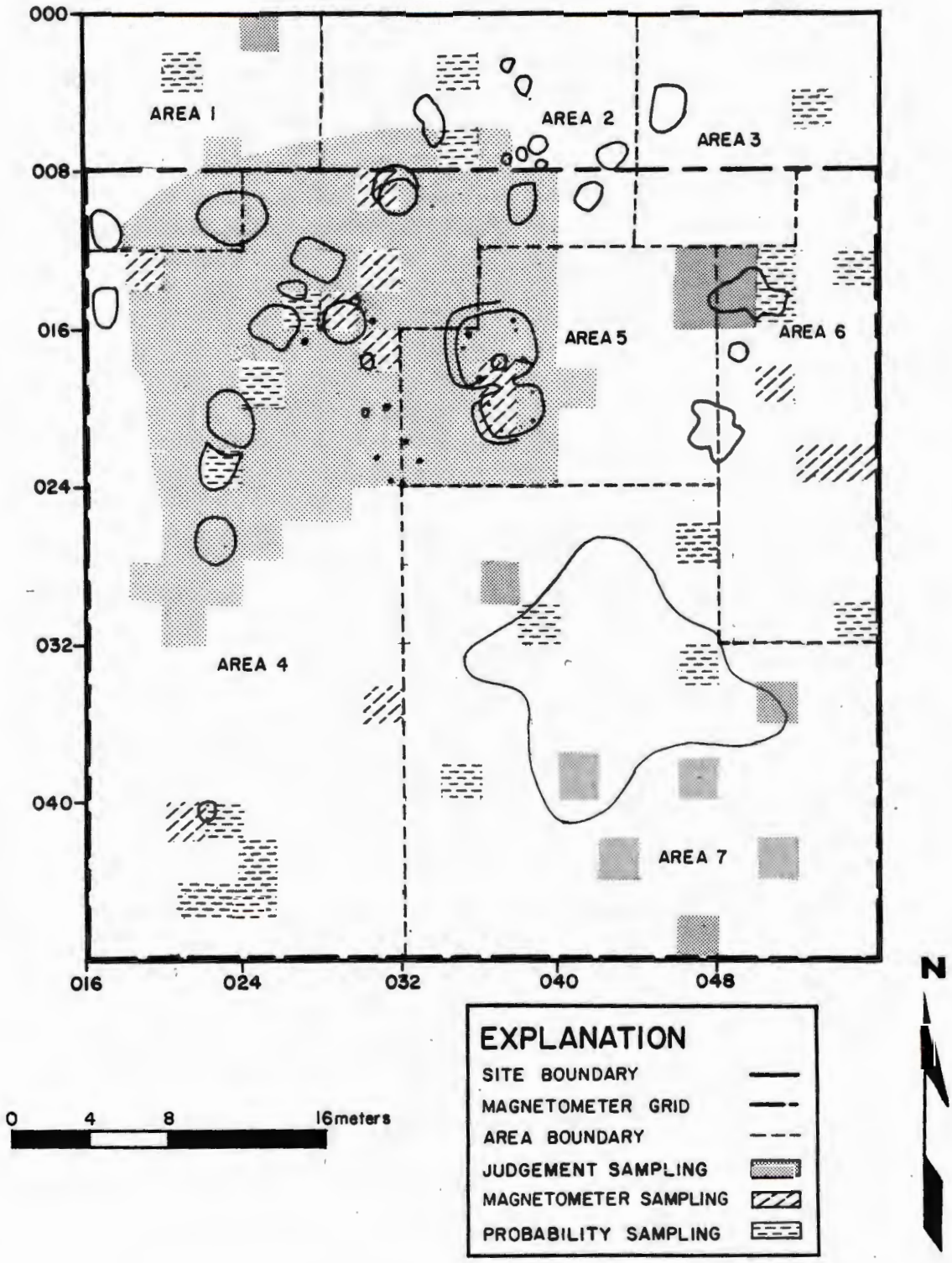

Figure 2.4 Site sampling plan, Tres Bobos Hamlet.

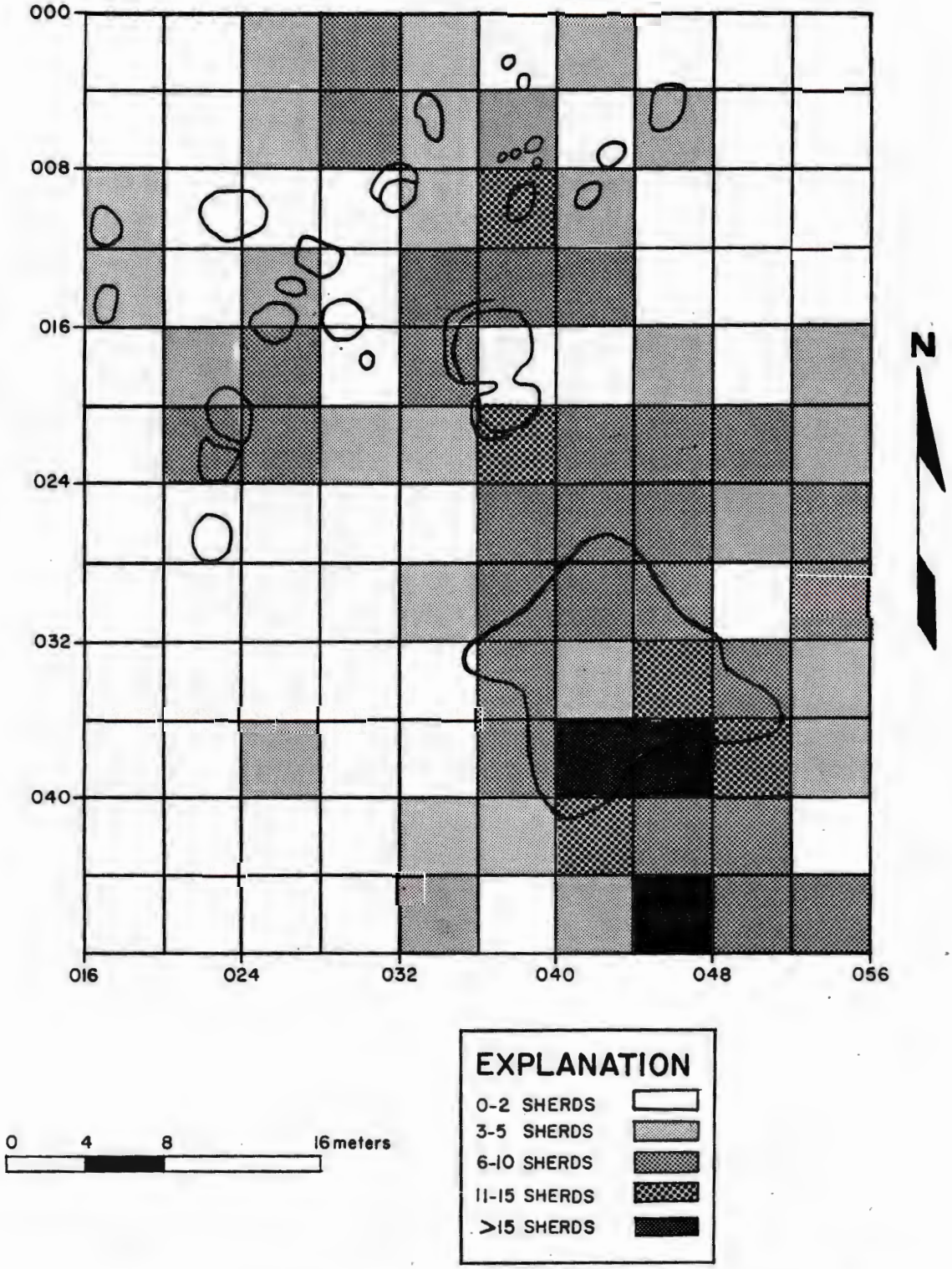

Figure 2.5 Surface distribution of ceramics, Tres Bobos Hamlet.

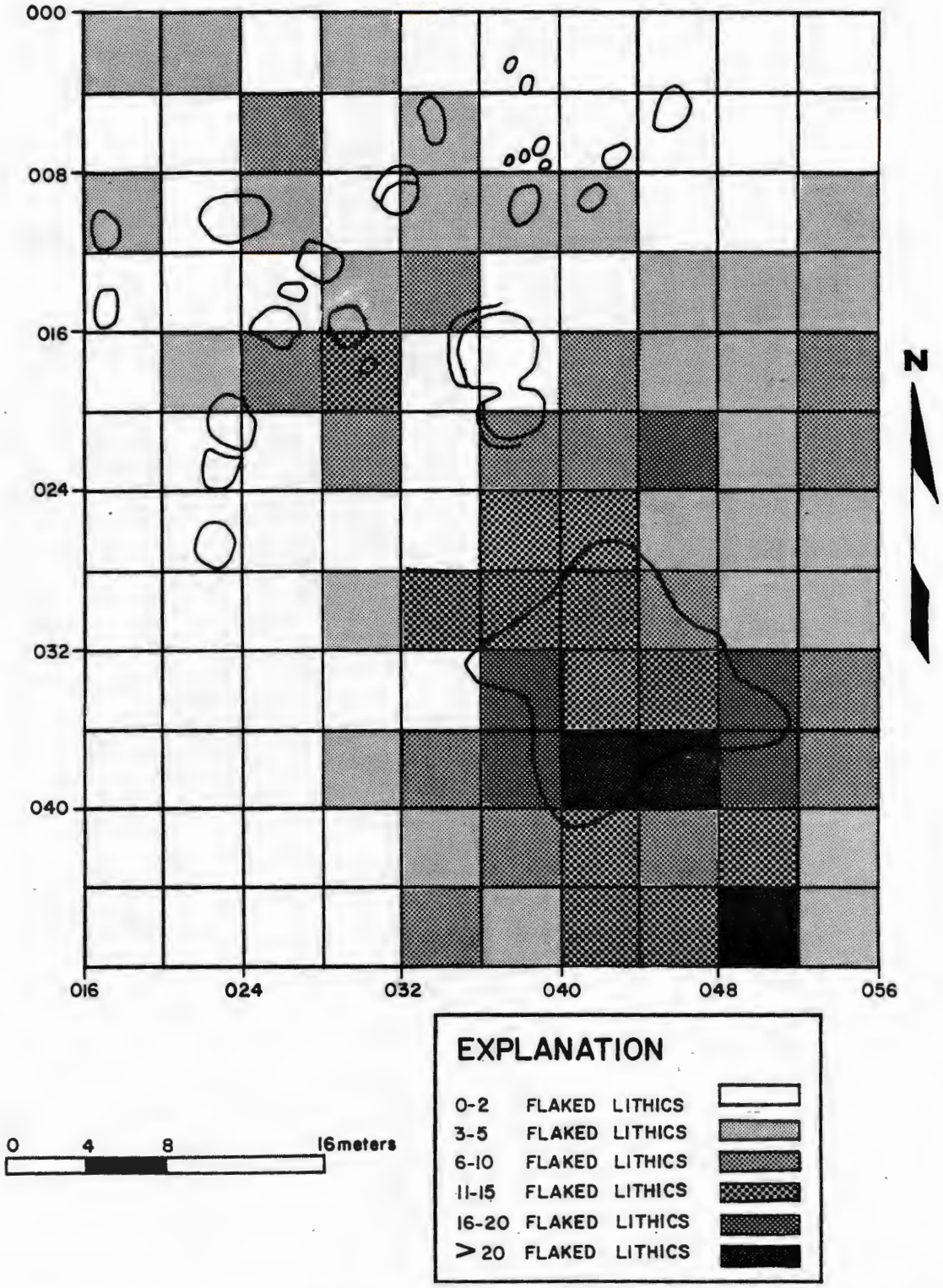

Figure 2.6 Surface distribution of flaked lithics, Tres Bobos Hamlet.

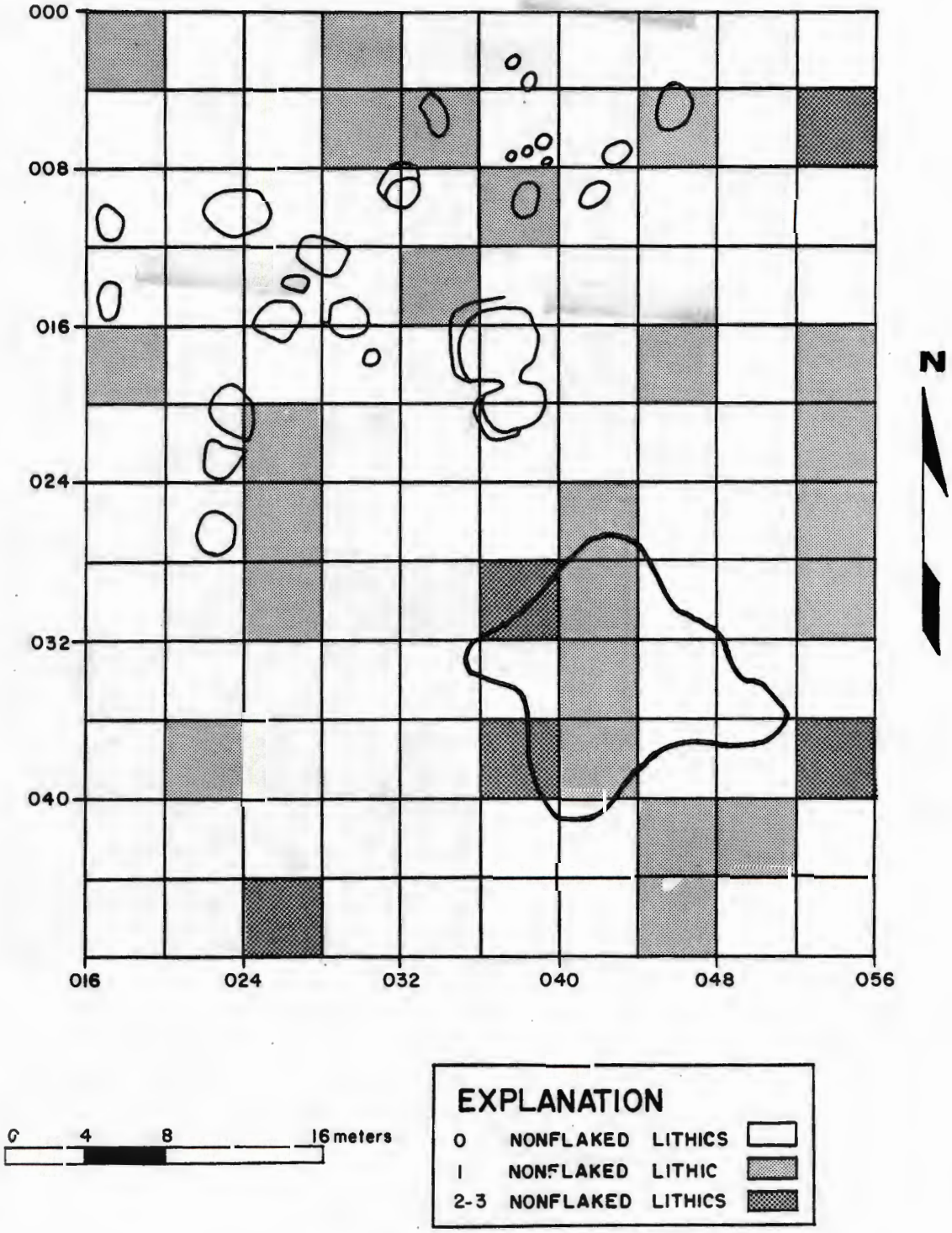

Figure 2.7 Surface distribution of nonflaked lithics, Tres Bobos Hamlet.

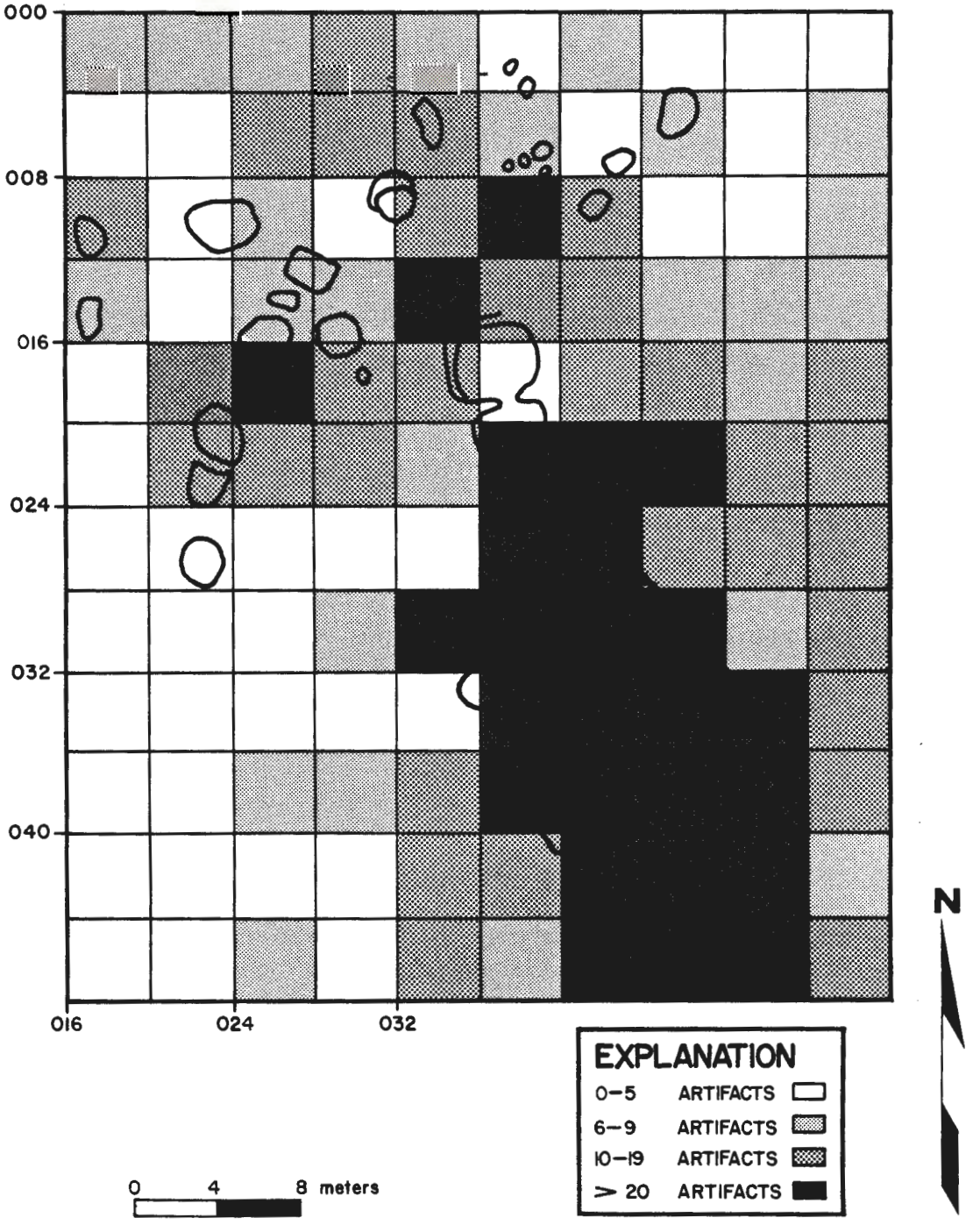

Figure 2.8 Total surface artifact distribution, Tres Bobos Hamlet.

the site; excavations proved this portion of the site to be sheet trash midden.

The second highest artifact concentration corresponded to the arc of surface structures north and west of the pitstructure. Few artifacts occurred in the area directly over the pitstructure. Few artifacts would be expected over a pithouse since most of the items would be washed into the it immediately after abandonment and natural deposits would account for the greater portion of the remaining fill.

The most general conclusion that can be drawn from these observations is that a relationship exists between what is found on the surface and what is represented beneath the surface. Unraveling the processes that produced this relationship, however, may not be a simple matter. The site is on a gentle slope and there is evidence of downslope soil erosion. This erosion has been substantial enough to fill the features, surface structures, and pitstructure at the site, eradicating all evidence of them on the modern ground surface. Historic land-use practices such as plowing have also disturbed the archaeological record. Downslope wash would transport only small, light objects, whereas plowing would move only larger objects since the plow furrows would generally impede the downslope wash of artifacts.

Thus, downslope wash would affect the distribution of flaked lithic and ceramic artifacts on the surface. Much of this movement would probably have occurred when the site was cleared of vegetation, such that the greatest movement of artifacts would have taken place immediately after the site was abandoned. Artifacts moving down slope at that time might have been obstructed by the collapsing surface structures and pitstructures, causing them to cluster near these structures. The

pitstructure would have been sufficiently deep that such materials would have been incorporated into the fill rather than remaining on the surface. If this were the case, the assumption that artifact density over the surface reflects the degree of prehistoric activity would be erroneous.

EXCAVATION METHODS AND OBJECTIVES

Sampling

At Tres Bobos the topography and the nature of the surface collection were used to subdivide the site into large proveniencing areas for excavation (Areas 1-7 as represented in Figure 2.4). However, these factors were not considered during the random selection of probability squares to be excavated.

The nonstratified probability sample at Tres Bobos consisted of 20 2 by 2 m units randomly selected from the population of 480 grid squares at the site. Parametric procedures (Kohler [9]) are used to estimate total site material culture populations from a limited number of randomly selected test squares. All earth from these squares was passed through one-quarter-inch screen, assuring a standard degree of artifact recovery.

The first procedure in processing the probability data is to make point estimations of specific element populations (for example, sherds). Since a simple random sample was used at Tres Bobos, the formula is straightforward:

$$\hat{X} = \frac{N}{n} \left(\sum_{1}^{n} X\right)$$

where $\hat{X}$ = estimated population total of element X

N = total number of possible squares on the site

n = total number of probability squares

N/n = inverse of the sampling proportion

Point estimations have been calculated for several categories of elements at Tres Bobos, and the results are presented in Table 2.1. For rare elements such as features and rooms, the estimates are neither accurate or precise. Based on the probability sample there should have been 245 features, but intensive excavation documented on 120. The point estimate

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Table 2.1 Material Population Estimates, Tres Bobos Hamlet

Element to be estimated*	Point Estimation	95% Confidence Interval	Actual counts where known
Features	244.9	±321.30	120
Fireplaces	25.2	± 50.64	3
Rooms	54.02	± 48.48	14
Sherd Counts	10,995.75	±3335.0	
Sherd Weights	38,132.64	±12,537.44	
Jar Counts	9626.4	±3161.0	
Jar Weights	34,590.78	±12,753.0	
Bowl Counts	730.8	±257.0	
Bowl Weights	2587.54	±1970.0	
Rim Counts	252.0	±140.10	
Flaked lithic Counts	17,148.6	±8057.0	
Flaked lithic Weights	86,759.56	±47,357.15	
Debitage Counts	16,012.08	±8180.44	
Debitage Weights	52,970.4	±22,340.0	
Flaked Tool Counts	1134.0	±753.06	
Flaked Tool Weights	33,795.47	±36,183.00	
Projectile Point Counts	75.6	±83.20	
Projectile Point Weights	85.68	±95.15	
NFL Counts	472.5	±357.52	
NFL Weights	102,904.2	±86,080.68	
Mano Counts	100.8	±119.92	
Mano Weights	46,090.80	±68,655.79	

*weights = grams

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for rooms was 54; only 14 were discovered through excavation. It is possible that some features were missed during excavation, but it is doubtful that human error alone would account for such large discrepancies. Rather, these figures probably reflect the fact that the smaller the total population, the less accurate the point estimation is likely to be (Asch [10:190]).

To avoid misleading inferences from point estimations, interval estimations providing a 95 percent confidence level can be generated. This confidence interval takes the form of a plus or minus factor added to the point estimation, signifying a 95 percent probability that the true population falls within the parameters established by the point estimation and the plus-or-minus factor. The greater the interval estimation relative to the size of the point estimate, the less useful the point estimation. In the case of the features at Tres Bobos, for example, the figures computed were 245 $\pm$ 321. This point estimation is clearly not useful. The estimates for artifacts, however, are more precise.

When the probability and magnetometer sampling were completed, grader operations were begun on the periphery of the site. The objective of these operations was to expose features by removing the plow zone. As the B horizon was exposed, a crew member followed the grader and tagged areas believed to be features. At Tres Bobos the areas cleared by the grader were shovel skimmed and swept with a broom to ensure that no features were missed. Backdirt prevented the clearing of the northern edge of the site.

Artifact recovery from grader operations is marginal; any artifacts recovered are provenienced in only the most general terms. The limited artifact recovery during grading is partially offset by the material

sample recovered in the probability sample. Moreover, because no prehistoric ground surface could be defined at Tres Bobos, the exposure of such a large area without destruction of cultural features outweighed the problems of limited artifact recovery. This strategy allowed for the mapping of architecture and features and the subsequent analysis of the spatial relationships among these features. It is believed that the abandonment processes at Tres Bobos involved the removal of most functional tool assemblages from the site. Therefore, the spatial relationships of architecture and features are crucial to the interpretation of prehistoric lifeways at Tres Bobos.

After the testing of magnetometer anomalies, the excavation of probability samples, and the inspection of the site after grading, an ordered arrangement of cultural features at Tres Bobos was apparent. Upon investigation, Magnetic Anomaly 1 revealed a stain indicative of a pitstructure (Figure 2.9). A series of nonmasonry rooms and small pitfeatures (exterior to both the pithouse and rooms) were also exposed. The exposed rooms gave the impression that if extended they would form an arc west and north of the pithouse.

Excavation

All 2 by 2 m units between the pitstructure and the projected arc of rooms were excavated by hand. Because the site had been plowed, there was only one stratum between the modern ground surface and the sterile Bt horizon. This plow zone (Ap horizon) averaged 20 cm in depth across the site; it is believed that the prehistoric ground surface was within this zone and was thus destroyed. The Ap horizon was removed as a simple stratum from each 2 by 2 m grid. This stratum was not screened, and

Figure 2.9 Photograph of stain indicating Pithouse 1 prior to excavation, Tres Bobos Hamlet.

artifact recovery was achieved through through visual inspection only.

The contact between the Ap and sterile B horizons was very abrupt. It was at this stratigraphic boundary that cultural features could be defined. Pits and rooms had been excavated into the orange Bt horizon by the prehistoric inhabitants and had subsequently been filled in by the dark cultural deposits of the overlying humic A horizon (characterized by inclusions of charcoal, artifacts, and sandstone).

North-south (Figure 2.10) and east-west stratigraphic trenches were excavated across the pithouse to define its extent, depth, and stratigraphic sequence. These 1-m-wide trenches were dug in arbitrary levels to 10 cm above the pithouse floor. The fill above the bench was removed to within 10 cm of the bench surface. The remaining 10 cm of fill overlying the surfaces was gridded into 1 by 1 m loci for tight spatial control. As these individual loci were excavated, each artifact was given a point location (P.L.) number for reference on an artifact distribution map.

Features on the floor were defined, mapped, and excavated. In each locus 1-L bulk soil samples were collected from the fill above the floor, from the floor itself, and from the fill contained within a floor feature. Bulk soil samples were also collected from beneath these features as lower control samples. Pollen samples were collected from the bottoms of features and from "pollen traps" in the corners of the main room and antechamber.

The rooms and all smaller surface features were divided into either halves or quadrants to maintain horizontal control. Fill was removed by cultural strata visible in an exposed profile. In the rooms, the last 5 cm of fill was treated as floor fill and assigned a separate vertical

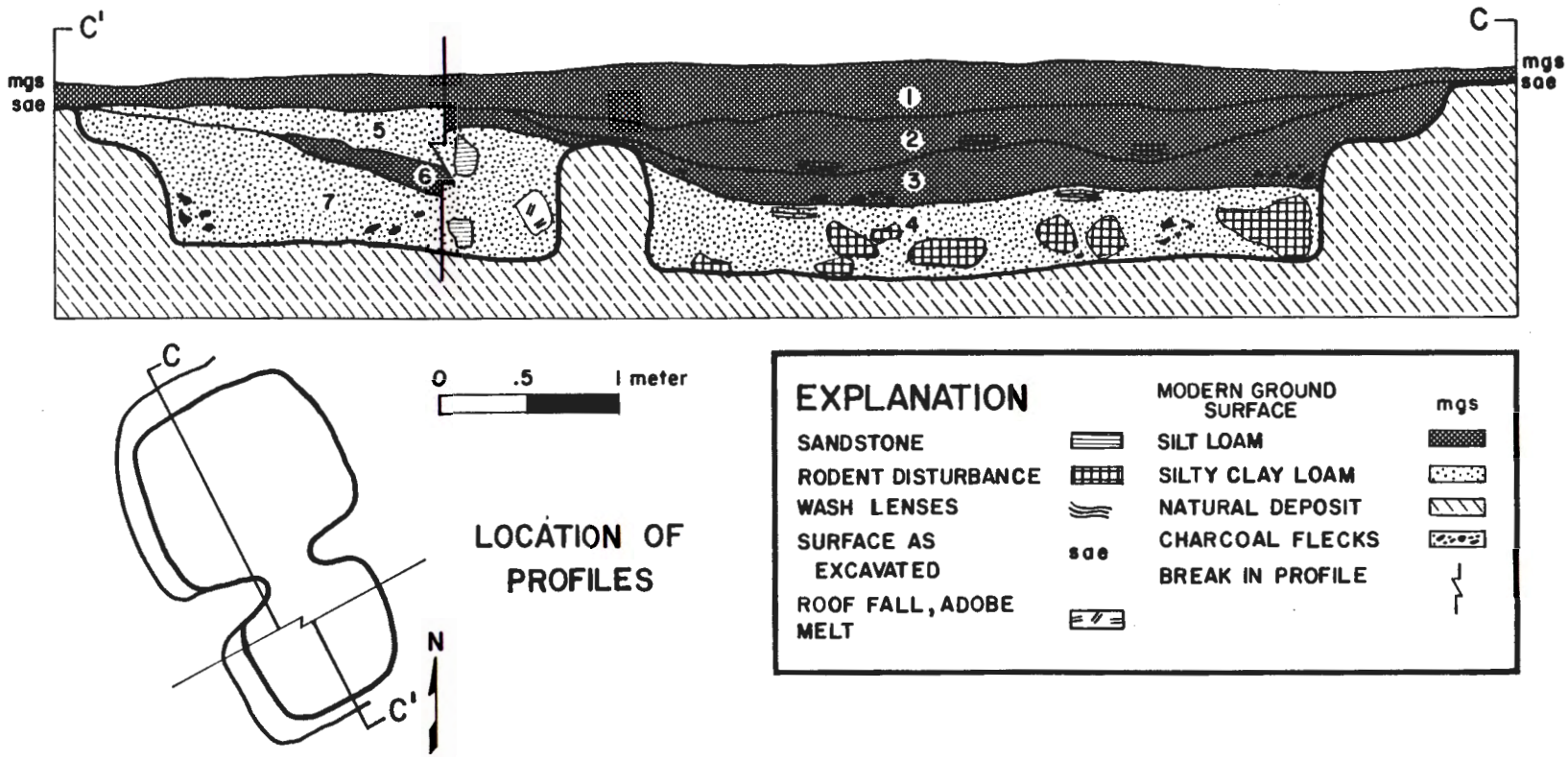


Figure 2.10 Stratigraphic profile, Pithouse 1, Tres Bobos Hamlet.

provenience. This fill, which contained very little cultural material, was not screened. From each such provenience unit a 1-L bulk soil sample was collected. These samples were processed by water flotation or fine-mesh screening for recovery of small cultural remains such as bones, seeds, and lithics. From floors which were well preserved, and from the bottom of features containing primary cultural deposits, pollen samples were also collected.

A total of 106 2 by 2 m units, or 424 m^2, was excavated. The remainder of the site, exclusive of the probability squares and magnetometer anomalies, was stripped of the plow zone using a grader. By this process 25 additional subsurface features, four additional nonmasonry rooms, and one additional trash-filled borrow pit were identified. Figure 2.11 illustrates the inter-relationship of the major cultural units at Tres Bobos and the locations of the architectural profiles (Figure 2.12).

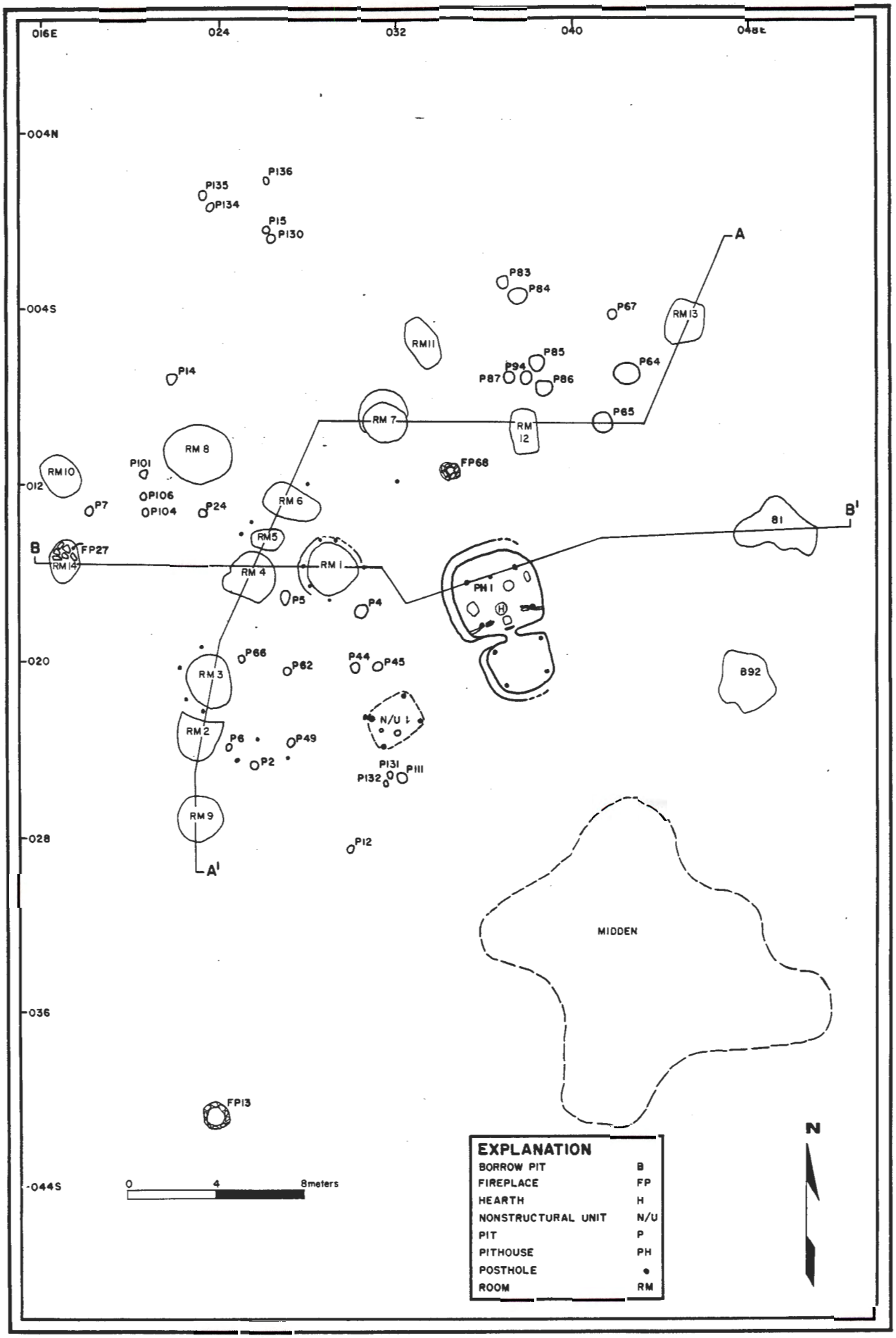


Figure 2.11 Spatial relationship of major cultural units, Tres Bobos Hamlet.

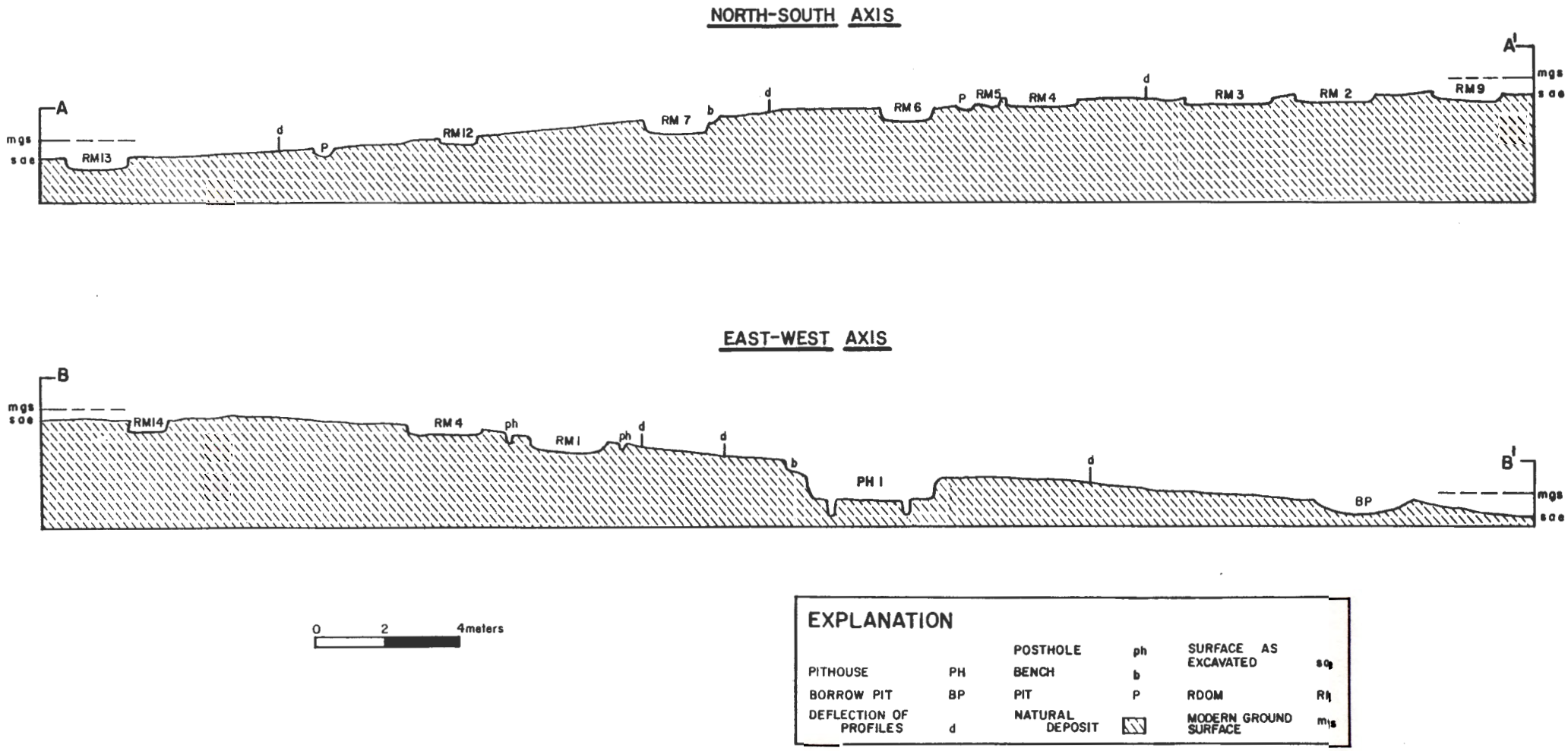


Figure 2.12 Architectural profiles, Tres Bobos Hamlet.

ARCHITECTURAL REMAINS

Post-abandonment Processes

Immediately after abandonment, the ridge and east-facing slope upon which the site was built were probably nearly bare of vegetation. Downslope movement of soil and small cultural trash could have occurred and the inital filling of open features would have taken place. Grasses would have begun to re-establish themselves within a few months of abandonment, retarding the slopewash process. Later, sagebrush, rabbitbrush, fendlerbush, and other shrubs would have taken hold.

When the site was again covered by grasses and shrubs, filling processes other than slopewash would have dominated. Frost heave, for instance, would have played a role in filling deep straight-sided features such as the pithouse. Eolian deposition of loess would also have occurred at this time. Rodent activity was probably a factor, especially as the features began to fill with soil softer than the undisturbed soil. Erosion along the top of the ridge probably deposited parts of the original prehistoric ground surface further downslope. Post-occupational human activity is evidenced by a burial which was placed in Pithouse 1 after it had partially filled. It is also possible that people made trips back to Tres Bobos for salvageable material (posts, slabs, etc.). All of these processes contributed to the depositional sequence at Tres Bobos.

The fill in Pithouse 1 (Figure 2.10), reflects the depositional sequence at the site. The fill sequence here indicates natural deposits with no human post-occupational disturbance other than the human burial. There are three distinct depositional lenses in the pithouse. The

lowest lens, which corresponds to Strata 4, 5, and 7 on the profile map, had more cultural material and a less compact consistency than the overlying lenses. Strata 2, 3, and 6 made up this next lens. It was more compact than the first, showed more water-deposited sandy laminations, and had fewer cultural inclusions. The uppermost lens was a darker, humic soil that built up after the pithouse depression had almost totally filled. This lens is Stratum 1 on the soil profile map.

The environmental processes were left unchecked until the early twentieth century. By this time the only evidence indicating a prehistoric habitation site was sherds, bits and pieces of shaped and unshaped sandstone, and pieces of flaked and nonflaked stone tools that littered the surface. Much of this material could have been pushed by frost action through the now well-established Ap horizon (plow zone), or exposed by erosion. During the 1930s, a good portion of the Sagehen Flats Locality was brought under cultivation, at which time the site was plowed.

Cultural Units at the Site

Before excavation, the site was divided into seven areas (Figure 2.4) based on the surface distribution of cultural material. Pithouse 1 is found in Area 5, the midden in Area 7, the rooms and exterior surface features associated with the rooms in Areas 2, 3, and 4, and two borrow pits in Area 6. No cultural units were assigned in Area 1.

The major cultural units illustrated in Figure 2.11 will be described in the following sections: (1) midden; (2) borrow pits; (3) rooms; (4) Pithouse 1; and (5) other features.

Midden

The heaviest concentration of cultural material occurred in the

southeast portion of the site, to the south and east of the pithouse. This area consisted primarily of broken ceramics, flaked lithic debitage, and discarded and broken lithic and bone tools. Also found were spalls of sandstone from construction; some of these were burned, but most were not. Only a small amount of animal bone was found. The main midden area covered approximately 7 m^2 and was less than 10 cm in depth; however, historic plowing makes the original depth impossible to determine. This area was defined as a midden due to the scarcity of cultural features and to the high percentage of cultural waste material recovered there during intensive surface collection and excavation of the probability test squares.

Borrow Pits

Borrow Pit 1 (Feature 1).

Existing Dimensions:

Length:	2.00 m
Width:	1.20 m
Depth:	0.37 m

Borrow Pit 2 (Feature 92).

Existing Dimensions:

Length:	2.25 m
Width:	2.50 m
Depth:	0.50 m

Two basin-shaped pits (Features 1 and 92, Figures 2.13 and 2.14, respectively) interpreted as borrow areas were found 7 m east of Pithouse 1. It appears that these two irregularly shaped features were excavated prehistorically to obtain raw material (adobe) for construction activities at the site. After the pits were no longer used to provide adobe, they became trash dumps. Borrow Pit 2 lies 3 m south of Borrow Pit 1; it is smaller in size and did not contain as much trash.

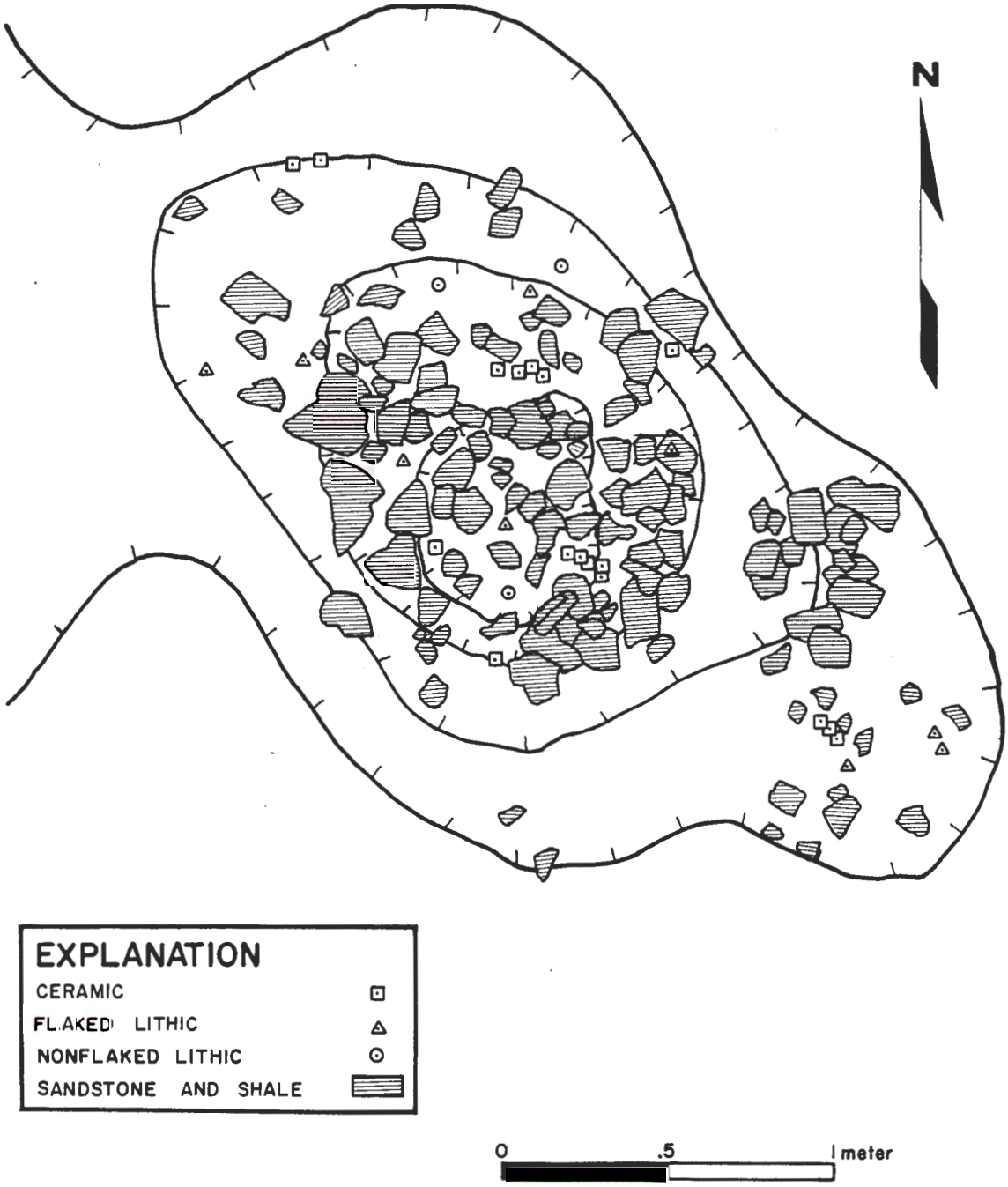


Figure 2.13 Plan view of Borrow Pit 1 (Feature 1), Tres Bobos Hamlet.

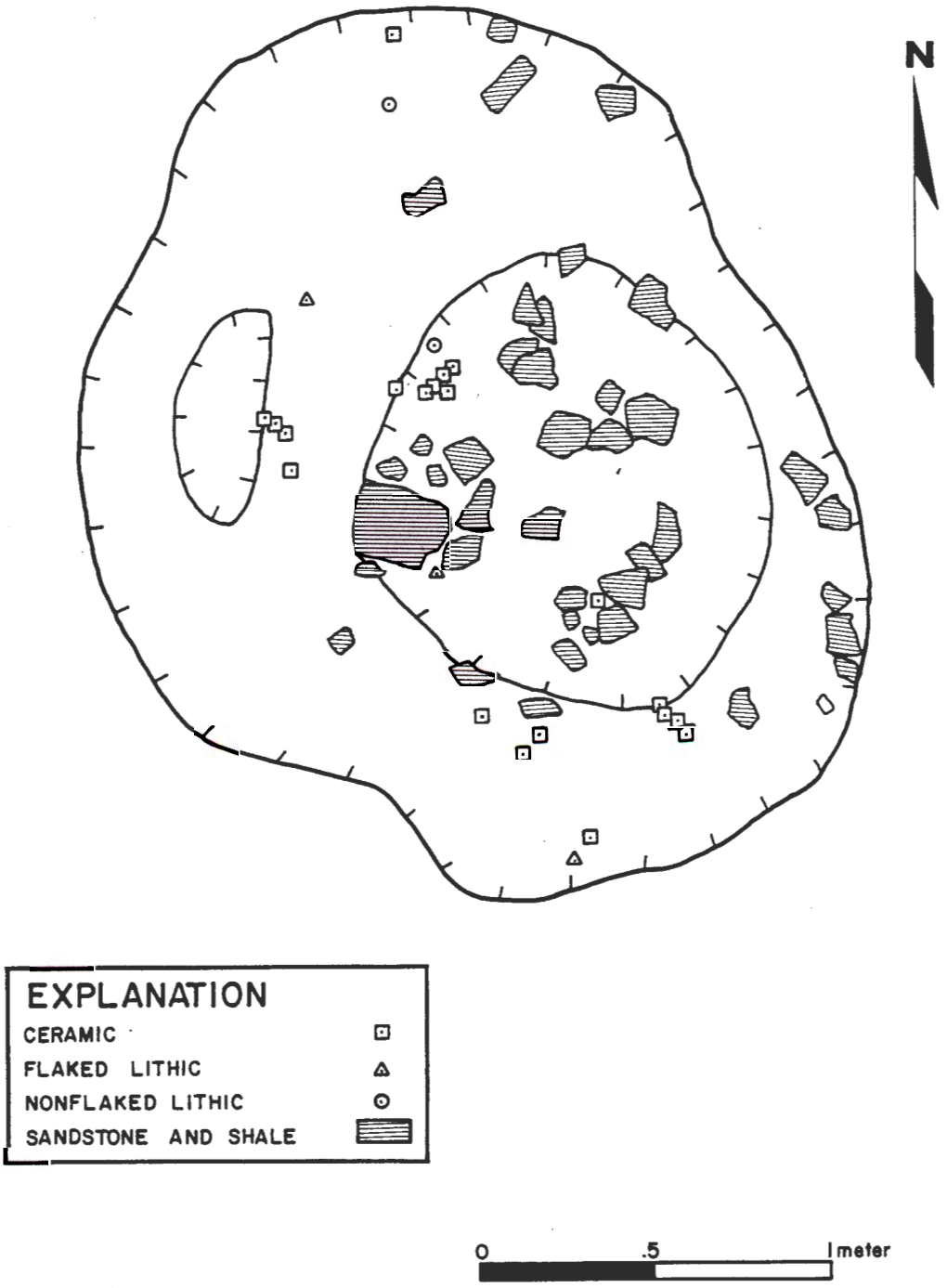


Figure 2.14 Plan view of Borrow Pit 2 (Feature 92), Tres Bobos Hamlet.

Rooms

Two types of nonmasonry surface rooms are present at Tres Bobos: deep rooms, which are greater than 25 cm deep; and shallow rooms, which range from 4 to 25 cm deep. On the whole, the rooms, though noncontiguous, are aligned in a long arc (Figure 2.11).

Room 1.

Dimensions:

North-south:	2.05 m
East-west:	2.15 m
Depth:	0.40 m
Floor area:	3.40 m^2

Room 1 lies 4 m west of the northwest corner of Pithouse 1 (Figure 2.11). Room 1 is circular in plan (Figure 2.15) and falls into the deep-room category (greater than 25 cm in depth). Both the floor and the lower portion of the walls resulted from excavation into the sterile Bt horizon by the prehistoric builders. The walls are straight, and the floor is relatively flat and use-compacted with no further modification. The floor artifacts in Room 1 (Table 2.2 and Figure 2.15) consisted mostly of burned corn found in seven general areas. One sherd (a P.L. lost and voided) from a Chapin Gray seed jar was found.

Because Room 1 burned while in use, the lower fill consisted of burned jacal and carbonized sticks, brush, and poles. The upper fill was a dark brown to black humus interspersed with charcoal bits and small amounts of cultural debris. An archaeomagnetic sample (#2) was collected from the north and northwest walls; results are presented in Appendix 2. The burned debris in the lower fill indicated a structure composed of wattle-and-daub. A series of six postholes is located outside of Room 1;

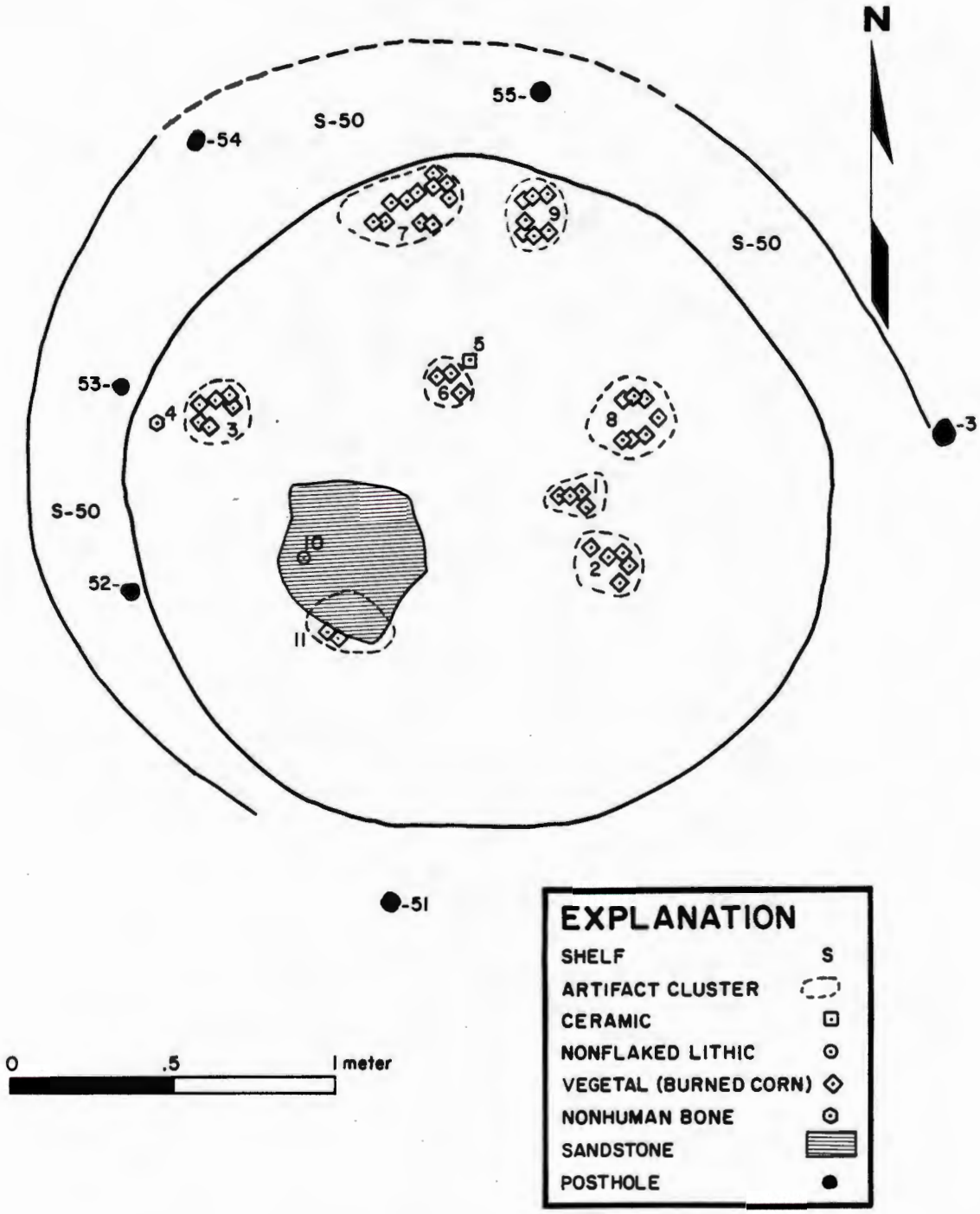


Figure 2.15 Plan view of Room 1, Tres Bobos Hamlet.

Table 2.2 Point Located Artifacts, Room 1, Tres Bobos Hamlet

PL # *	Item Description
1	Vegetal, ca. 10 g *Zea mays* kernels, charred
	Vegetal, 100+ *Zea mays* cupules, charred
	Vegetal, 16 *Zea mays* cob fragments, charred
	Vegetal, <1 g *Pinus* sp. wood, charred
	Vegetal, <1 g *Pinus* sp. bark
2	Vegetal, ca. 10 g *Zea mays* kernels, charred
	Vegetal, 9 *Zea mays* cob fragments, charred
	Vegetal, 37 *Zea mays* cupule
	Vegetal, 1 *Zea mays* infructescence fragment (ear), charred
	Vegetal, <1 g *Pinus* sp. bark, charred
3	Vegetal, 3.5 g *Zea mays* kernels, charred
	Vegetal, 8 *Zea mays* cob fragments
	Vegetal, 24+ *Zea mays* cupules
	Vegetal, <1 g Gymnospermae wood, charred
4	Nonhuman bone, *Cynomys gunnisoni*
5	Ceramic, MV Chapin Gray seed jar sherd
6	Vegetal, 2.5 g *Zea mays* kernels, charred
	Vegetal, 2 *Zea mays* cupules, charred
	Vegetal, 2 *Zea mays* cob fragments, charred
7	Vegetal, 6 g *Zea mays* kernels, charred
	Vegetal, 21 *Zea mays* cupules, charred
	Vegetal, <1 g Gymnospermae bark, charred
8	Vegetal, 5 g *Zea mays* kernels, charred
	Vegetal, 6 *Zea mays* infructescence fragments (ear), charred
	Vegetal, 16 *Zea mays* cupules, charred
	Vegetal, 1 *Zea mays* cob fragment, charred
	Vegetal, <1 g *Populus* sp. wood, charred
	Vegetal, <1 g *Pinus* sp. bark, charred
	Vegetal, <1 g *Juniperus* sp. wood, charred
	Vegetal, <1 g Gymnospermae bark, charred
9	Vegetal, 8.5 g *Zea mays* kernels, charred
	Vegetal, 1 *Zea mays* infructescence fragment, charred
	Vegetal, 9 *Zea mays* cob fragments, charred
	Vegetal, 45 *Zea mays* cupules, charred
	Vegetal, 2 *Zea mays* glumes, charred
	Vegetal, <1 g *Populus* sp. wood, charred
	Vegetal, <1 g Gymnospermae bark, charred
10	Nonflaked lithic, sandstone slab
11	Vegetal, 5.9 g *Zea mays* kernels, charred
	Vegetal, 2.2 g *Juniperus* sp. wood, charred
	Vegetal, <1 g *Pinus* sp. bark, charred
	Vegetal, 18 *Zea mays* cob fragments, charred
	Vegetal, 29 *Zea mays* cupules, 4 whole and 25 fragmentary, charred

* - see Figure 2.15 for artifact locations
g - grams

ıımensions of these postholes are given in Table 2.3.

Room 2.

Dimensions:

North-south:	1.8 m
East-west:	2.2 m
Depth:	0.1 m
Floor area:	4.3 m^2

Room 2 lies 12 m southwest of Pithouse 1. In plan, as illustrated in Figure 2.16), Room 2 is best described as irregular. The north boundary is concave, the west and east boundaries are fairly straight, and the south is convex, bulging away from the room interior. Room 2 is of the shallow-room variety.

The walls and floor of Room 2 are like Room 1 in that they are formed in the sterile Bt horizon with no further modification. The floor is use-compacted with no recognizable features. Eight groups of items were given floor-artifact designations in Room 2 (Table 2.4). Three of these were sherd clusters representing pieces of two Chapin Gray jars. In the northwest corner was a concentration of burned corn kernels with an associated polishing stone.

No postholes were found in or around the room. There was no burned roof fall to indicate that the structure had burned; the corn, however, was burned. A few slightly oxidized areas on the floor suggest that a structure of quick-burning materials, perhaps light poles and brush, once covered the room. The fill contained a few pieces of sandstone along with numerous pieces of carbonized corn. Most of the fill was slight brown to tan sandy loess, both eolian and alluvial in origin.

Table 2.3 Posthole Dimensions, Room 1, Tres Bobos Hamlet

Feature #	Length (cm)	Width (cm)	Depth (cm)
3	20.0	17.0	15.0
51	5.0	5.0	10.0
52	5.0	5.0	4.0
53	5.0	5.0	3.0
54	6.0	6.0	4.0
55	4.0	4.0	2.0

Table 2.4 Point Located Artifacts, Room 2, Tres Bobos Hamlet

PL #*	Item Description
1	Ceramic, MV EP Gray jar sherd
2	Ceramic, MV EP Gray jar sherd
3	Nonflaked lithic, indeterminate
4	Ceramic, MV Chapin Gray jar sherds (4)
	Ceramic, MV EP Gray jar sherds (5)
	Ceramic, MV Chapin Gray jar sherd
5	Ceramic, MV EP Gray jar sherds (3)
6	Ceramic, MV EP Gray jar sherds (3)
7	Nonflaked lithic, undifferentiated

*see Figure 2.16 for artifact locations
( ) - number of items
MV - Mesa Verde
EP - Early Pueblo

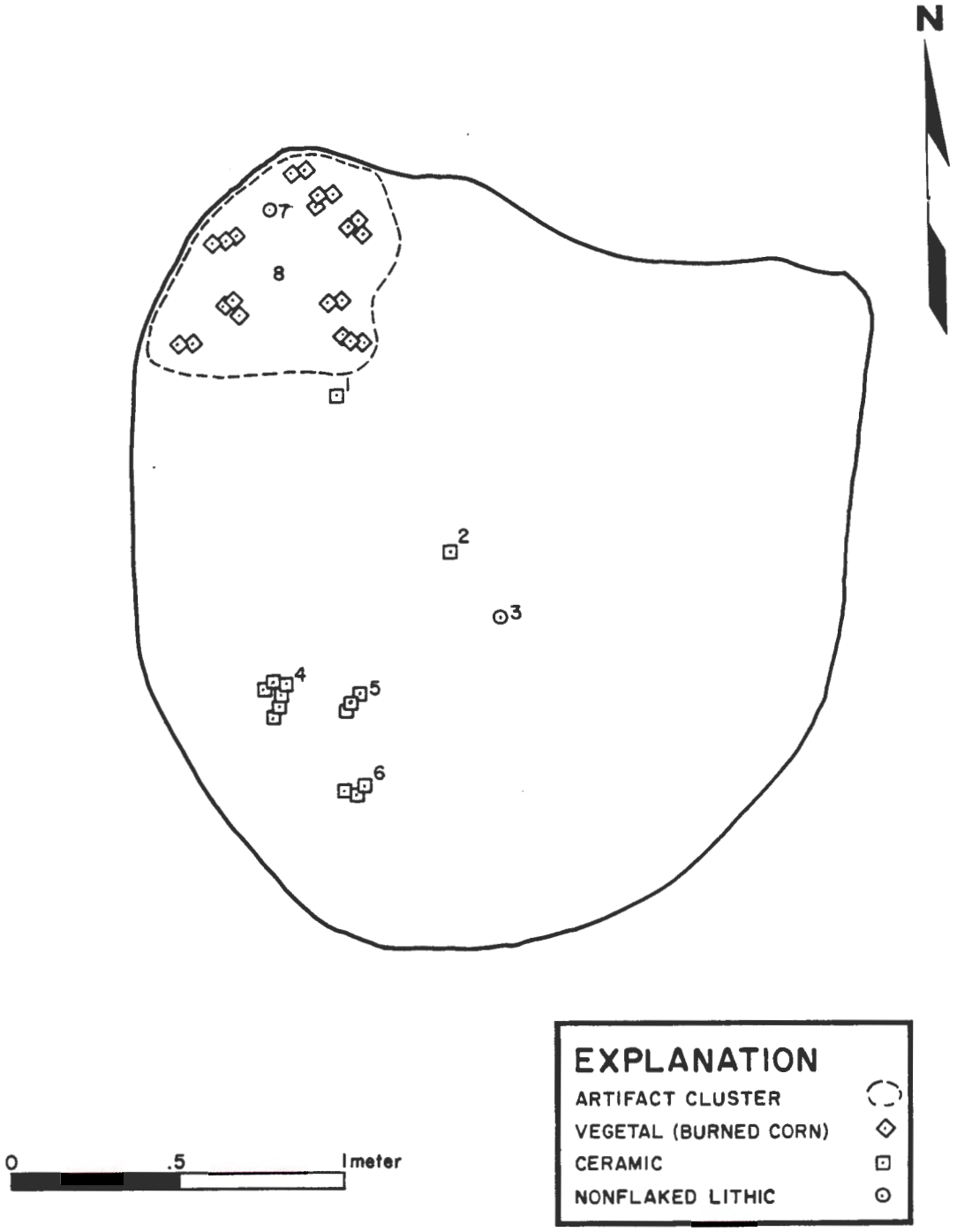


Figure 2.16 Plan view of Room 2, Tres Bobos Hamlet.

Room 3.

Dimensions:

North-south:	2.1 m
East-west:	2.4 m
Depth:	0.2 m
Floor area:	5.0 m^2

Room 3 is located 0.45 m north of Room 2 and 11 m west of Pithouse 1. In plan, the room is basically circular and falls within the shallow-room category (Figure 2.17). As in all the rooms at Tres Bobos, the walls and floor of Room 3 are unmodified, culturally sterile soil. The floor is use compacted, and only a small concentration of burned corn was found in the southern portion. The primary fill was post-abandonment wash interspersed with charcoal flecks. One section of the upper stratum was composed of black, charcoal-laden sediment which might represent a temporary re-use of the room after it, and probably the site, was abandoned.

Room 3 appears very similar in construction style to Room 2. There are three irregularly shaped areas of burning on the floor of Room 3. A concentration of burned corn was in one of these areas. This is a possible indication that a superstructure of fast-burning material, such as sagebrush and light willow poles, ignited, and clumps of the burning brush fell onto the floor. Five small postholes found around Room 3 support the suggestion of a light-weight roof (Table 2.5).

Table 2.5 Posthole Dimensions, Room 3, Tres Bobos Hamlet

Feature #	Length (cm)	Width (cm)	Depth (cm)
70			
96	26.0	20.0	13.0
103			
105	18.0	18.0	17.0
109	20.0	17.0	20.0

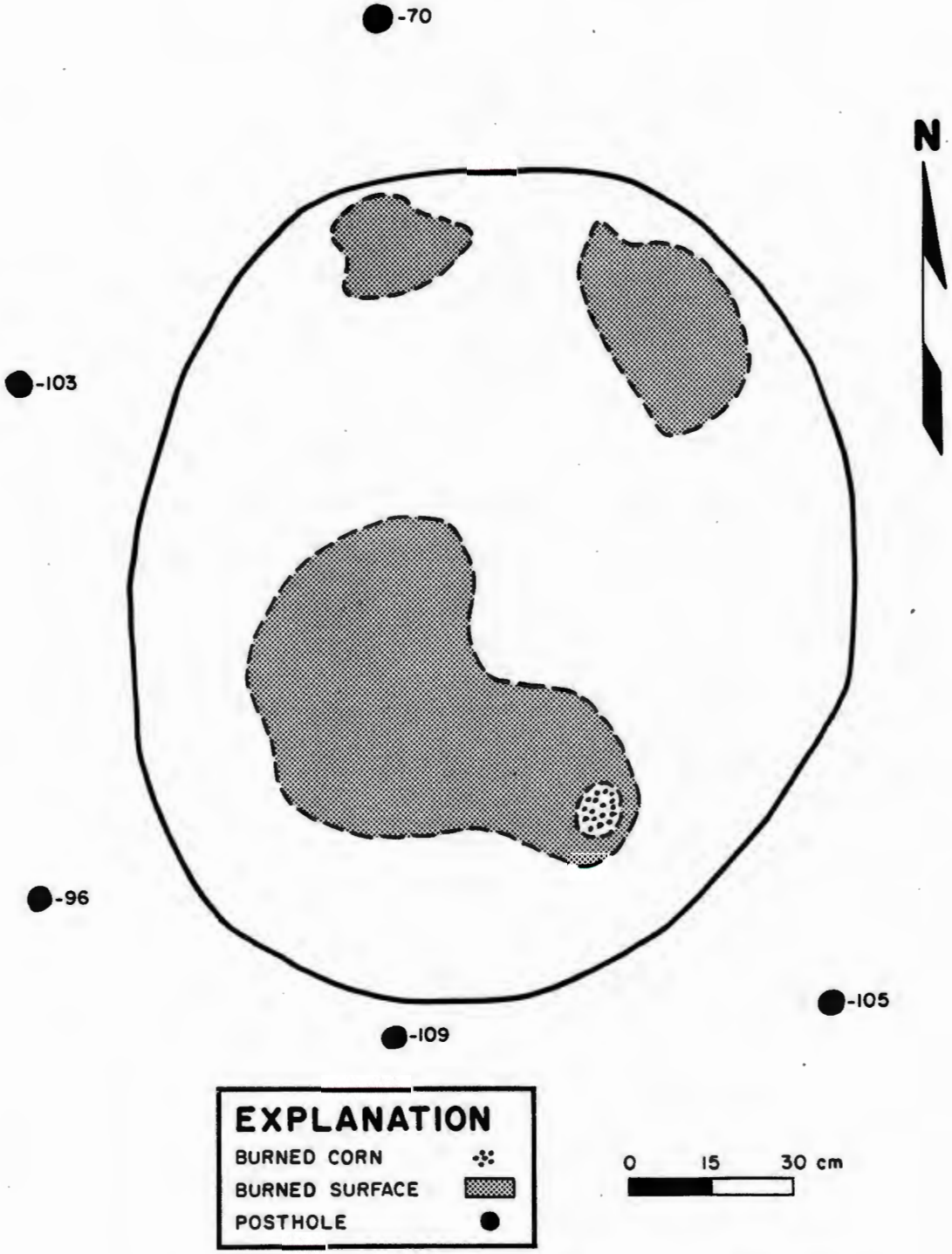


Figure 2.17 Plan view of Room 3, Tres Bobos Hamlet.

Room 4.

Dimensions:

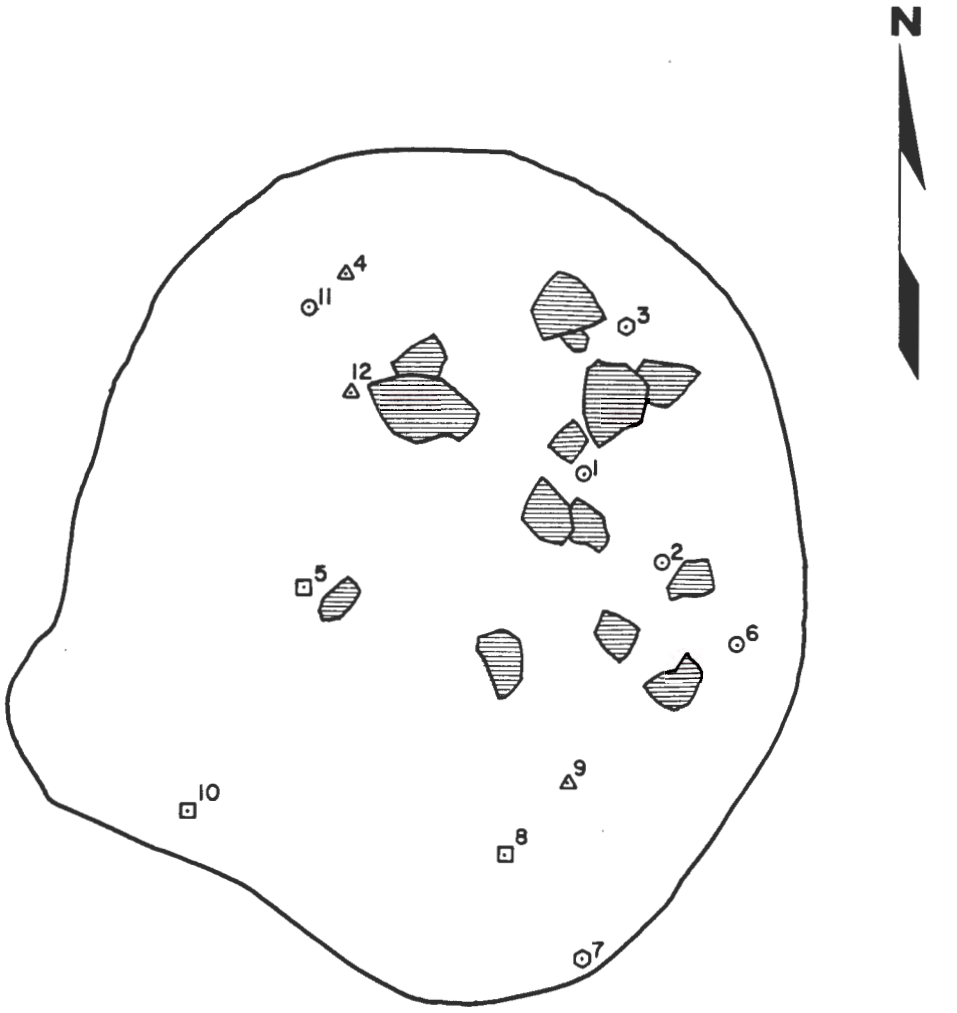
North-south:	2.4 m
East-west:	2.0 m
Greatest depth:	0.1 m
Floor area:	4.8 m^2

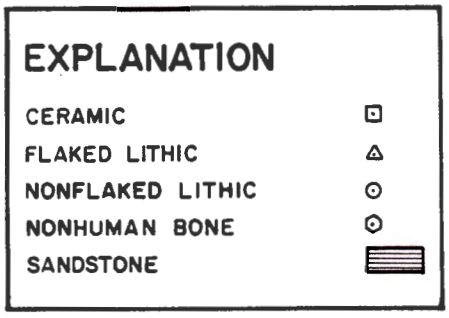
Room 4 lies 1 m west of Room 1 and almost 8 m west of the north end of Pithouse 1. In plan (Figure 2.18) Room 4 is almost circular except for the southwestern portion of the wall, which is fairly straight. An amorphous bulge at the west end of this straight wall suggests an entryway, but this inference could not be substantiated. Averaging 15 cm deep, Room 4 falls into the shallow-room category. The side walls, which cut into culturally sterile soil, are vertical in profile except for the southeast side, which meets the floor at a 45° angle. The floor is relatively flat and use compacted; the northern half of the room shows burned areas similar to those in Rooms 2 and 3. The floor artifacts given point locations in Room 4 are listed in Table 2.6.

Table 2.6 Point Located Artifacts, Room 4, Tres Bobos Hamlet

PL #*	Item Description
1	Nonflaked lithic, undifferentiated
2	Nonflaked lithic, undifferentiated
3	Nonhuman bone, *Lepus californicus*
4	Flaked lithic debitage
5	Ceramic, indeterminate gray ware jar sherd
	Ceramic, MV EP Gray jar sherd
6	Nonflaked lithic, two-hand mano
7	Nonhuman bone, *Lepus californicus*
8	Ceramic, MV EP Gray jar sherd
9	Flaked lithic debitage
10	Ceramic, MV EP Gray jar sherd
11	Nonflaked lithic, indeterminate
12	Flaked lithic debitage

*see Figure 2.18 for artifact locations
MV - Mesa Verde EP - Early Pueblo





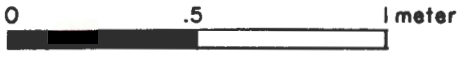


Figure 2.18 Plan view of Room 4, Tres Bobos Hamlet.

The fill in Room 4 consisted of a few bits and pieces of burned roof fall on or near the floor in the northern half of the room. Along with this sparse roof fall, 14 pieces of sandstone, with diameters ranging from 10-30 cm, were also found. Some of these pieces of stone were oxidized from burning. The southern half of the room contained only sandy loam that had washed in after abandonment. This sandy loam was the bulk of the post-abandonment fill found in Room 4.

The postulated construction for Room 4 is the same as that described for Rooms 2 and 3. The fact that these rooms appear to have burned but contain very little carbonized wood supports the argument that construction in the shallow rooms was not very substantial.

Room 5.

Dimensions:

North-south:	1.20 m
East-west:	1.70 m
Depth:	0.04 m
Floor area:	1.20 m^2

Room 5 lies only 0.2 m north of Room 4 and is an irregularly shaped oval in plan. In profile this room is basin shaped and has no definable walls. The fill was composed of a dark brown to black, charcoal-filled silty loam with bits and pieces of burned adobe. The jacal and charcoal in the fill indicate a wattle-and-daub type structure covering Room 5. The small size and irregular shape of Room 5, as well as its proximity to Room 4, suggest that Room 5 might have been a lean-to arrangement connected to the northern end of Room 4.

Figure 2.20 Photograph of Room 6, excavation in progress, Tres Bobos Hamlet.

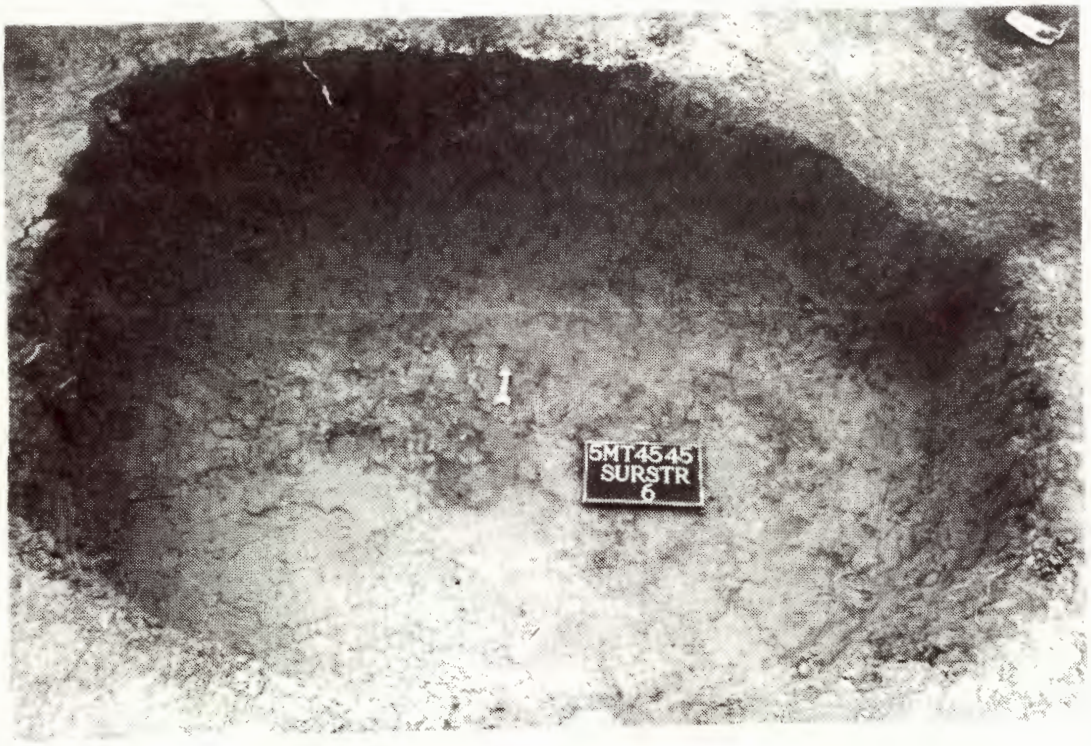


Figure 2.21 Photograph of Room 6, excavation complete, Tres Bobos Hamlet.

suggests a gradual, natural alluvial and eolian deposition; occasional bits of trash were incorporated.

It is possible that two of the slabs found in the upper fill were once part of a vertical slab skirt extending around the whole room. Other slabs from the skirt might have been removed prehistorically and used for construction at another site. These vertical slab linings or skirts have been noted in other Basketmaker III storage rooms (Birkedal [11]; Bullard [12]). Other than the stone, none of the material included in the fill can be described as roof fall.

Room 7.

Dimensions:

North-south:	1.70 m
East-west:	1.83 m
Depth:	0.47 m
Floor area:	2.80 m^2
Width of shelf (tapering off on both ends):	0.50 m

Room 7 is located 4 m northeast of Room 6 and 6 m northwest of Pithouse 1. The room is circular in plan (Figure 2.22) and falls into the deep-room category. Room 7 differs from the other rooms in that it contains a crescent-shaped shelf that encompasses roughly the northern half of the room. This shelf is widest at the northernmost arc of the room and gradually narrows to where it meets the east and south walls of the room. It is 0.25 m above the floor level. The walls and floor, as well as the shelf, are composed of unmodified soil. The walls are vertical in profile and the floor is relatively flat; both show evidence of burning. Only

four artifacts were associated with the floor of Room 7 (Table 2.8).

Table 2.8 Point Located Artifacts, Room 7, Tres Bobos Hamlet

PL #*	Item Description
1	Nonflaked lithic, hammerstone
2	Vegetal, 10 *Zea mays* cob fragments, charred
	Vegetal, 20 *Zea mays* cupules, charred
3	Ceramic, MV EP White bowl sherd
4	Flaked lithic debitage

*see Figure 2.22 for artifact locations
MV - Mesa Verde EP - Early Pueblo

The lowest level of fill was composed of burned roof fall containing charcoal, ash, and some pieces of burned adobe (roof casts). This roof fall was heaviest in the southern half of the room. Above the roof fall was a layer of sandy loam interspersed with light cultural trash. Above this level and continuing into the plow zone, a stratum characterized by a large amount of burned sandstone, broken cobble tools, lithic debitage, and ceramic sherds was encountered. This fill sequence indicates that Room 7 was destroyed by fire and, after a period of natural filling, it was used as a trash dump.

The roof fall indicated a framework composed of small poles, brush, and daub covered the room. This material gave the impression that the superstructure for Room 7 was more substantial than those of the shallow rooms but not as massive as that of Room 1. No exterior or interior postholes were found associated with Room 7.

Room 8.

Dimensions:

North-south:	2.3 m
East-west:	2.8 m
Depth:	0.2 m
Floor area:	4.5 m^2

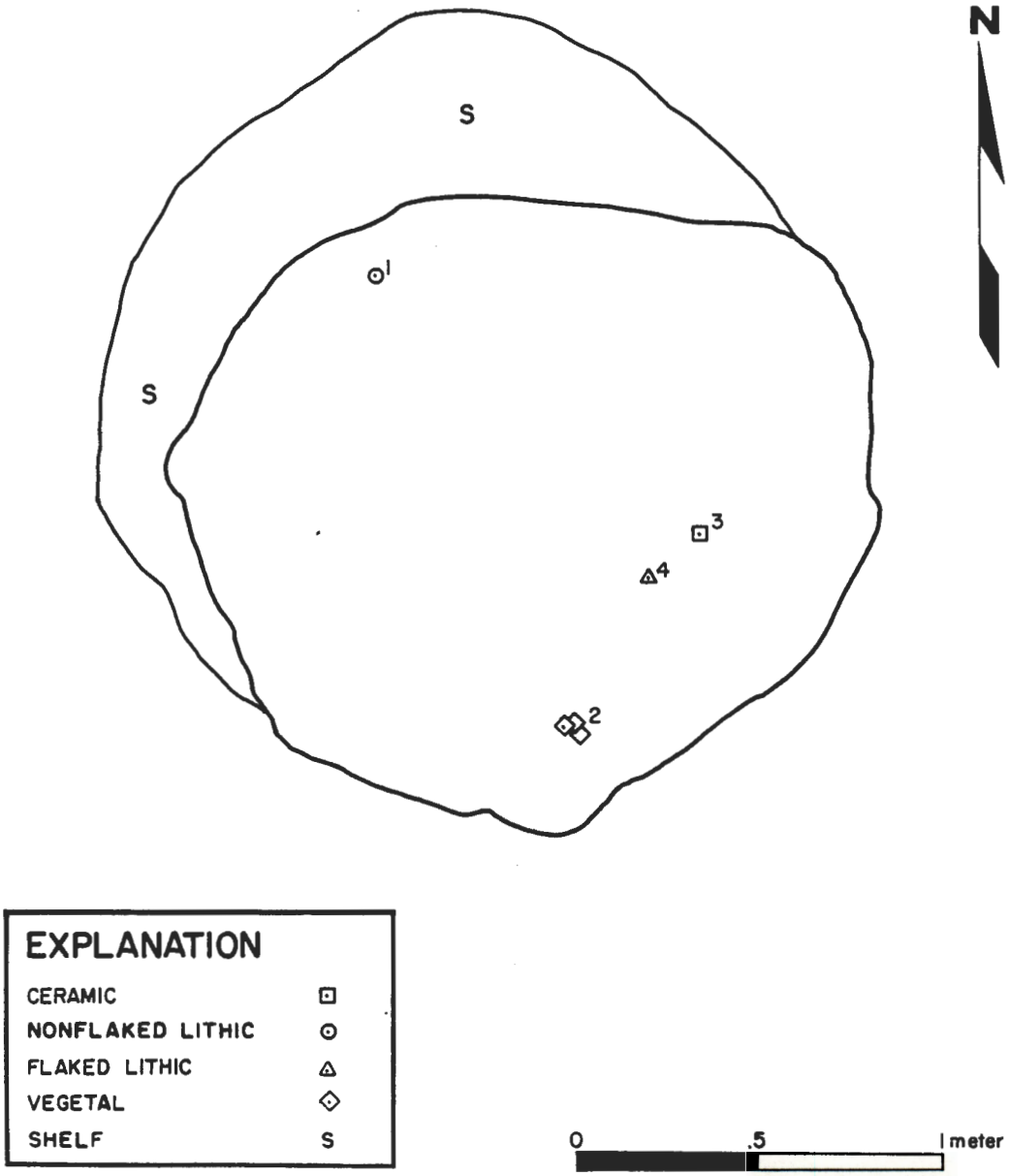


Figure 2.22 Plan view of Room 7, Tres Bohos Hamlet.

Room 8 is located 2 m northwest of Room 6 and 10.5 m northwest of Pithouse 1. The structure is roughly circular in plan and falls within the shallow-room category. There are no definable walls in Room 8, and the floor is basin shaped. It is possible that the plow zone destroyed a shallow wall, but the basin shape of the floor makes this unlikely.

No floor artifacts were associated with Room 8. The fill sequence indicates a period of abandonment, with natural deposits overlaid by cultural material. The lowest stratum is composed of a clay loam that could have washed in from the surrounding area or eroded in from the sides of the excavation. Above that lens toward the center of the room was a lens of black charcoal, above which was a silt-loam, post-occupational deposit. Throughout these strata typical trash (burned sandstone, a metate fragment, sherds, and flakes) was found, indicating that trash had been deposited in the room throughout its filling process.

There is no evidence to indicate the construction style of Room 8. No exterior or interior postholes were found. The similar shape and size of Room 8 to the other shallow rooms suggest that the roof construction was also similar.

Room 9.

Dimensions:

North-south:	2.2 m
East-west:	1.9 m
Depth:	0.2 m
Floor area:	2.5 m^2

Room 9 is the southernmost room in the arc of 14 rooms at Tres Bobos. It is 1.8 m south of Room 2, and 13.5 m to the southwest of the pithouse. In plan the room is irregular but somewhat circular (Figure 2.23) and falls into the shallow-room category. Like Room 8, this room has no discernible

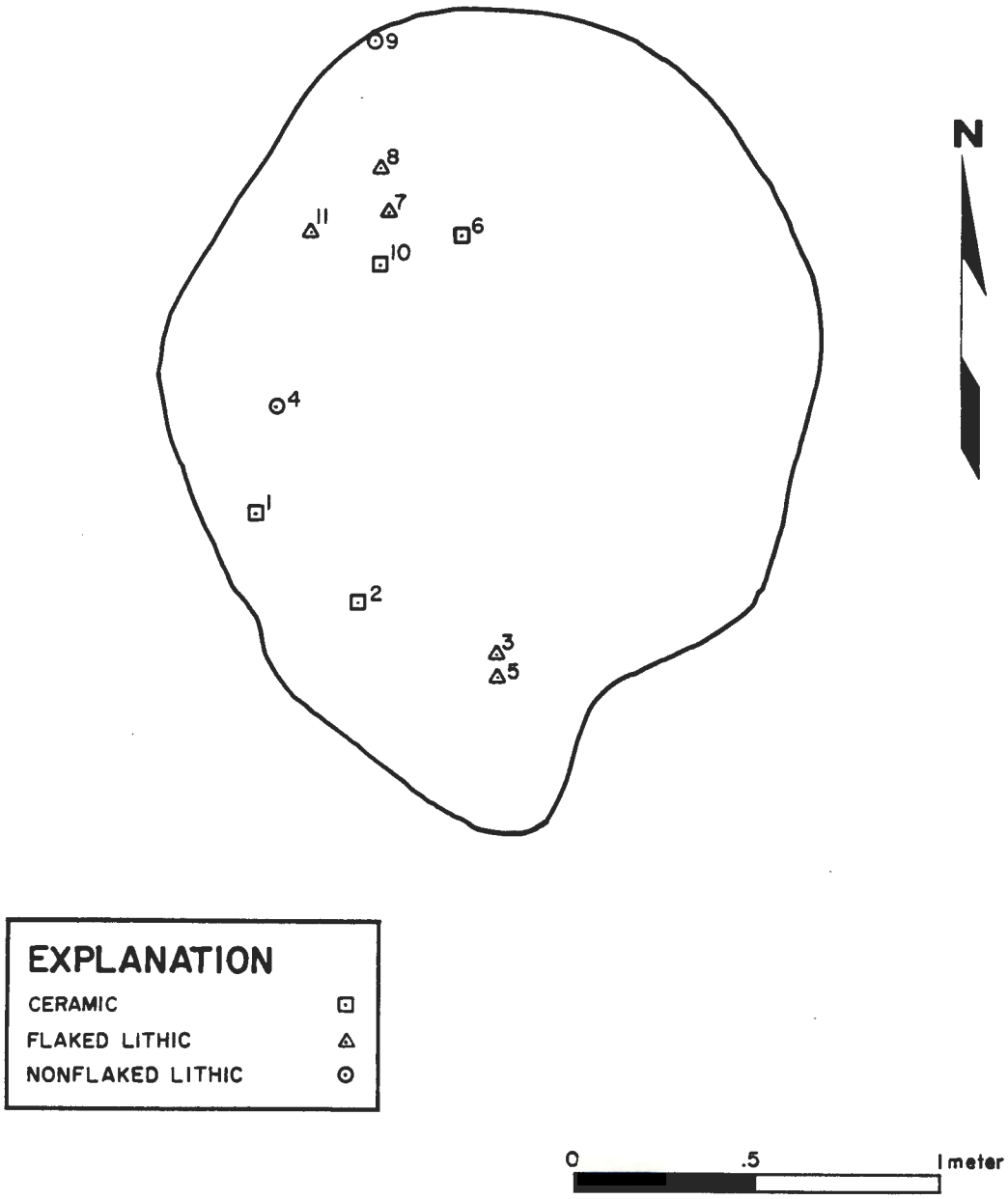


Figure 2.23 Plan view of Room 9, Tres Bobos Hamlet.

walls; it is simply a shallow basin cut into the sterile Bt horizon. No burning was evident on the floor, nor was there any evidence of floor features. Eleven floor artifacts were found, all along the western side (uphill) of the structure (Table 2.9). It is possible that some of these artifacts washed into the room and do not represent activities that took place in this structure.

The room was filled with a dark brown claylike matrix with an occasional sand lens along the west side. The only trash found in this fill consisted of flakes, sandstone, and small bits and pieces of sherds, all found along the western side. Again, no physical evidence remains to indicate what material was used to roof this structure. No postholes, either interior or exterior, were found.

Room 10.

Dimensions:

North-south:	1.6 m
East-west:	1.4 m
Depth:	0.2 m
Floor area:	2.9 m^2

Room 10 lies 17 m northwest of Pithouse 1. In plan this room is roughly oval to circular; it falls within the shallow-room category. The walls and floor are basin shaped in profile with steep, sloping sides. There were no floor artifacts recorded for this surface. The lowest lens suggests natural filling; it was nearly sterile, with small bits and pieces of charcoal. Above this lens was a darker fill heavily stained with decomposing charcoal; it had little cultural material and was very loose. The uppermost lens was a darker version of the lens immediately below. These two uppermost lenses suggest that the room was reused at a later time.

Table 2.9 Point Located Artifacts, Room 9, Tres Bobos Hamlet

PL #*	Item Description
1	Ceramic, MV EP Gray jar sherds (6)
2	Ceramic, MV EP Gray jar sherds (3)
3	Flaked lithic debitage
4	Nonflaked lithic, two-handed mano
5	Flaked lithic debitage
6	Ceramic, MV EP Gray jar sherd
7	Flaked lithic debitage
8	Flaked lithic debitage
9	Nonflaked lithic, undifferentiated
10	Ceramic, MV EP Gray jar sherd
11	Flaked lithic debitage

*see Figure 2.23 for artifact locations
( ) - number of items
MV - Mesa Verde
EP - Early Pueblo

Table 2.10 Point Located Artifacts, Room 12, Tres Bobos Hamlet

PL #*	Item Description
1	Flaked lithic, thick biface
2	Vegetal, 1 g Gymnospermae wood, charred
3	Nonflaked lithic, indeterminate

*see Figure 2.24 for artifact locations
g - gram

There was no indication of a superstructure, and no postholes were found within or around the room. Damage from plowing was more pronounced in this area than in most other portions of the site and may have destroyed indications of any postholes.

Room 11.

Dimensions:

North-south:	2.20 m
East-west:	0.80 m
Depth:	0.04 m
Floor area:	1.80 m^2

Room 11 lies 8.5 m northwest of Pithouse 1. In plan it appears roughly rectangular, with the long axis northwest-southeast. Falling within the shallow-room category, Room 11 is basin shaped in profile, with no discernible side walls. Like all the other rooms at Tres Bobos, this room was dug into the sterile Bt horizon. Artifacts found in the room include numerous small sherds, all belonging to a Chapin Gray jar, and one bifacially flaked core tool. However, due to the shallowness of the fill and the amorphous nature of the surface, it was difficult to determine which artifacts, if any, were resting on the floor.

There was a very shallow, 1 cm thick lens of nearly sterile sediment covering the bottom of this room. Three centimeters of dark brown, very loose silt loam were stratigraphically superimposed over the nearby sterile thin sediment. No evidence remains as to how this room was covered. The light brushy superstructure that is indicated for the other shallow rooms (Rooms 2, 3, and 9) might have also been constructed over Room 11.

Room 12.

Dimensions:

North-south:	2.0 m
East-west:	1.0 m
Depth:	0.1 m
Floor area:	2.1 m^2

Room 12 is 4 m north and slightly east of Pithouse 1. In plan this room is rectangular with rounded corners (Figure 2.24); it falls into the shallow-room category. In profile the room has a slightly basin-shaped floor with steep sloping walls formed by prehistoric excavation into the sterile Bt horizon.

Only three floor artifacts were found, including one sample of burned organic matter which was identified in the field as sagebrush (Table 2.10). Room 12 had two strata above the floor. The lower stratum was an almost sterile wash, containing charcoal flecks and one sherd, which was deposited after the room was abandoned. Above this lens a silty loam was found that was similar to the lower stratum, although its composition was looser and there were more charcoal inclusions. This stratum also contained three small pieces of sandstone measuring less than 10 by 10 cm each. This room did not burn, and the fill sequence indicates natural deposits after the superstructure was removed. There was no evidence to indicate how this room was roofed.

Room 13.

Dimensions:

North-south:	1.6 m
East-west:	1.2 m
Depth:	0.2 m
Floor area:	2.0 m^2

Lying 12 m northeast of Pithouse 1, Room 13 is the easternmost room at Tres Bobos. In plan the room is square, with rounded corners and slightly

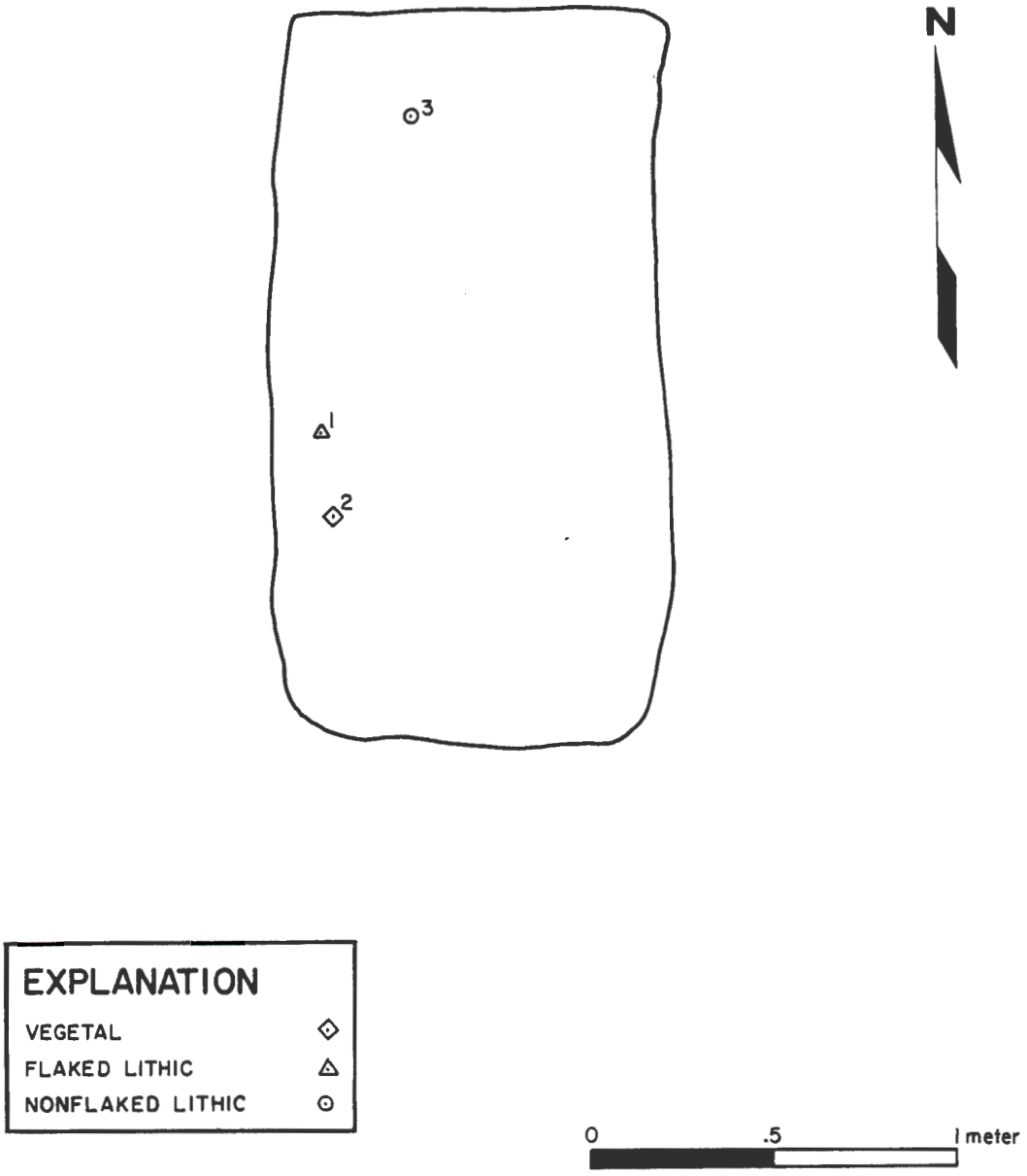


Figure 2.24 Plan view of Room 12, Tres Bobos Hamlet.

bulging sides. This room also falls into the shallow-room category. The walls along the west, north, and south sides meet the floor at nearly right angles, while the eastern wall slopes into the floor at about an 80° angle. This sloping along the eastern wall could be due to wall breakdown after abandonment. The floor is flat and use-compacted. After abandonment the room filled naturally for a short period of time and was then used as a trash dump. This trash level is characterized by a dark loamy deposit with numerous pieces (approximately 30) of burned, fragmented sandstone, as well as ceramics, broken cobble tools, and one piece of a nonhuman rib.

Again, there was no evidence to indicate what type of superstucture covered this room. It is possible that the pieces of sandstone were at one time part of the superstructure, and that the superstructure was intact when the room was abandoned. It is postulated that after natural deposits had filled in part of the structure the superstructure burned. Trash could have been thrown in on top of the burned remains; however, no floor or side-wall oxidation was present to indicate the burning.

Room 14.

Dimensions:

North-south:	1.7 m
East-west:	1.3 m
Depth:	0.35 m
Floor area:	1.4 m^2

Hearth (Feature 27):

Dimensions:

Length:	1.35 m
Width:	1.33 m
Depth:	0.22 m

Room 14 lies 6 m west of Room 4 and 16 m west of Pithouse 1. In plan Room 14 is oval with its long axis north-south (Figure 2.25). This room falls into the deep-room category and is basin-shaped in profile, with steep sides rising fairly abruptly from the floor.

No artifacts were associated with the surface of Room 14. The soil profile indicates that Room 14 was destroyed by fire: the floor and walls were burned, and a lens of decomposing charcoal covered the floor. After the room burned, natural deposits began to fill the room. When the room was approximately half-full, the northern half was reused as a large slab-lined firepit (Feature 27). There was a 4 cm thick lens of charcoal at the base of the hearth, over which were placed some sandstone slabs. The remaining fill in Room 14 and the fill in the slab-lined hearth consisted of post-abandonment, organically stained loess.

There was no evidence for a superstructure over Room 14. The carbonized fill lying on the floor indicated that the roof might have been composed of light materials, probably small poles and brush.

Nonstructural Unit 1.

Dimensions:

North-south:	1.5 m
East-west:	2.0 m
Floor area:	2.8 m^2

Pit (Feature 60):

Dimensions:

Length:	0.20 m
Width:	0.20 m
Depth:	0.07 m

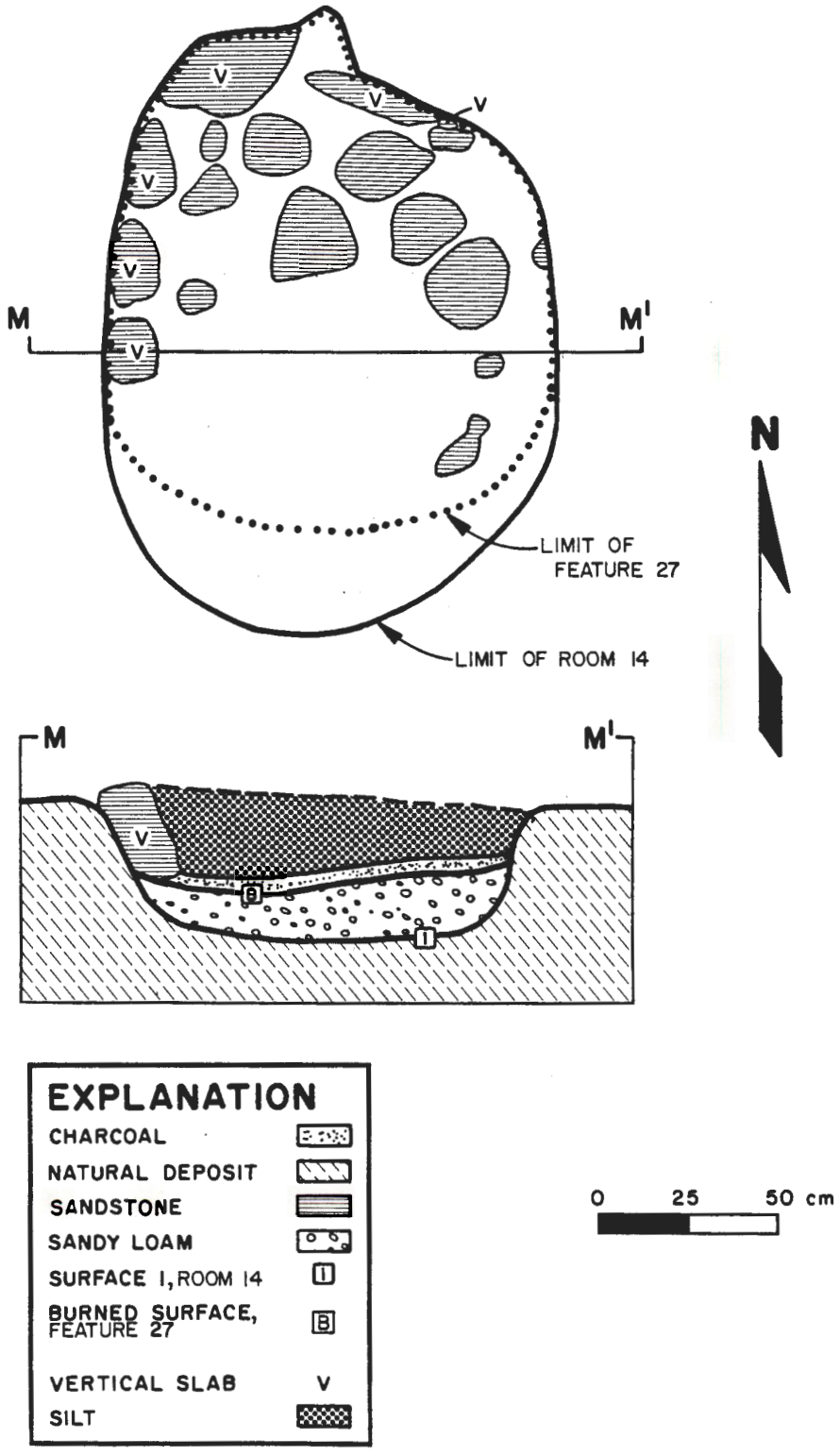


Figure 2.25 Room 14 and Feature 27, Tres Bobos Hamlet.

Basin-shaped hearth (Feature 61):

Dimensions:

Length:	0.36 m
Width:	0.36 m
Depth:	0.09 m

Nonstructural Unit 1 is located 3.5 m southwest of Pithouse 1 and 6.5 m east of Room 2. The area is rectangular in plan with its long axis running southwest by northeast (Figure 2.26). Nonstructural Unit 1 is a horizontally defined area that has no depth. In fact, the plow zone probably removed the associated prehistoric surface. This area, termed a ramada, is defined by a series of seven postholes (Table 2.11). Four of these postholes are in the northwest corner: two are primary and two are auxiliary. The remaining three postholes are located in the other corners of the ramada.

Table 2.11 Posthole Dimensions, Nonstructural Unit 1, Tres Bobos Hamlet

Feature #	Length (cm)	Width (cm)	Depth (cm)
59	15.0	15.0	22.0
108	15.0	13.0	8.0
110	13.0	13.0	24.0
113	6.0	6.0	7.0
114	6.0	6.0	10.0
124	12.0	12.0	15.0
125	18.0	18.0	15.0

Two subsurface features were found within the ramada. A circular, unlined, basin-shaped hearth (Feature 61) is located midway between the southwest and southeast postholes. Feature 61 evidenced oxidation of the walls. A shallow pit devoid of wall oxidation, Feature 60 is located in the northwest quarter of the ramada.

The posthole pattern around the features and the area's lack of depth suggest an open-sided, ramada-covered unit.

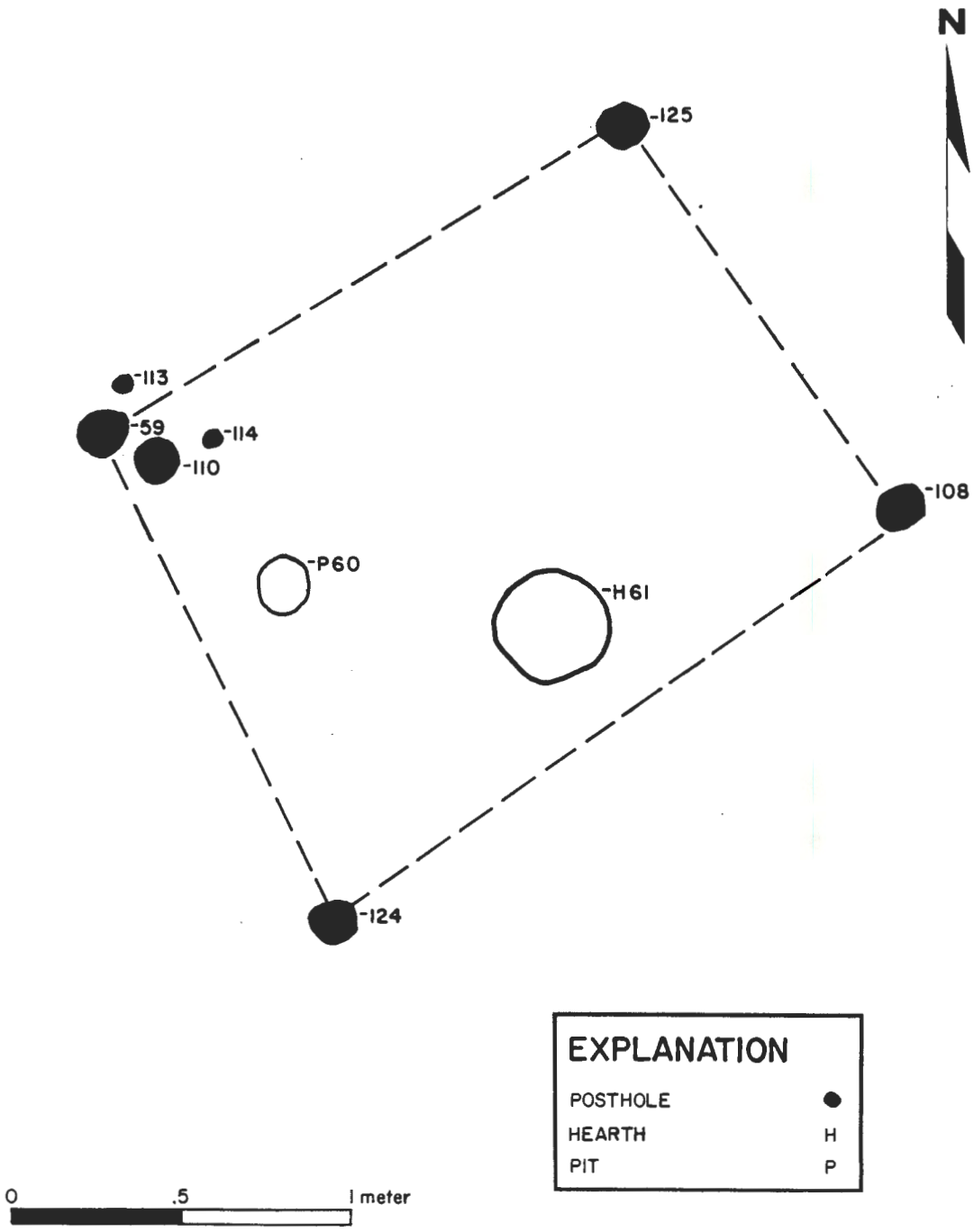


Figure 2.26 Plan view of Nonstructural Unit 1, Tres Bobos Hamlet.

Pithouse 1

Main chamber.

Dimensions:

North Wall:	
Length:	3.30 m
Greatest height:	1.02 m
South Wall:	
Length:	3.20 m
Greatest height:	0.70 m
East Wall:	
Length:	2.80 m
Greatest height:	1.00 m
West Wall:	
Length:	2.80 m
Greatest height:	0.68 m
North-south:	4.20 m (above bench)
East-west:	4.40 m (above bench)
Floor area (including bench areas):	18.60 m^2

Pithouse 1 (Figures 2.27 and 2.28) (referred to as Pitstructure 1 during fieldwork) is the focal point of Tres Bobos. Its size (27.3 m^2) indicates a single-family residence, though it could possibly have also been an extended family residence. The following discussion is descriptive only.

Pithouse 1 is a bilobed structure with the northern section larger than the southern one. The main axis of the pithouse lies 18° west of true north. This northwest-southeast orientation is quite common for Basketmaker III and Pueblo I pithouses in the Mesa Verde Region (Bullard [12:112]). The pithouse walls are unmodified, culturally sterile soil. The walls of the main chamber are nearly vertical in profile with a slight tendency to lean inward (Figure 2.29). The walls are formed by the

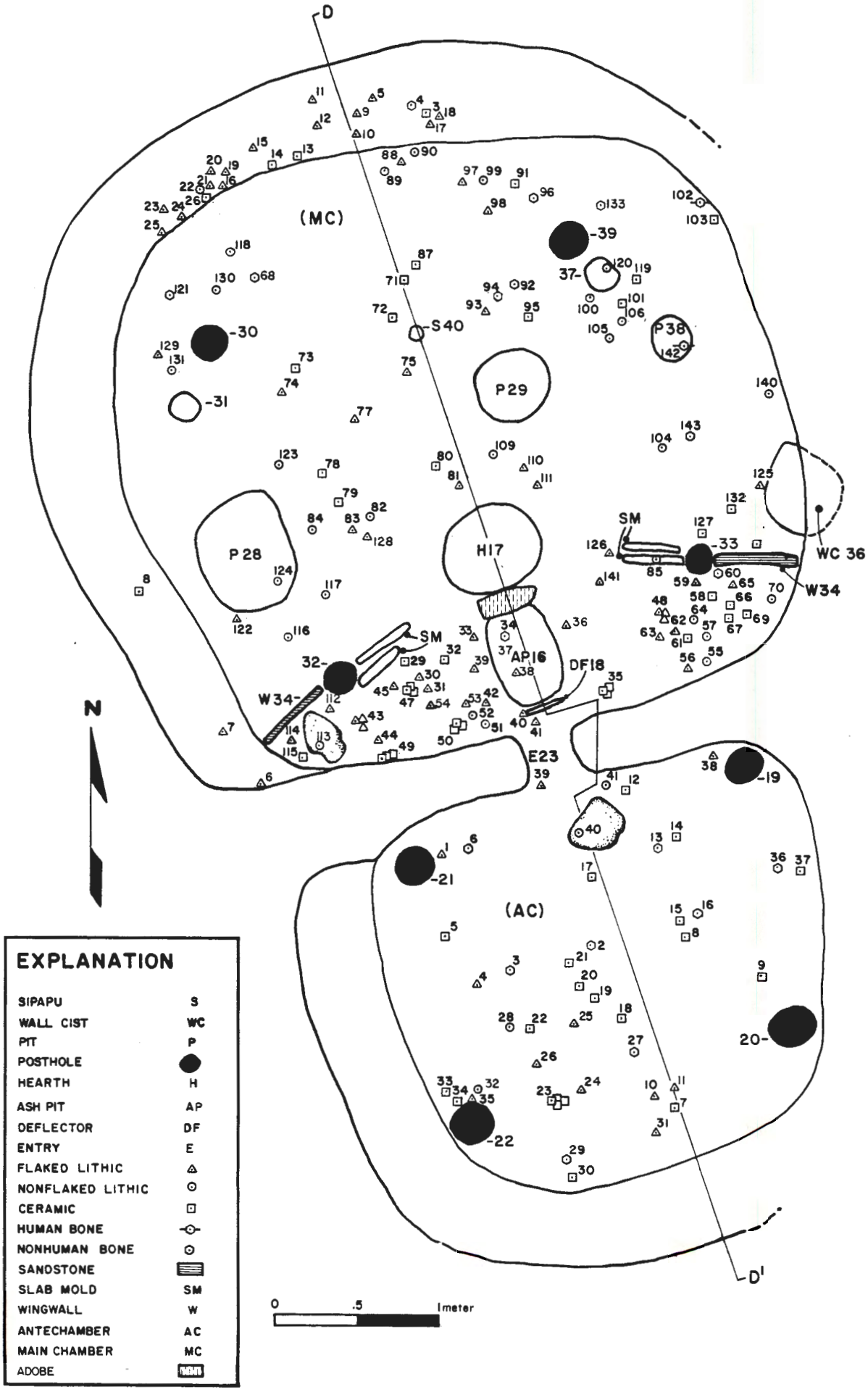


Figure 2.27 Plan view of Pithouse 1 with antechamber, Tres Bobos Hamlet.

Figure 2.28 Photograph of Pithouse 1, Tres Bobos Hamlet.

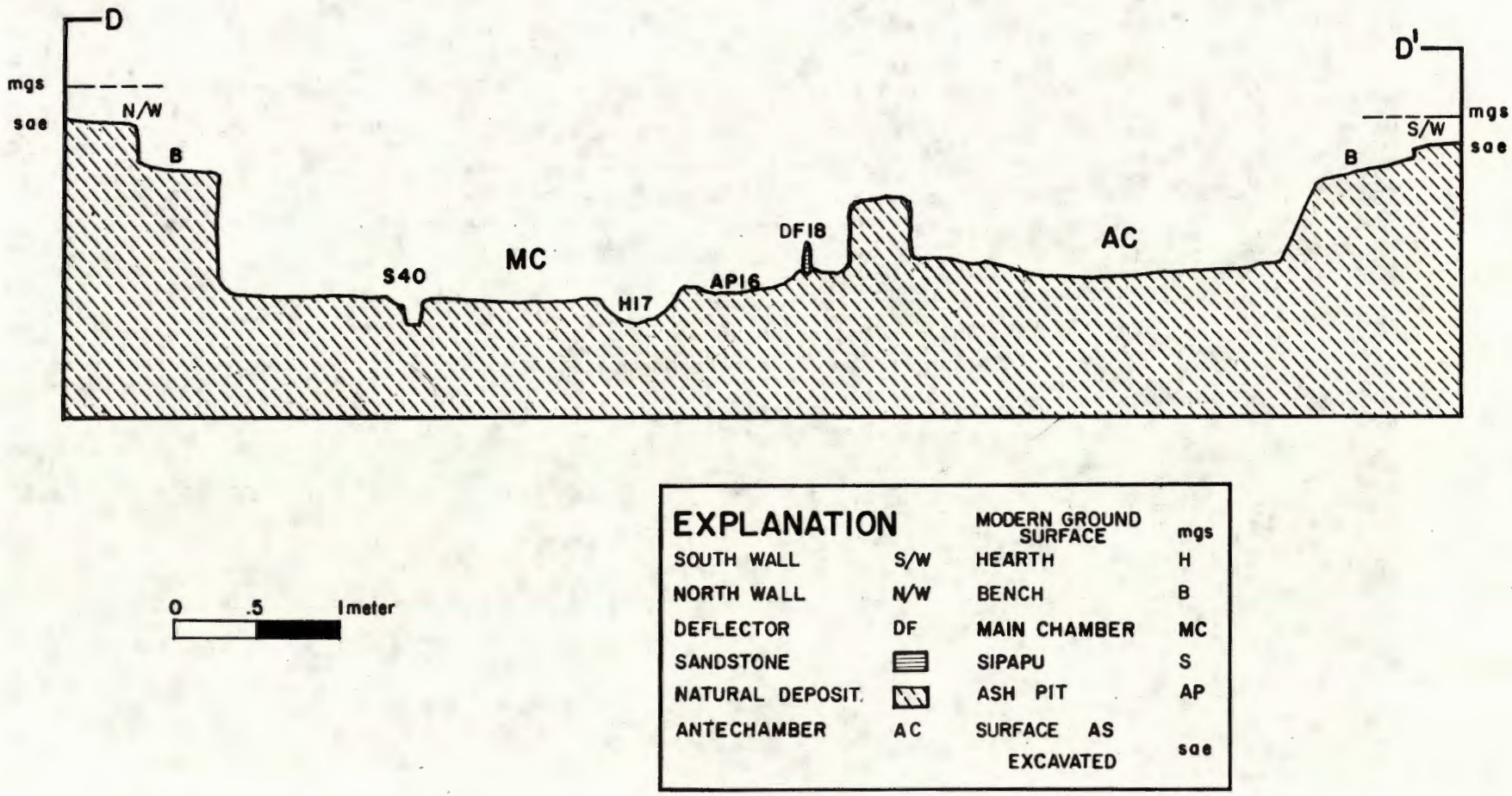


Figure 2.29 Architectural profile of Pithouse 1, north-south axis, Tres Bobos Hamlet.

sterile Bt horizon; no evidence remains to indicate whether these walls were plastered.

The bench in Pithouse 1 is located only in the western half. The downhill, or eastern, half of the pithouse shows no sign of ever having been equipped with such a feature. The bench, with an average width of 50 cm, was dug as part of the pithouse and is composed of undisturbed soil. The bench butts up against the south wall in the southwestern corner of the main chamber of the pithouse and extends along the west and north walls, becoming progressively shallower until it ends near the northeast corner.

Wingwall (Feature 34):

West wingwall:

Dimensions:

Length:	1.20 m
Width:	0.07 m
Height:	0.70 m

East wingwall:

Dimensions:

Length:	0.90 m
Width:	0.04 m
Height:	0.64 m

Most Basketmaker III and Pueblo I pithouses excavated in the Mesa Verde District consistently have one feature in common--a wingwall (Birkedal [11]). The pithouse at Tres Bobos is no exception (Figure 2.30). The wingwall is a low partition built toward the southern end of the main chamber, dividing the main chamber into two portions. Traditionally, the heavier work tools are found in the smaller area to the south (A. Lancaster, personal communication); this is true for the majority of the pithouses excavated by the D.A.P to date. The artifact assemblages that

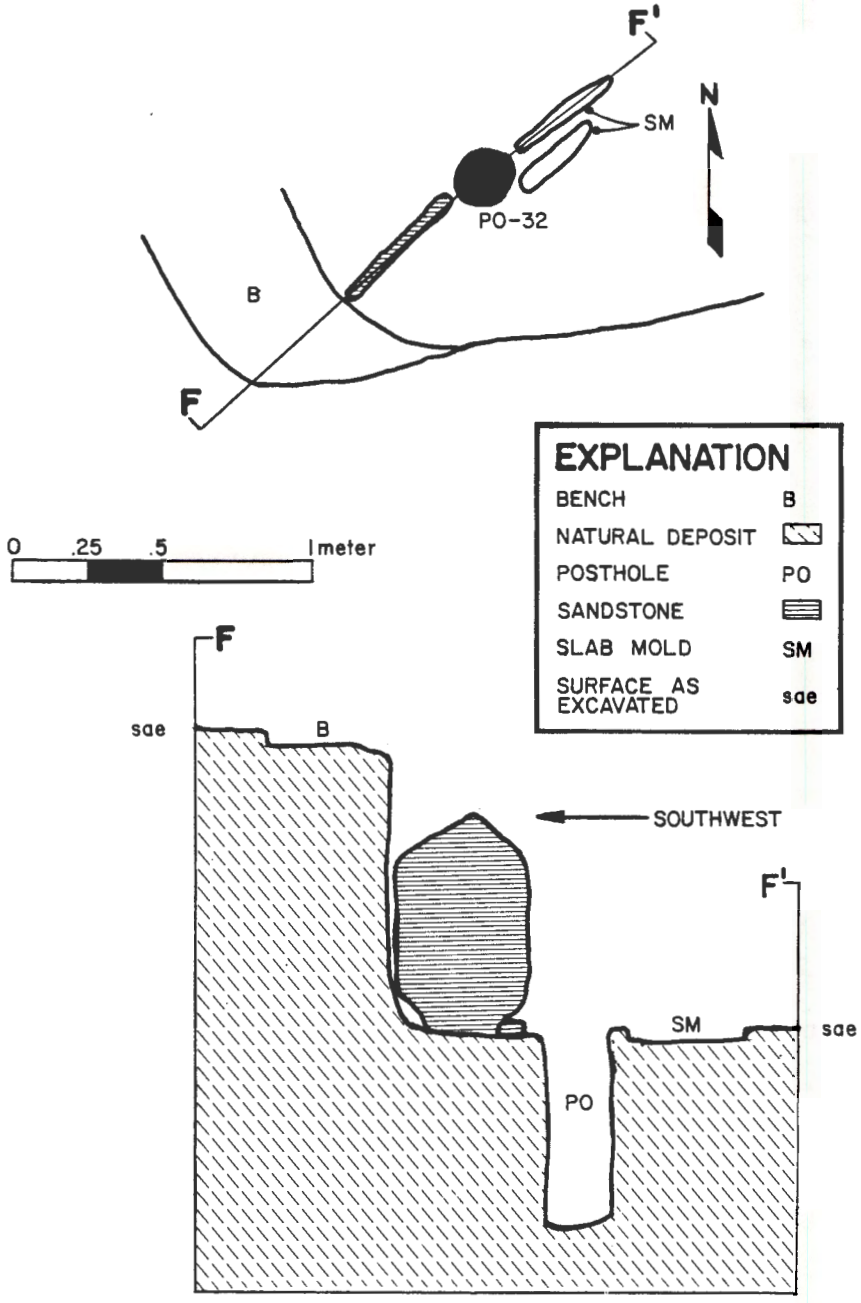


Figure 2.30 Pithouse 1, Floor 1, west wingwall, Tres Bobos Hamlet.

have been found behind the wingwalls, such as metates set on stones in a working position, manos, cobble pounding tools, and jars and bowls suggest that these were the areas within pithouses where parched and dried food and other foodstuffs were prepared for daily cooking and consumption.

The wingwalls found in pithouses are usually composed of vertical sandstone slabs set upright in grooves carved into the floor, with a space left in the center of the wall for access between the north and south sections. It is not atypical to find the two southern main-support posts incorporated into the wingwall, which is the case at Tres Bobos. In the early Basketmaker III period, the vertical slabs of the wingwall were often mortared with mud along their vertical seams and along the floor. Later in the Basketmaker III period and in the Pueblo I period, the slabs were usually completely covered by a thick coat of mud (Brew [14]). Pithouse 1 at Tres Bobos resembles the earlier version. The two inner-most slabs of the wingwall were removed at some point in time, leaving the floor grooves to mark their original placement. A post-abandonment human burial was excavated along the north wall of the pithouse. This burial had been placed in a pit dug into the fill that had accumulated since the pithouse was abandoned. Many stones, including two large slabs, were placed over the burial. It is speculated that the wingwalls were removed and placed over the burial.

Floor features:

Central hearth (Feature 17):

Dimensions:

Plan:	Circular
Length:	0.65 m
Width:	0.54 m
Depth:	0.17 m

Ash pit (Feature 16):

Dimensions:

Plan:	Oval
Length:	0.60 m
Width:	0.41 m
Depth:	0.05 m

Deflector (Feature 18):

Dimensions:

Plan:	Rectangular
Length:	0.32 m
Width:	0.02 m
Depth:	0.18 m

Three features in a north-south line effectively divide the area north of the wingwall into east and west halves. These are, from north to south, the central hearth, the ash pit, and the upright slab serving as an air deflector. The central hearth, Feature 17 (Figure 2.31), and the ash pit, Feature 16 (Figure 2.32), were both filled with fine gray ash and lithic debitage (mainly small pressure flakes). The deflector, Feature 18 (Figure 2.32), is simply a low, thin sandstone slab set into the floor 15 cm in front of the entryway leading into the antechamber. It is thought that the deflector functioned as a wind screen. Without it, air from the antechamber would flow directly across the flames and/or coals in the central hearth and increase the risk of the structure catching fire.

Sipapu (Feature 40):

Dimensions:

Length:	0.08 m
Width:	0.06 m
Depth:	0.03 m

A small subfloor pit, Feature 40, (Figure 2.33) lies north of the hearth along the north-south axis of the main chamber. It occupies the location traditionally reserved for the sipapu (Bullard [12]). Its shape and fill

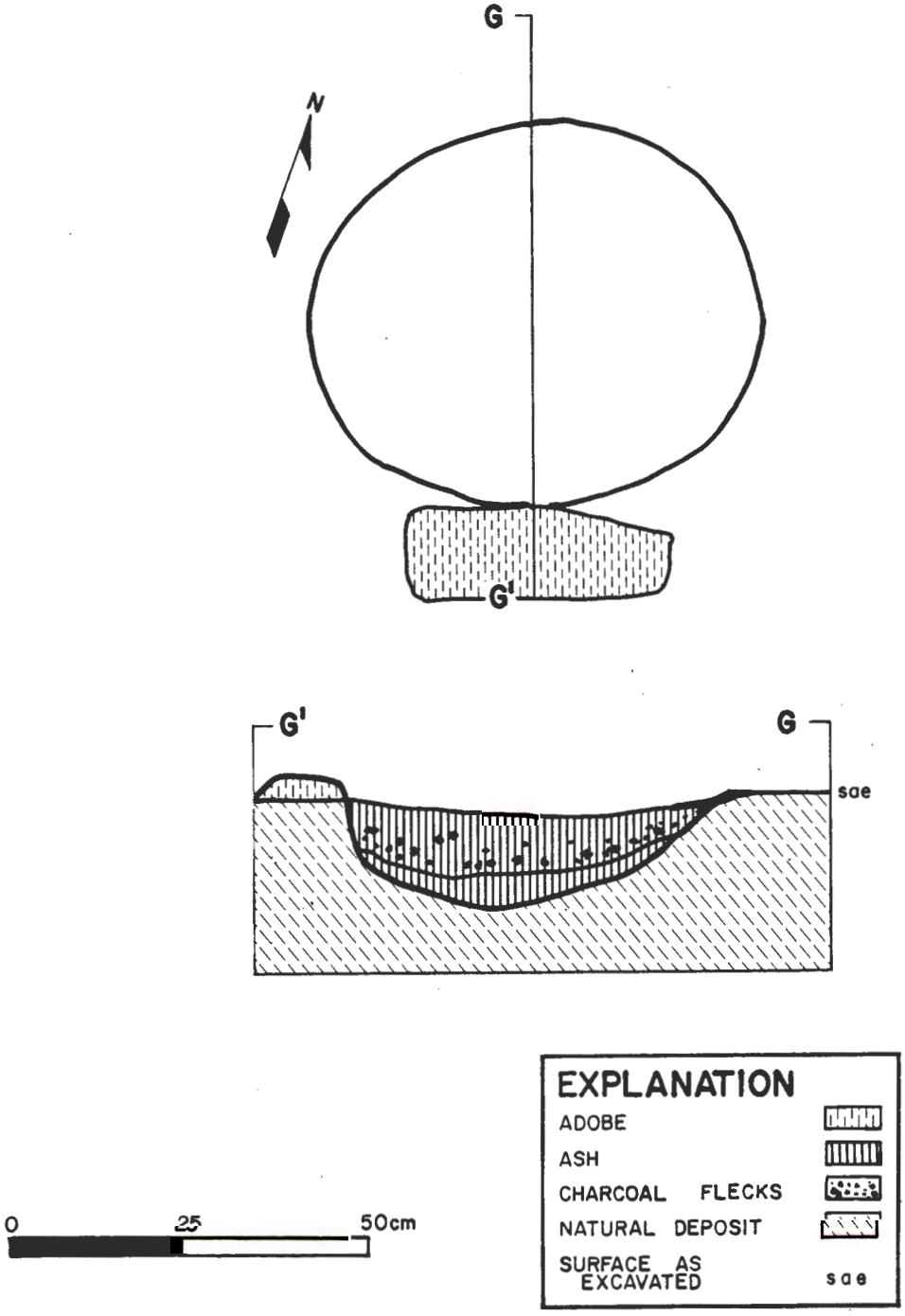


Figure 2.31 Pithouse 1, Floor 1, hearth (Feature 17), Tres Bobos Hamlet.

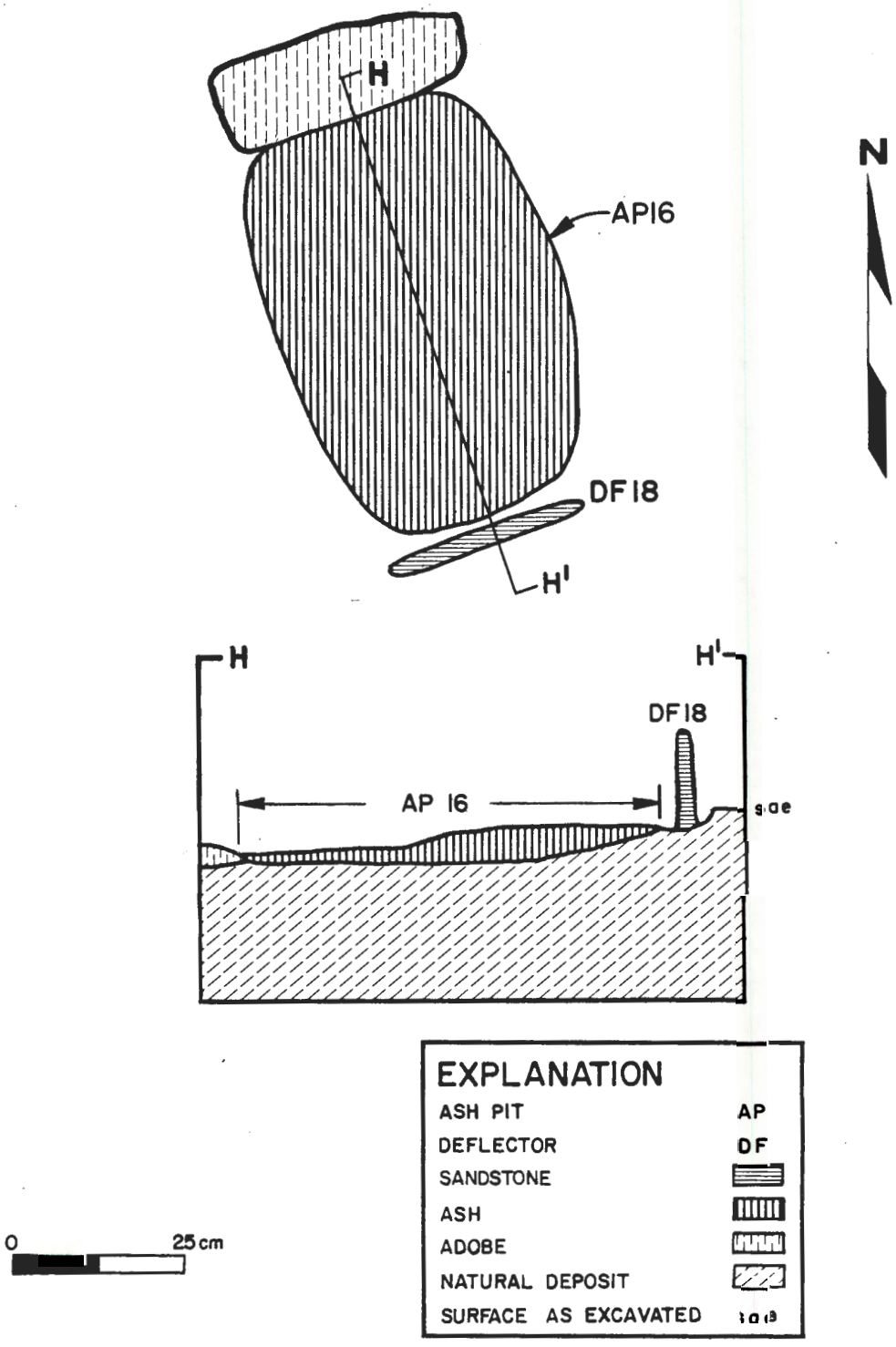


Figure 2.32 Pithouse 1, Floor 1, ash pit (Feature 16), and deflector (Feature 18), Tres Bobos Hamlet.

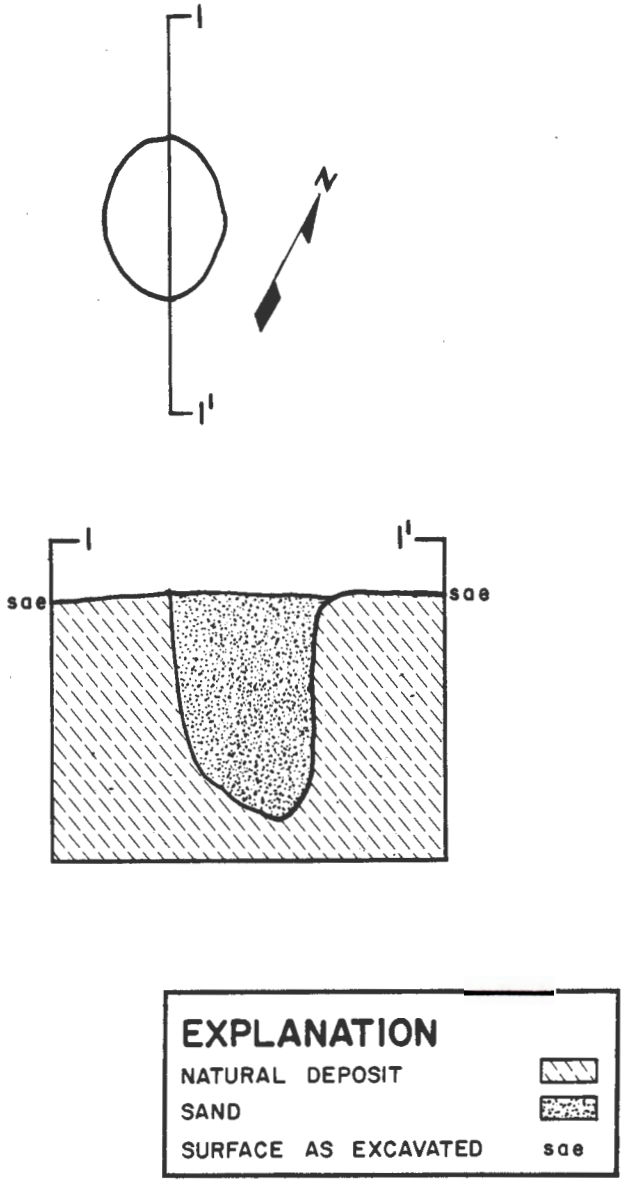


Figure 2.33 Pithouse 1, Floor 1, sipapu (Feature 40), Tres Bobos Hamlet.

also fit the criteria for the sipapu; it is cylindrical, narrow, and was filled with clean sand.

Bell-shaped cist (Feature 38):

Dimensions:

Length:	0.27 m
Width:	0.24 m
Inner diameter (at widest point):	0.24 m
Depth:	0.16 m

A bell-shaped cist, Feature 38 (Figure 2.34), is located about midway along the east wall and 38 cm west of the wall of Pithouse 1. Feature 38 was the only feature in the pithouse that was sealed with an adobe plug, indicating that it was not in use when the pithouse was abandoned. The cist was filled to within 3 cm of floor level with clean, tan sand. The last 3 cm of fill were adobe mud that blended into the floor.

Feature 38 was probably a storge cist that might have been used in conjunction with a subfloor pit (Feature 29) (Figure 2.35), found 60 cm west. Feature 29, a pit without evidence of burning, has a steep-sided, basin-shaped profile. Lying in the bottom were four fist-sized pieces of unburned sandstone held in place by clean sand. Above the sand was a mixture of sand and post-abandonment fill.

Pit without burning (Feature 29):

Dimensions:

Plan:	Circular
Length:	0.41 m
Width:	0.43 m
Depth:	0.26 m

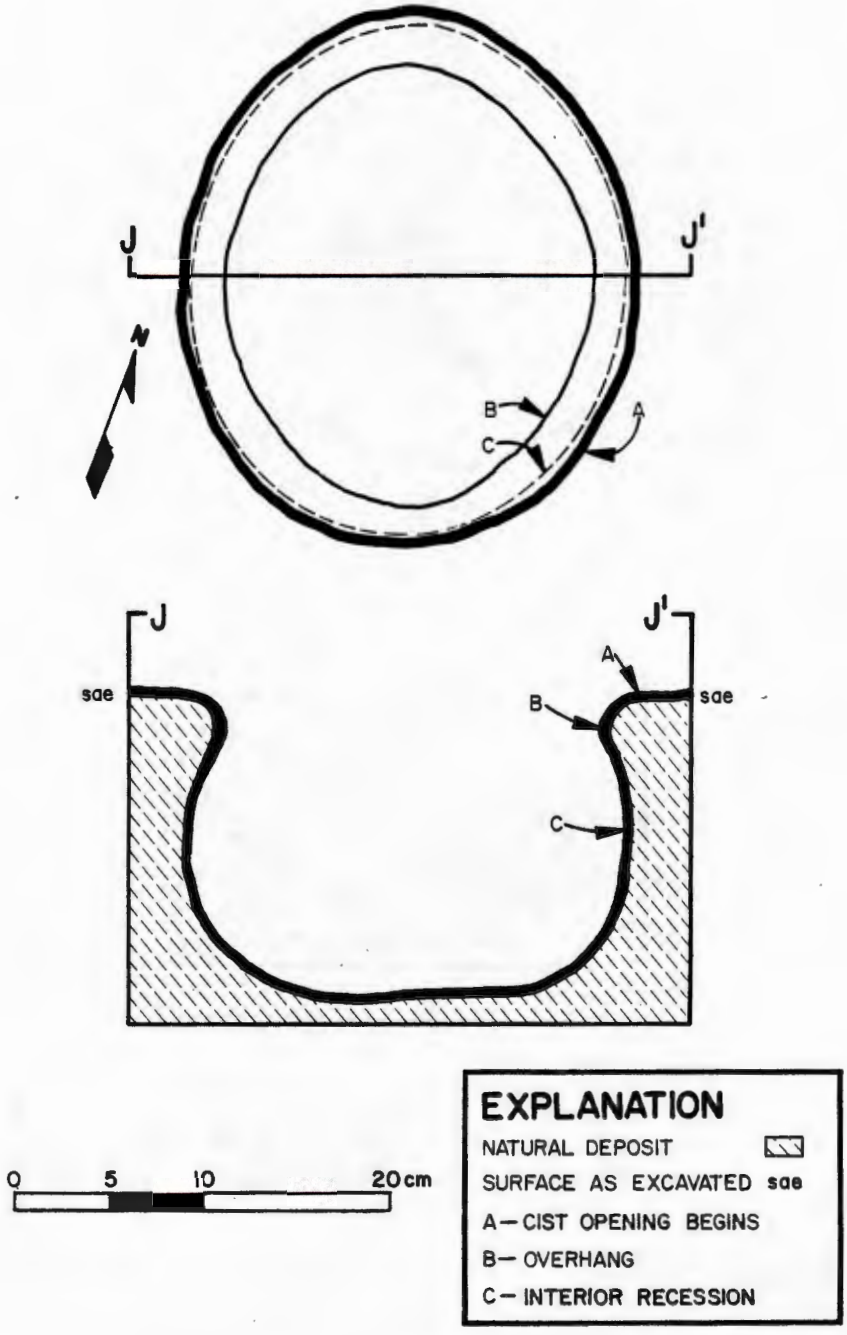


Figure 2.34 Pithouse 1, Floor 1, bell-shaped cist (Feature 38), Tres Bobos Hamlet.

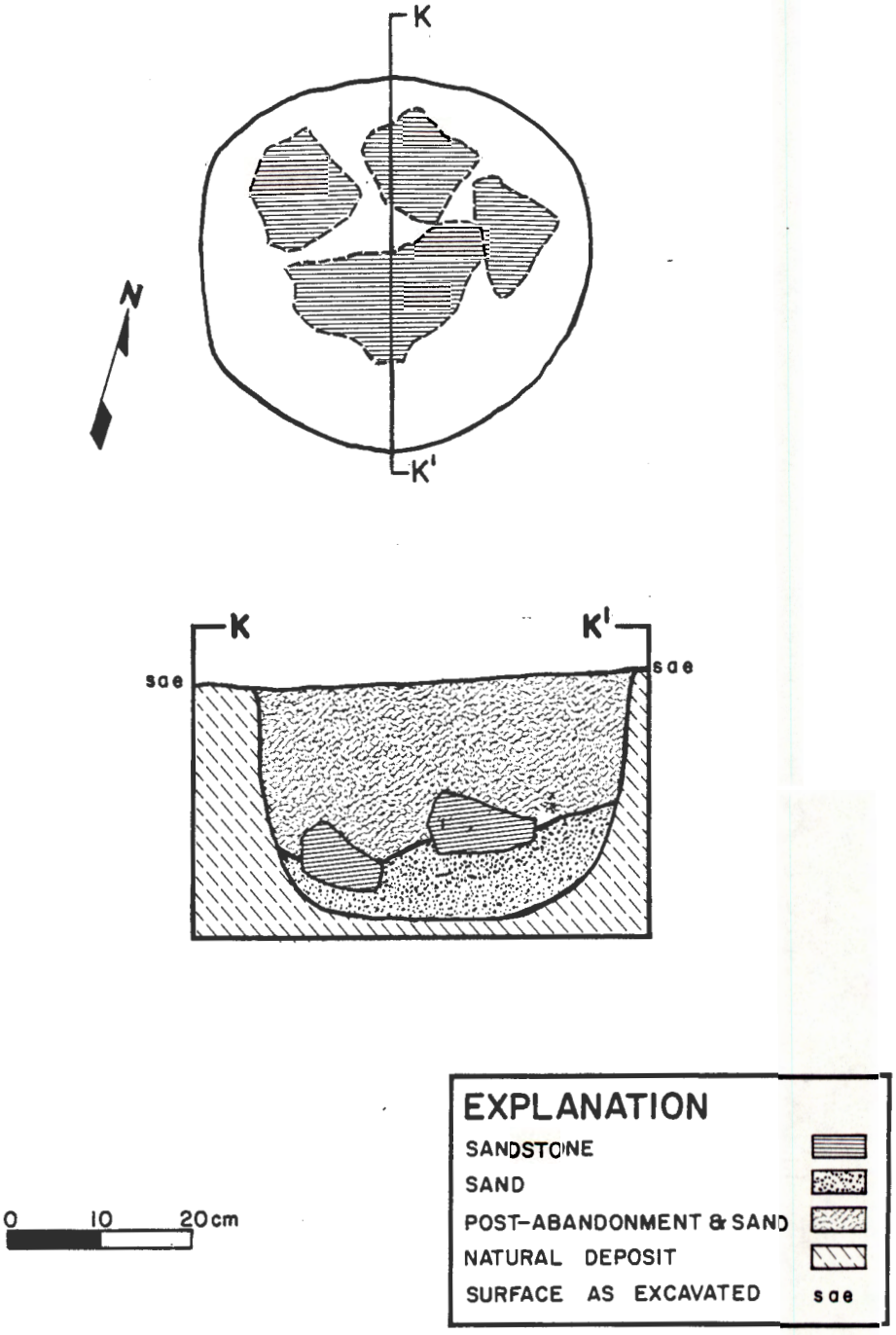


Figure 2.35 Pithouse 1, Floor 1, pit without burning (Feature 29), Tres Bobos Hamlet.

Pot rest (Feature 28):

Dimensions:

Plan:	Subrectangular
Length:	0.63 m
Width:	0.51 m
Depth:	0.11 m

Near the west wall lies Feature 28 (Figure 2.36), another pit with no evidence of burning. This pit is subrectangular with straight sides and is approximately 10 cm deep. The fill consisted of two slabs supported and surrounded by clean sand, which dip toward the center to form a trough. The slabs are situated mainly in the southern half of the pit, and the northern half of the pit contained only sand. It is thought that Feature 28 served as a resting place for a large round-bottomed jar, with the stone and sand acting as the basal support. A similar feature is known from another Baskemaker III-Pueblo I pithouse in the Negro Mesa area, approximately 25 miles west-northwest of Tres Bobos. The pit at Negro Mesa was interpreted as a pot rest due to the large, gray ware, round-bottomed olla which was found sitting in the trough formed by the slabs. Water would probably have been removed from the large jar by tipping it forward along the long axis of the slabs, with the slabs acting as a guide (J. Ives, personal communication). It is quite possible that Feature 28 found in Pithouse 1 at Tres Bobos served the same function.

Wall cist (Feature 36):

Dimensions:

Wall Opening:	
Width:	0.49 m
Height:	0.33 m
Interior:	
Length:	0.52 m
Width:	0.43 m
Depth below pithouse floor level:	0.14 m

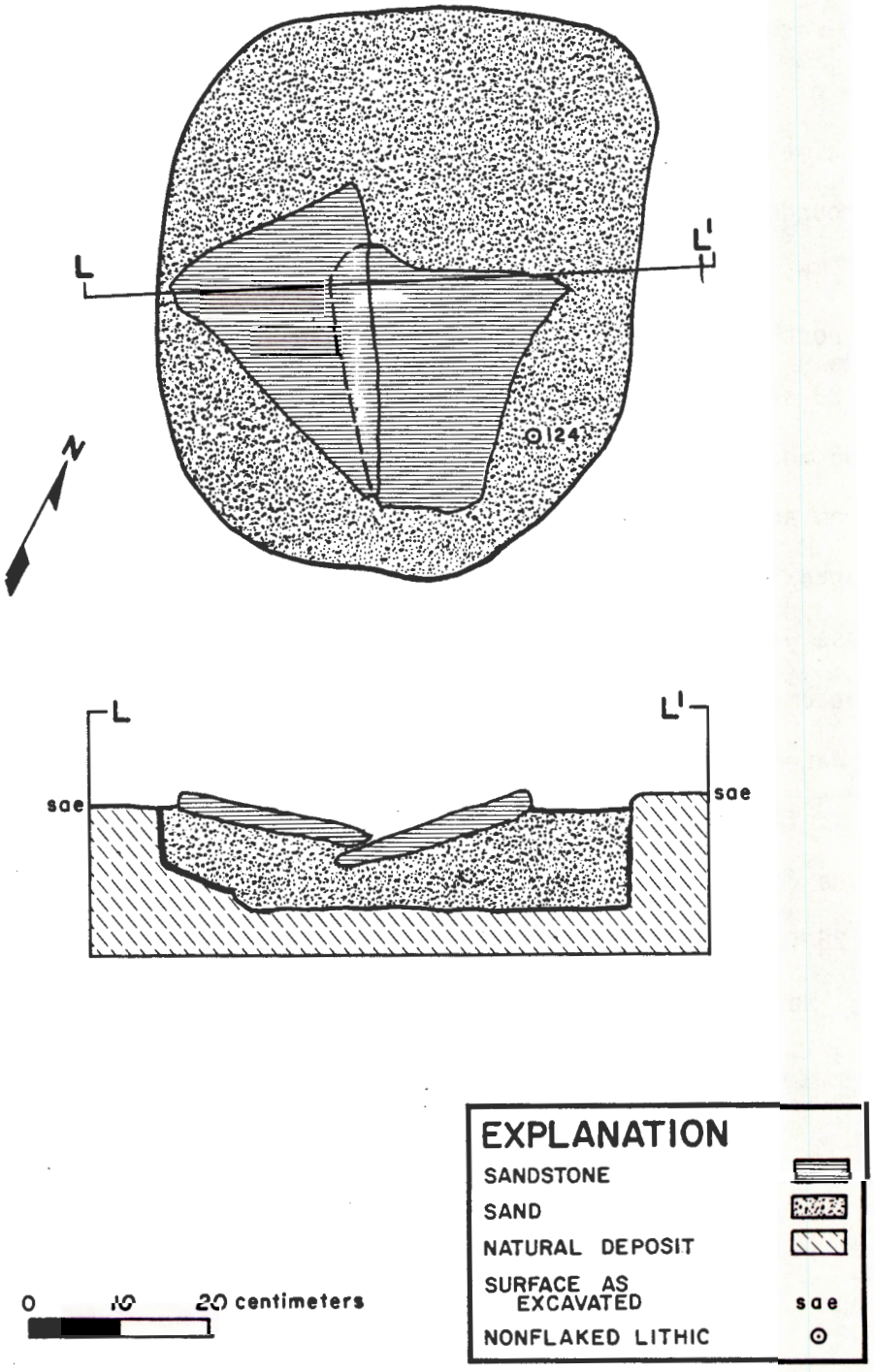


Figure 2.36 Pithouse 1, Floor 1, pot rest (Feature 28), Tres Bobos Hamlet.

A wall cist, Feature 36 (Figure 2.37), is located in the east wall immediately north of the wingwall. This cist contained the same fill that was found in the rest of the main chamber and is thus inferred to have been open at the time of abandonment. Floor artifacts associated with this feature include one core, one river cobble, one piece of unworked sandstone, and a ceramic cluster.

There are six other floor features in the main chamber of Pithouse 1; four are the primary post sockets, and the remaining two are shallow pit features, possibly auxilliary postholes, located near the northern two primary post sockets (Figure 2.27). The fill in all of these features was the same as the general pithouse fill, indicating that the posts were removed at the time the pithouse was abandoned. Table 2.12 presents the dimensions of these features.

Table 2.12 Posthole Dimensions, Main Chamber, Pithouse 1, Tres Bobos Hamlet*

Feature #	Length (cm)	Width (cm)	Depth (cm)
30	23.0	23.0	61.0
31	11.0	10.0	18.0
32	19.0	21.0	64.0
33	20.0	20.0	54.0
37	15.0	15.0	10.0
39	23.0	20.0	50.0

*this table includes dimensions of two pit features (Features 31 and 37) which may have held auxilliary posts.

Antechamber.

Dimensions:

North-south:	3.00 m
East-west:	3.10 m
Depth:	0.71 m
Floor area:	6.00 m^2

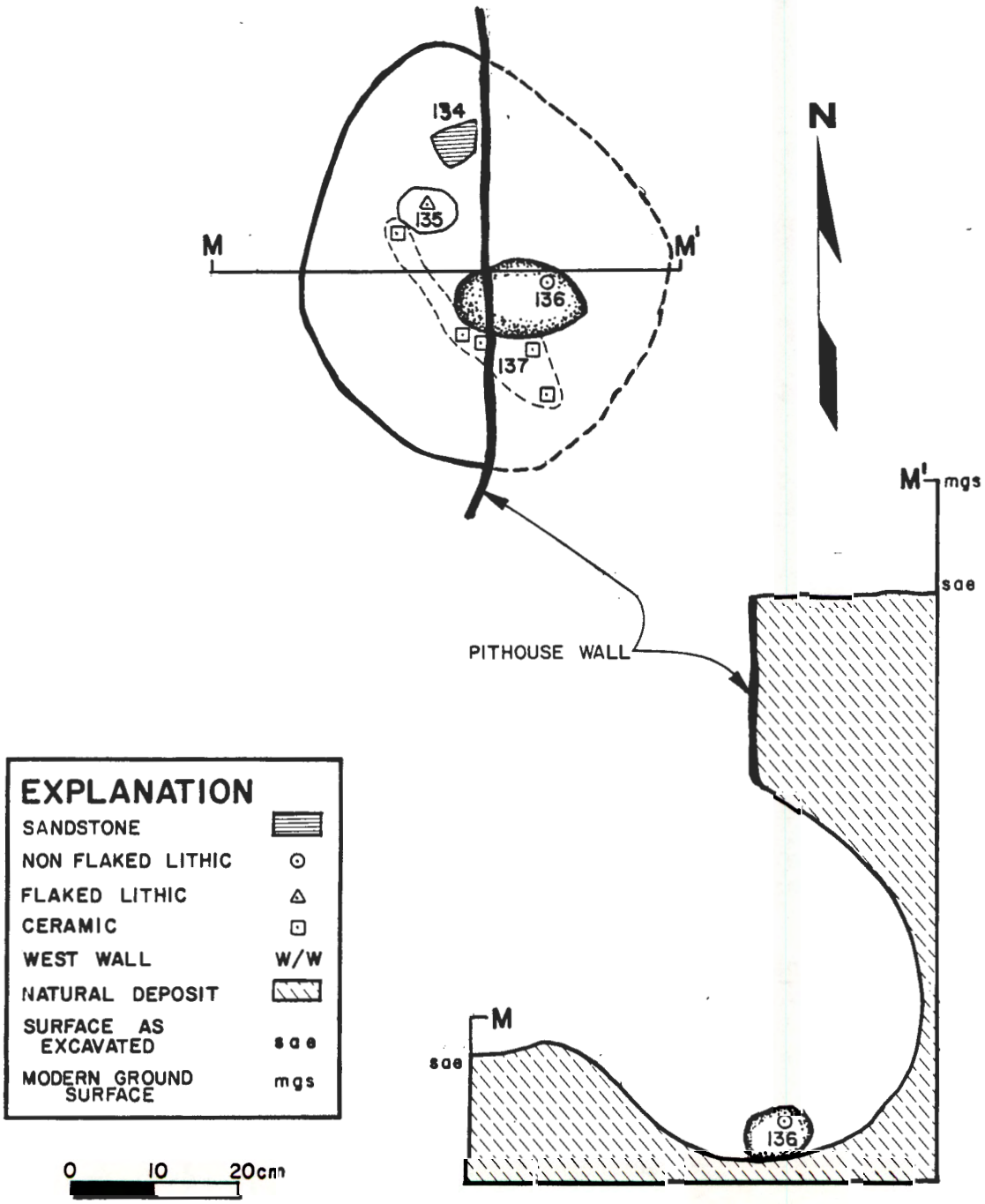


Figure 2.37 Pithouse 1, Floor 1, wall cist (Feature 36), Tres Bobos Hamlet.

The southern section of Pithouse 1 is the antechamber (Figures 2.27 and 2.30), connected to the main chamber by an entryway; the antechamber was originally called Pitstructure 2 in the field. The floor of the antechamber is 5 cm higher than that of the main chamber (Figure 2.29). Both the walls and the floor in the antechamber indicate that the superstructure over the antechamber burned, but that the room was subsequently cleaned and possibly reused.

The bench in the antechamber is slightly smaller (average width 45 cm) than is the bench in the main chamber. It occupies the area along the west side and half of the south side before it slopes upward and disappears at the base of the plow zone. There is no evidence that the bench in either the main chamber or the antechamber ever extended to encompass the eastern periphery of the structure. The bench in the antechamber averages 55 cm above floor level. The lower walls, as in the main chamber, are unmodified Bt horizon.

The only features discovered in the antechamber are four postholes, one in each corner (Table 2.13). The fill of the post sockets indicates that the posts were removed during abandonment or shortly thereafter.

Table 2.13 Posthole Dimensions, Antechamber, Pithouse 1, Tres Bobos Hamlet

Feature #	Length (cm)	Width (cm)	Depth (cm)
19	22.0	23.0	41.0
20	25.0	20.0	46.0
21	25.0	20.0	34.0
22	20.0	19.0	44.0

Floor artifacts. The bench and floor of the main chamber and the floor of the antechamber had a combined total of 177 floor artifacts (the positions of artifacts are illustrated in Figure 2.27). Of these

artifacts, all but 30 were either isolated sherds, nonutilized flakes, or nonworked bone. In other words, 84 percent of the floor-contact material was scattered cultural debris, probably accumulated during occupation. Of the tools, 27 (89 percent) were located in the main chamber, including 6 on the bench surface. Seventeen of the 27 artifacts in the main chamber are flaked tools, 8 are worked bone, 1 is a metate fragment, and the last is a bowl sherd with ground hematite on its interior surface. Table 2.14 lists (by their orignial field numbers) the 27 tools found in the main chamber of Pithouse 1 and the morpho-use category for each tool. Artifacts found in the antechamber are listed in Table 2.15; these were randomly spaced and suggest no particular economic activity.

The area on the floor of the main chamber south of the wingwall contained a cluster of flakes and flaked tools. Many nonutilized waste flakes were found, as well as one projectile point, one thin biface, three utilized flakes, one side-edged uniface, three used cores, and a trough-metate fragment. This area behind the wingwall was traditionally the food preparation and mealing area (Bullard [12]). These tools could also have been used in food preparation. Eighteen nonutilized flakes were also scattered throughout this area, as well as numerous sherds which represent trash rather than a single vessel that was crushed in situ. In the northeast corner of the main chamber were three bone awl fragments that might indicate an activity area.

It appears that no major remodeling took place in Pithouse 1 other than the addition of two auxiliary support posts in the north end of the house. The archaeological record indicates that the antechamber caught fire, burned, and was subsequently cleaned out and rebuilt. When the pithouse was abandoned, it was stripped of most materials (metates, manos,

Table 2.14 Point Located Artifacts, Main Chamber (including bench), Pithouse 1, Tres Bobos Hamlet (Page 1 of 4)

PL #*	Item Description
3	Ceramic, MV EP White jar sherds (16) RC-8
4	Nonhuman bone, Odocoileus hemionus, bone awl
5	Flaked lithic debitage
6	Flaked lithic, used core
7	Flaked lithic debitage
8	Nonhuman bone, Odocoileus hemionus, bone awl
9	Flaked lithic debitage
10	Flaked lithic debitage
11	Flaked lithic debitage
12	Flaked lithic debitage
13	Ceramic, MV EP Gray jar sherd
14	Ceramic, MV EP Gray jar sherds (2)
15	Flaked lithic debitage
16	Flaked lithic, used core
17	Flaked lithic, projectile point, corner notched
18	Flaked lithic debitage
19	Flaked lithic debitage
20	Flaked lithic debitage
21	Flaked lithic debitage
22	Nonflaked lithic, indeterminate
23	Flaked lithic debitage
24	Flaked lithic debitage
25	Flaked lithic debitage
26	Ceramic, MV EP Gray jar sherd
29	Ceramic, MV EP White bowl sherd
30	Flaked lithic debitage
31	Flaked lithic debitage
32	Ceramic, MV EP White bowl sherd
33	Flaked lithic, projectile point, stemmed
34	Nonhuman bone, unidentifiable mammal
35	Ceramic, MV Chapin B/W bowl sherd
36	Flaked lithic, utilized flake
37	Flaked lithic, used core
38	Flaked lithic debitage
39	Flaked lithic, thin biface
40	Flaked lithic debitage
41	Flaked lithic, utilized flake
42	Flaked lithic debitage
43	Flaked lithic debitage
44	Flaked lithic debitage
45	Flaked lithic debitage
46	Flaked lithic debitage
47	Ceramic, MV EP White bowl sherds (19), RC-3
	Ceramic, MV EP White jar sherd
	Ceramic, MV Chapin Gray jar sherds (12), RC-5
48	Flaked lithic debitage

Table 2.14 Point Located Artifacts, Main Chamber (including bench), Pithouse 1, Tres Bobos Hamlet (Page 2 of 4)

PL #*	Item Description
49	Ceramic, MV EP White bowl sherds (3), RC-3
50	Ceramic, MV EP White bowl sherd
51	Nonflaked lithic, two-hand mano
52	Nonflaked lithic, polishing stone
53	Flaked lithic, utilized flake
54	Flaked lithic, thin side-worked uniface
55	Nonflaked lithic, two-hand mano
56	Flaked lithic debitage
57	Nonflaked lithic, indeterminate
58	Ceramic, MV EP Gray jar sherd
59	Flaked lithic debitage
60	Nonhuman bone, Odocoileus hemionus, bone awl
61	Ceramic, MV EP Gray jar sherd
62	Flaked lithic debitage
63	Flaked lithic debitage
64	Nonflaked lithic, metate fragment
65	Flaked lithic debitage
66	Ceramic, unidentifiable white ware
67	Ceramic, MV EP Gray seed jar sherd
68	Nonhuman bone, Artiodactyla
69	Ceramic, MV EP Gray jar sherd
70	Nonflaked lithic, hammerstone
71	Ceramic, MV EP White bowl sherd
72	Ceramic, MV LP White jar sherd
73	Ceramic, MV EP Gray jar sherd
	Ceramic, MV Chapin B/W bowl sherd
74	Flaked lithic debitage
75	Flaked lithic debitage
77	Flaked lithic debitage
78	Ceramic, item missing
79	Ceramic, MV EP White bowl sherd
80	Ceramic, MV EP Gray jar sherds (2)
81	Flaked lithic debitage
82	Nonflaked lithic, two-hand mano
83	Flaked lithic debitage
84	Nonflaked lithic, indeterminate
85	Nonflaked lithic, hammerstone
86	Ceramic, EP Gray jar sherd
87	Ceramic, MV EP Gray jar sherd
88	Nonflaked lithic, indeterminate
89	Flaked lithic debitage
90	Flaked lithic, hammerstone
91	Ceramic, MV EP Gray jar sherds (2)
92	Human bone, unidentifiable fragments
93	Flaked lithic debitage
94	Nonflaked lithic, undifferentiated

Table 2.14 Point Located Artifacts, Main Chamber (including bench), Pithouse 1, Tres Bobos Hamlet (Page 3 of 4)

PL #*	Item Description
95	Ceramic, MV EP Gray jar sherd
	Ceramic, MV EP Gray jar sherd
	Ceramic, MV EP Gray jar sherd
	Ceramic, MV EP Gray jar sherds (2)
96	Nonhuman bone, unidentifiable mammal
97	Flaked lithic, side worked uniface
98	Flaked lithic debitage
99	Nonflaked lithic, undifferentiated
100	Nonflaked lithic, hammerstone
101	Ceramic, MV EP White jar sherd
	Ceramic, MV EP White jar sherd
102	Human bone, rib fragment
103	Ceramic, MV Chapin gray jar sherd
	Ceramic, MV EP Gray jar sherds (2)
104	Nonflaked lithic, indeterminate
105	Nonflaked lithic, trough metate, one end open
106	Nonflaked lithic, undifferentiated
107	Nonflaked lithic, trough metate, one end open
108	Nonflaked lithic, trough metate, one end open
109	Nonflaked lithic, slab metate
110	Flaked lithic debitage
111	Flaked lithic debitage
112	Flaked lithic, used core
113	Nonflaked lithic, metate fragment
114	Flaked lithic debitage
115	Ceramic, MV EP Gray jar sherd
116	Nonflaked lithic, hammerstone
117	Nonflaked lithic, undifferentiated
118	Nonflaked lithic, hammerstone
119	Ceramic, MV Chapin gray jar sherds (6)
120	Nonflaked lithic, hammerstone
121	Nonhuman bone, *Odocoileus hemionus*, bone awl
122	Flaked lithic debitage
123	Flaked lithic, used core
124	Nonflaked lithic, indeterminate
125	Flaked lithic debitage
126	Flaked lithic debitage
127	Ceramic, item missing
128	Flaked lithic, used core
129	Flaked lithic, thin side-worked uniface
130	Nonflaked lithic, one-hand mano
131	Nonflaked lithic, undifferentiated
132	Ceramic, MV EP Gray jar sherd
133	Nonhuman bone, large mammal
134	Nonflaked lithic, undifferentiated
135	Flaked lithic, used core
136	Nonflaked lithic, indeterminate

Table 2.14 Point Located Artifacts, Main Chamber (including bench), Pithouse 1, Tres Bobos Hamlet (Page 4 of 4)

PL #*	Item Description
137	Ceramic, MV EP White bowl sherd
	Ceramic, MV EP White seed jar sherds (5)
140	Nonflaked lithic, trough metate fragment
141	Flaked lithic, used core
142	Human bone, metacarpal
143	Nonhuman bone, Artiodactyla

*Numbers not represented on this list were assigned to items later determined not to be point located artifacts. See Figure 2.27 for artifact locations.

( ) - Number of items
MV - Mesa Verde
EP - Early Pueblo
RC - Reconstructable vessel
B/W - Black-on-white

Table 2.15 Point Located Artifacts, Antechamber, Pithouse 1, Tres Bobos Hamlet

PL #*	Item Description
1	Ceramic, MV Chapin Gray jar sherd
	Ceramic, MV EP Gray jar sherd
2	Nonhuman bone, Lepus californicus
3	Nonhuman bones, small mammal (3)
4	Flaked lithic debitage
5	Ceramic, MV Chapin Gray jar sherd
6	Nonhuman bone, Lepus californicus
7	Ceramic, MV EP Gray jar sherd
8	Ceramic, MV EP White bowl sherd
9	Ceramic, MV EP White jar sherd
10	Flaked lithic debitage
11	Flaked lithic debitage
12	Ceramic, MV EP Gray jar sherds (2)
13	Nonhuman bone, Sylvilagus spp.
14	Ceramic, MV Chapin Gray jar sherds (3), RC-9 (Fugitive Red)
15	Ceramic, MV EP White jar sherd
	Ceramic, MV EP Gray jar sherds (3) (Fugitive Red)
16	Nonhuman bone, Lepus californicus
17	Ceramic, MV EP Gray jar sherds (2)
18	Ceramic, item misplaced
19	Ceramic, MV Chapin Gray jar sherd, RC-9 (Fugitive Red)
20	Ceramic, MV EP Gray jar sherd
21	Ceramic, MV Chapin Gray jar sherds (2), RC-9 (Fugitive Red)
22	Ceramic, MV EP Gray jar sherds (2)
23	Ceramic, MV Chapin Gray jar sherd
	Ceramic, MV Chapin Gray jar sherds (2), RC-9 (Fugitive Red)
	Ceramic, MV EP Gray jar sherd
24	Flaked lithic debitage
25	Flaked lithic, uniface
26	Flaked lithic debitage
27	Nonhuman bone, large mammal
	Nonhuman bone, small mammal
28	Nonflaked lithic, undifferentiated
29	Nonhuman bone, large mammal
30	Ceramic, MV EP Gray jar sherd
31	Flaked lithic debitage
32	Nonflaked lithic, indeterminate
33	Ceramic, MV Chapin Gray jar sherds (3), RC-9 (Fugitive Red)
34	Ceramic, item misplaced
35	Flaked lithic debitage
36	Nonhuman bone, Lepus californicus
37	Ceramic, MV EP Gray jar sherd
38	Flaked lithic debitage
39	Flaked lithic debitage
40	Nonflaked lithic, metate
41	Item misplaced

*see Figure 2.27 for artifact locations
( ) - Number of items MV - Mesa Verde EP - Early Pueblo
RC - Reconstructable vessel

ceramics, etc.), and much of the pole framework might have been dismantled and taken elsewhere.

Passageway between Main Chamber and Antechamber (Feature 23).

Dimensions:

Length:	0.37 m
Width:	0.30 m
Depth:	0.50 m

A wall averaging 35 cm in thickness separates the main chamber from the antechamber. This wall is composed of undisturbed soil left in place when the pithouse was constructed. At the center of this dividing wall, an entryway was cut--presumably for access between the two sections of the pithouse. This entryway is visible in Figure 2.38, the photographic view of the antechamber, facing west.

Construction techniques. The floors in both the main chamber and the antechamber of the pithouse show no evidence of special preparation (e.g., plaster or paving), but they are both use-compacted. Except for the postholes, little evidence remains to indicate the form and materials of the walls and roof. Birkedal [11], Bullard [12], and Lancaster and Watson [13], among others, have recorded the following construction style for Basketmaker III pithouses; it is thought that the same construction style might have been incorporated at Tres Bobos.

The four main-support postholes found in each of the two chambers would at one time have been fitted with eight vertical posts. Each group of four posts would have been joined together by four horizontally laid primary beams, which would have been joined near the tops of the vertical beams. Two separate frames, one in each chamber of the pithouse, would have thus been formed, and it was on this frame that the roof and side walls would have rested.

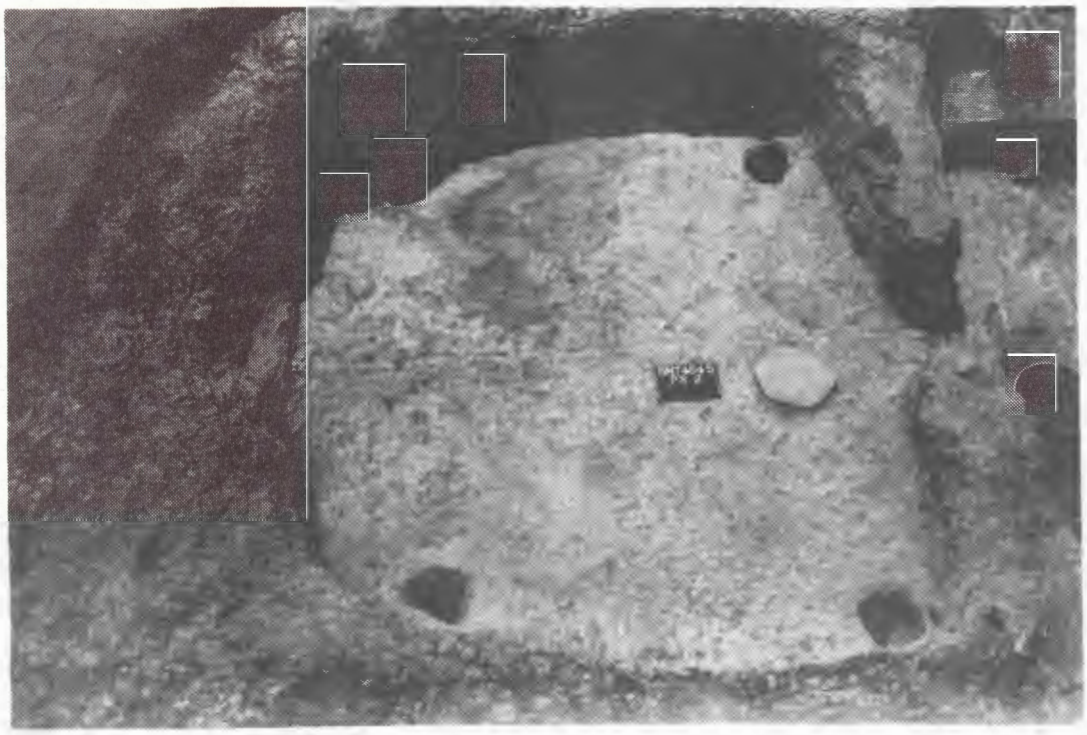


Figure 2.38 Photograph of antechamber, Pithouse 1, Tres Bobos Hamlet.

From the archaeological record it has been inferred that pithouse roofs were composed of four layers: the primary beams, the secondary poles, the matting, and a capping layer of mud. The secondary poles would have been laid across the primary ones to form the second layer of roof construction. These secondary posts were quite possibly laid in pairs, perhaps 15-20 cm apart. While the layers were being added, a space was probably left open above the central hearth for access into the house and for ventilation. Brush would then have been laid at right angles over the secondary poles. Sagebrush and reeds might have been two materials available for this process in the Sagehen Flats Locality. The final layer would have consisted of a thick mud cap.

Side walls were typically constructed in a similar fashion to the roof. Secondary (or leaner) poles were leaned in from the edge of the pithouse or from the surface of the bench until they rested against the primary beams of the roof. There is no evidence at Tres Bobos to suggest that stringer poles were butted on the bench surface. It is therefore likely that stringer poles were butted on the ground surface around the house. This prehistoric surface has been destroyed by historic plowing and cultivating, however, and no stringer-pole sockets were found.

Basketmaker III pithouses equipped with an antechamber have been recorded with one continuous roof, covering the whole structure and with each chamber separately roofed, forming two distinct units connected by something like a walkway. There is no formal walkway in Pithouse 1, suggesting that one roof covered the whole structure.

Other features. Of the 122 cultural features located at Tres Bobos, 22 were found in the pithouse and have already been discussed. The two borrow pits were also designated as features and have also been discussed.

On the basis of morphological attributes and type of fill, the remaining features fall into five type-categories; postholes are one of the five type-categories, but they will not be discussed here. A sixth category includes anomalous features.

Excluding the postholes, 45 features can be grouped into four distinct types on the basis of their formal attributes. These are illustrated in Figure 2.39. Type 1 features are basin-shaped heating pits, of which 24 were recovered. These symmetrical features are circular in plan and basin-shaped in profile. Dimensions for the 24 Type 1 features are presented in Table 2.16. The mean diameter of these pits at the level of detection is 50 cm, and the mean depth is 12 cm.

The fill encountered in Type 1 features was a very dark gray to black loamy matrix. It was extensively mottled with chunks of burned vegetal matter that appear to be sagebrush when observed in the field. This fill is interpreted as primary deposit from the use of the pit. It is assumed that silts washed in and mixed with these ashy deposits, and that the matrix was blackened by the decomposing charcoal. In only four of the 24 features do the walls show signs of oxidation due to extreme heat, and in these cases the discoloration is slight and limited to localized areas within the features. The term "basin-shaped heating pit" was chosen to imply that there were no in situ fires in these pits or that if there were, the fires were not of long duration or high intensity.

Type 2 features are termed cylindrical heating pits. Fifteen Type 2 features were recorded at Tres Bobos; their dimensions are presented in Table 2.17. Type 2 features have a mean diameter of 29 cm and a mean depth of 18 cm. These features most often occur in pairs or in clusters of three; in such groups there is at least one shallow pit and one deep

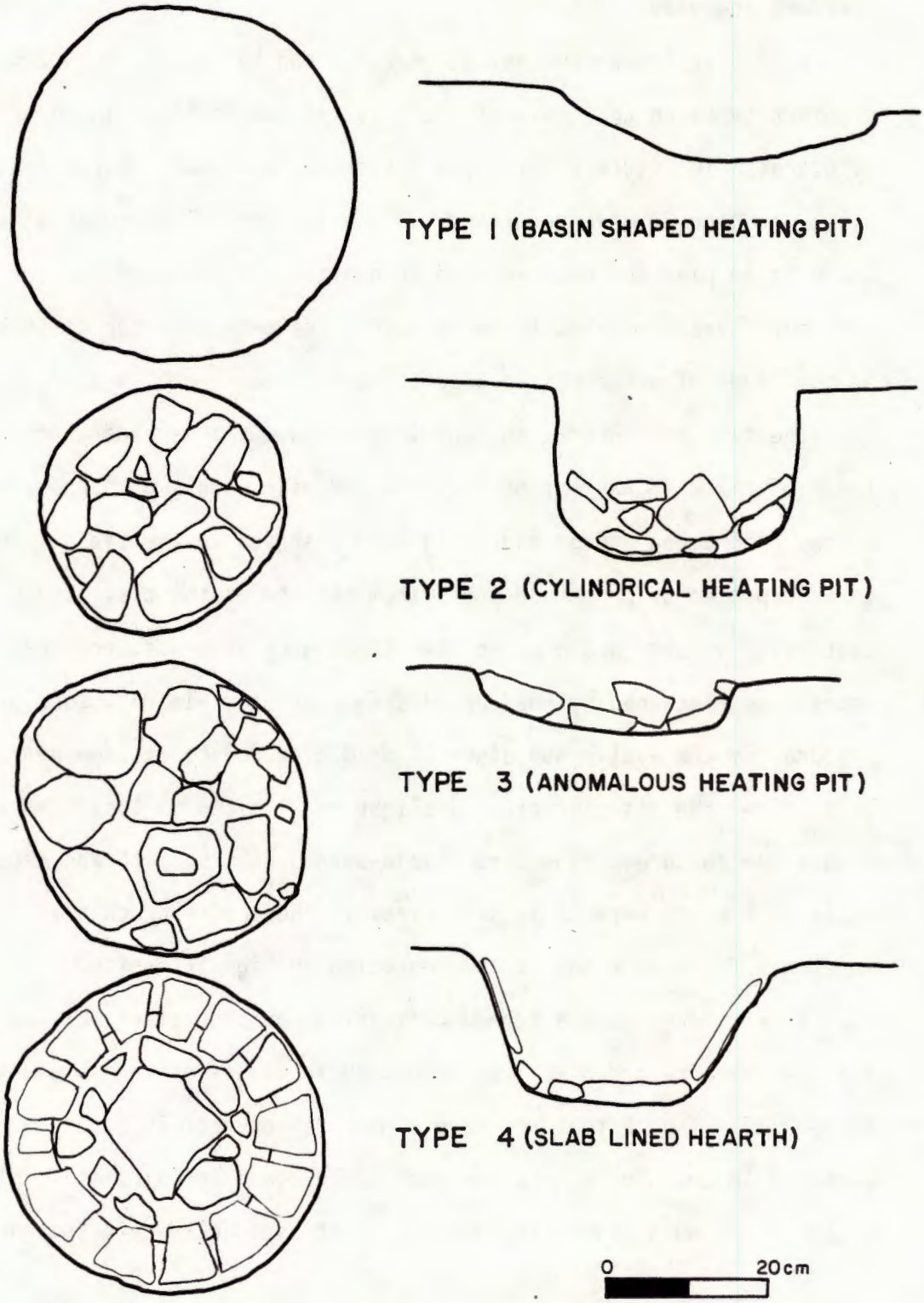


Figure 2.39 Comparative diagrams of Feature Types 1-4, Tres Bobos Hamlet.

Table 2.16 Existing Dimensions of Type 1 Features, Tres Bobos Hamlet

Feature Numbers	Length (m)	Width (m)	Depth (m)
4	0.81	0.66	0.12
5	0.64	0.75	0.18
6	0.26	0.26	0.05
12	0.34	0.27	0.05
14	0.47	0.50	0.09
44	0.49	0.44	0.09
45	0.23	0.19	0.04
47	0.80	0.73	0.16
64	1.10	0.92	0.23
65	0.93	0.90	0.20
67	0.49	0.36	0.09
69	0.21	0.20	0.16
72	0.20	0.20	0.12
73	0.18	0.23	0.16
76	0.32	0.32	0.04
83	0.62	0.50	0.12
84	0.50	0.50	0.23
85	0.74	0.73	0.21
86	0.90	0.81	0.23
87	0.58	0.50	0.17
89	0.42	0.40	0.07
91	0.47	0.45	0.14
94	0.85	0.64	0.21

Table 2.17 Existing Dimensions of Type 2 Features, Tres Bobos Hamlet

Feature Numbers	Length (m)	Width (m)	Depth (m)
15	0.30	0.28	0.11
24	0.33	0.31	0.18
49	0.22	0.20	0.04
62	0.39	0.30	0.14
66	0.20	0.20	0.02
101	0.30	0.30	0.27
104	0.23	0.23	0.08
106	0.30	0.30	0.22
111	0.44	0.41	0.27
130	0.28	0.29	0.24
131	0.31	0.28	0.18
132	0.20	0.20	0.12
134	0.33	0.33	0.26
135	0.34	0.34	0.36
136	0.28	0.28	0.16

pit. The bottoms of these cylindrical pits are lined with small pieces of sandstone and, less frequently, with pieces of shale. These stones are not shaped but are fitted so that they cover the bottom of the pit. The only variability in this attribute is that some of the deeper pits have two or three layers of these stones. In every case, however, these stones show signs of burning: they are discolored and tend to crumble easily.

The fill is very similar to the fill described for the basin-shaped heating pits. The matrix is dark carbonized soil with large chunks of organic matter thought to be sagebrush when observed in the field. The walls and bottoms of the cylindrical heating pits are also similar to those of Type 1 features in that they show no signs of oxidation from extreme heat. It is possible that the rocks and ash were heated at another location and brought to these pits; however, if there were in situ fires in these pits, they were not extremely hot or of long duration.

Features similar to Type 2 features have been described in the archaeological literature. Bullard [12] reports finding cylindrical pits with basalt rocks in the bottoms at the Cerro Colorado site in west central New Mexico. The features Bullard speaks of are similar to the Tres Bobos features in many respects. Those pits usually occurred in pairs, and Bullard believes that the rocks were heated elsewhere and placed in these features. At Cerro Colorado, however, these features are found in the pithouse floor, not outside of the pithouse.

Type 3 features are termed anomalous heating pits. There are only three of these feature types at Tres Bobos, and they have similarities to both Types 1 and 2. Type 3 features are shallow pits, circular in plan and basin-shaped in profile, and therefore resemble Type 1 pits. They also resemble Type 2 in that there are sandstone rocks in the bottoms of

the pits. In general, the stones in these features are not as numerous as those in Type 2 features nor were they placed in the pits in an ordered fashion. It is possible that the rocks used in Type 2 features were heated in Type 3 features. Dimensions of Type 3 features are presented in Table 2.18. The mean diameter is 30 cm and the mean depth is 7 cm. The fill is dark carbonized soil apparently stained from decomposing charcoal. Type 3 is problematic since there are so few of these features and since they are so similar to each of the first two types. It is probable that these Type 3 features do not represent a functionally distinct type.

There are only three features of Type 4, termed slab-lined fireplaces. They are circular in plan and in profile they have flat bottoms and straight, outflaring walls. The most distinctive attribute of Feature Type 4 is the tabular sandstone slabs that cover the floor and portions of the walls. These tabular slabs differ in size and shape from the irregularly shaped stone found in the cylindrical heating pits, and these seem to have been fitted together with greater care. These slabs are discolored and fractured from intense heat, and the earthen walls and floors of these hearths are oxidized from heat. This oxidation is interpreted as the result of several very intense in situ fires.

Dimensions of these features are presented in Table 2.19. The mean diameter of Feature Type 4 is 81 cm, and the mean depth is 30 cm. The fill sequence is more complex than that in the features discussed previously. The upper portion of the fill was a loamy deposit with relatively few inclusions. Beneath this lens was a dark charcoal-rich lens over and between the slabs. This pattern might have been produced by repeated cleaning out of these features in order to keep them functional. The features seem to have been partially cleaned out when the site was

Table 2.18 Existing Dimensions of Type 3 Features, Tres Bobos Hamlet

Feature Numbers	Length (m)	Width (m)	Depth (m)
2	0.20	0.29	0.08
7	0.33	0.28	0.08
75	0.35	0.35	0.05

Table 2.19 Existing Dimensions of Type 4 Features, Tres Bobos Hamlet

Feature Numbers	Length (m)	Width (m)	Depth (m)
13	1.00	1.05	0.20
27	1.74	1.33	0.22
68	0.82	0.79	0.46

Table 2.20 Posthole Dimensions, Tres Bobos Hamlet*

Feature Numbers	Length (cm)	Width (cm)	Depth (cm)	Location (2 by 2 m grid coordinate) S	E
41	10.0	8.0	10.0	024	024
42	12.5	7.5	7.5	022	024
43	8.0	8.0	4.0	024	026
82	15.0	9.0	14.0	014	024
102	17.0	17.0	27.0	012	028
107	20.0	20.0	31.0	012	026
127	13.0	13.0	17.0	012	032

*These postholes, which can be seen on Figure 2.11, were not clearly associated with any architectural feature.

abandoned and subsequently they filled in with eolian and alluvial (sheet wash) sediments.

Two Type 4 features are found in association with the arc of rooms. In fact, one of these features, Feature 27, (Figure 2.40) was constructed in a room (Room 14) that had been abandoned and partially filled with post-abandonment deposits. The second fireplace is Feature 68, located south of Rooms 7 and 12. The third slab-lined fireplace (Feature 13) is 10 m south of the arc of rooms and was not associated with any architectural feature. The slabs had been removed from the base of this fireplace; distinct impressions remained to show where they had once been.

The anomalous feature category includes seventeen small pit features which were excavated from the prehistoric ground surface into the sterile B horizon and have filled in with post-occupational deposits. These features are not associated with surface rooms or with other features. Although their margins are abrupt, the sizes and shapes of these features are quite variable. These features are thought to be the product of prehistoric cultural activity, but they have no attributes that suggest what function they served.

Room Function and Temporal Placement

> In order to study a social system, prehistoric or otherwise, it is necessary that the system be defined at a specific point or points in time. While it is reasonable to compare systems that have existed at different points in time, it would not be very meaningful to consider them all as a single system (Hill [15:29]).

Hill adequately summarizes the major problem encountered at Tres Bobos. Excavations expose the site for the entire time it was occupied. At a single point in time, however, many of the rooms and features might

Figure 2.40 Photograph of Feature Type 4 (Feature 27) Tres Bobos Hamlet.

have been abandoned, no longer functional, or not yet constructed. Without a large cluster of dates, an undisturbed prehistoric ground surface, and in situ tool inventories it is difficult to separate the 14 rooms and associated features into distinct temporal components. Nevertheless, some statements can be made about the functions of the various rooms and features, and they can be separated into distinct temporal units.

On the basis of their locations relative to the pitstructure and their morphological attributes, it seems likely that the surface rooms were used for storage. Their sizes, shapes, and total lack of internal features indicate that the rooms were not used for habitation. It can also be inferred from the morphological attributes of the rooms that they could not have functioned as storage facilities in and of themselves: stored food laid directly on the floors would not have been protected against rodents. Ceramic vessels, or possibly baskets hung within the rooms might have been used. Sherds representing almost complete vessels were found on the floors of four of the rooms. There seem to be more storage rooms present however,than a single nuclear or extended family would have needed to store a year's supply of corn, even if storage were in jars. Three of the rooms were filled with trash, as if they had been abandoned while Tres Bobos was still occupied. These and other factors led to the hypothesis that the surface rooms represent more than a single temporal unit.

To test this hypothesis, three estimations were made: the population size at Tres Bobos, the storage capacity of the ceramic vessels, and the floor space available in the rooms for storage. There are various methods for estimating population from the archaeological record. Perhaps the

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most frequently used formula is Naroll's [16] estimate that an average of 10 m^2 of roofed area is required for each person. Considering this information, Flannery [17] reports that early Mesoamerican houses had 15-35 m^2 of roofed floor space and concludes that these dwellings were intended for nuclear families (two adults and three children). Following Flannery, the pithouse at Tres Bobos, with 27.3 m^2 of roofed area, could have supported a nuclear family or possibly even a small extended family.

To estimate the volumetric storage capacity of vessels, Rohn's [18] Mug House Report was consulted. Rohn [18:144] reports that medium-sized jars with a diameter of 25 cm can hold as much as 7 L, while larger jars of 40 cm in diameter can hold up to 35 L. Baskets apparently have similar storage capacities. Based on modern consumption estimates from the valley of Oaxaca, Lees (Flannery [17:106]) suggests a family of five persons consumes about one metric ton of corn each year to subsist. A bushel could hold 25.2 kg of shelled corn (Castetter and Bell [19]). Approximately 40 bushels of corn would be required to feed a family of five for a year (since a metric ton equals 1000 kg, and 1000/25.5 = 39.2). There are 0.035 m^3 in a bushel, so 1.4 m^3 would be needed to contain one metric ton of corn (40 x .035 = 1.4). There are 1000 L in one m^3. Thus, 200 7-L vessels would be needed to store one metric ton of corn (1.4 x 1000 = 1400; 1400/7 = 200), while only 40 large (35-L) vessels would be needed (1400/35 = 40).

Since the diameter of the medium-sized vessels is 25 cm, the area occupied by each vessel would be 0.06 m^2; the area needed for storing a metric ton would be 12 m^2. The area occupied by the larger vessels is 0.167 m^2; the larger vessels would require only 6.4 m^2 of floor area

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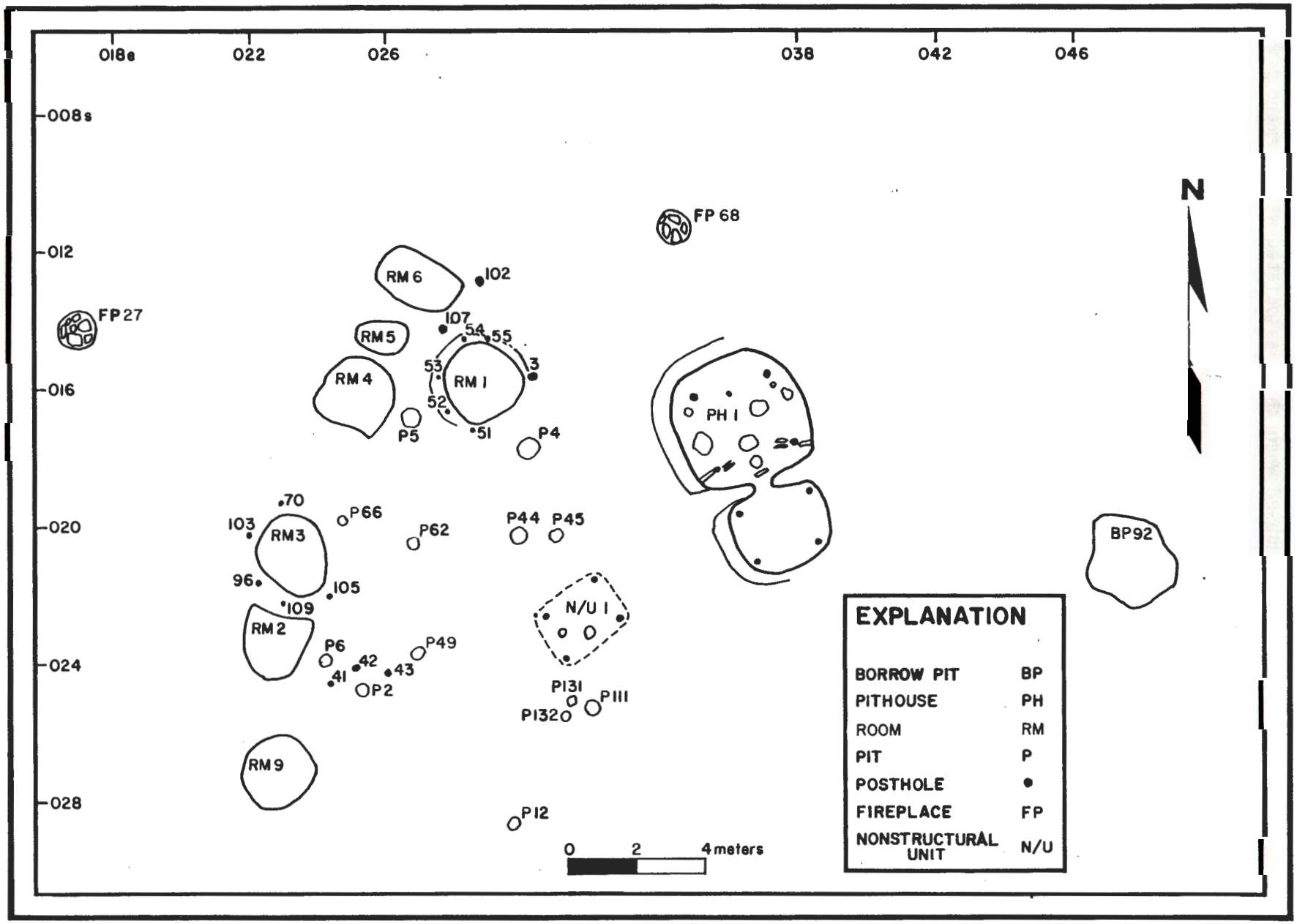


Figure 2.43 Excavated features associated with Cultural Element 2, Tres Bobos Hamlet.

have been constructed and used when those associated with Element 1 were abandoned. The most obvious evidence for this temporal distribution is that three rooms of Element 1 (Rooms 7, 10, and 13) were used as trash dumps and a fourth, Room 14, had filled partially with natural deposits and then was renovated to function as a slab-lined hearth. In contrast, only two rooms associated with Element 2 were filled by other than natural processes: Room 5 contained numerous sandstone inclusions which may have been intentionally placed, and Room 1 had burned and was used as a trash dump. There is no other evidence that would indicate that Element 2 rooms were used as trash dumps. Associated with Element 1, corn remains were found only in Room 7, which had burned; however, associated with Element 2, corn was found in Rooms 1, 2, and 3. Artifacts were found on the floors of only two rooms for Element 1; the artifact total is only five. Only Rooms 3 and 5 in Element 2 did not have floor artifacts, and the total number of artifacts is 36. This assemblage includes the bases of two reconstructable ceramic jars found in Room 2 and another found in Room 9.

The sum of the floor area of the rooms associated with the Element 1 occupation is 17.5 m^2, and the total floor area for Element 2 is 23.6 m^2. Both of these figures exceed the space requirements for storing one metric ton of corn. If the temporal placements of Elements 1 and 2 are correct, then the greater floor area for the Element 2 rooms may indicate an increased population at Tres Bobos at one time, perhaps a shift from a nuclear to an extended family.

Feature Function

The absence of a prehistoric ground surface and associated tool inventories makes it very difficult to define activity areas and feature functions in terms of specific tasks performed at specific locations. The

ethnographic literature was searched for features morphologically similar to those found at Tres Bobos for a possible contribution to understanding how these features were used. This effort was disappointing; although limited descriptions of cooking methods were found, there were no accompanying descriptions of the features used in these activities. There are, however, continuities in the literature upon which some general interpretations can be based. (The following discussion draws on Barrows [20]; DiPeso [21]; Forde [22]; Kroeber [23]; Mindeleff [24]; Robbins et al. [25]; Russell [26]; and Underhill [27]). For example, in virtually every ethnography consulted, cooking and food preparation activities take place outside of the domicile when weather permits. At Tres Bobos, the hearth beneath the ramada, the slab-lined hearth just north of the pitstructure, as well as the pithouse hearth, are areas where day-to-day cooking activities probably took place.

Ethnographic sources also repeatedly document the same set of food-preparation activities: parching, baking, boiling, and roasting. These activities may be grouped by the amount of time involved in each process. Parching is a short-term activity, while baking, boiling, and roasting take progressively longer periods of time to complete.

Parching is a common technique of toasting a foodstuff with dry heat. The material to be parched is mixed continuously on or among hot coals, so that the foodstuffs are not burned. The primary aim of this activity is to remove moisture, thus dehydrating the foodstuff. Parching is done in preparation for grinding and cooking (Robbins et al. [25]). Among the Walapai, corn is dried in the sun and then parched in preparation for storage in buckskin bags (Kroeber [23]). Parching is most often described as taking place in a winnowing tray, a basin-shaped basket in which the

coals and the material to be parched are gently tossed. The basin-shaped heating pits (Feature Type 1) at Tres Bobos have a shape analogous to the winnowing tray and might have served a parching function. The walls of these pits do not show signs of oxidation from intense fires, yet the fill includes ash and charcoal flecks, suggesting that hot coals were contained in the pits at one time. Unhusked corn, pinyon nuts, or wild seeds could have been placed among these coals to drive off the moisture in preparation for eating, storage, or further processing.

From ethnographic studies, baking is described as taking place on stone slabs placed on top of hot coals. At Walapai, a dough made from corn flour and water is placed on heated stones, covered with corn husks to hold in the heat, and baked like a loaf of bread (Kroeber [23]). Robbins et al. [25] describe a dough wrapped in corn husks being placed on hot coals for baking. Cakes made by this method would be very convenient to store and transport. Baking does not require an intense or long-lasting heat source. Coals are placed on the bottom of a pit and stones placed on top of them. Baking activities might have been one of the functions of the basin-shaped heating pits (Feature Type 1), although no stones were found in these features. The Type 3 features had stones as a component of the fill and might have served as locations for baking.

Boiling and roasting would require more heat for longer periods of time than parching and baking. In the ethnographic descriptions of boiling activities, a mixture of what is to be boiled is placed in a pot which is then placed in a pit lined with hot stones. Hot coals are placed around the vessel; the pit is covered with a slab, which is then covered with a lens of clay. A fire is built over the pit, and the mixture is left to cook overnight (Robbins et al. [25]). The cylindrical heating

pits (Feature Type 2) are the features most likely to have been used for boiling at Tres Bobos. The straight-sided walls and the burned stones in the bottoms of the pits seem designed to hold in heat for long periods of time. The fills of these features indicate that hot coals were contained in them. Type 3 pits are found in association with these cylindrical pits; the stones might have been heated in these Type 3 pits and then transported to the cylindrical heating pits.

Feature Type 4 (slab-lined hearths) probably served more varied functions; however, the oxidation on the walls indicates that they were used for very hot fires. These features might have been the location of roasting activities. Yucca pods or pinyon nuts, for example, might have been placed among the coals of a fire and left to roast for long periods of time. In addition, these features might have been the location where stones were heated and hot coals produced for use in other features.

These four feature types are spatially associated with all the storage rooms; it is likely that they were used to process food in preparation for storage as well as to cook food for consumption. Each of the four types of features also cluster in association with the elements; for example, in each element the basin-shaped heating pits, which occur together, are spatially distinct from the cylindrical heating pits, which also occur together. This supports the argument that these feature types are functionally distinct. Given this spatial distribution of storage rooms and features, Elements 1 and 2 can be thought of as temporally distinct food-storage and food-processing activity areas.

Unfortunately, descriptions of food processing for storage were not located in the ethnographic literature, perhaps because these are seasonal activities. However, a Pueblo woman who toured the site during the 1979

field season gave the following description of processing for storage: corn was first cooked by boiling and then transferred into shallow pits, where it was covered with coals and allowed to remain overnight. In the morning the corn was removed and could then be stored for long periods of time without danger of spoilage. This personal communication provides a model for defining features and storage rooms at Tres Bobos in terms of economic activity sets.

MATERIAL CULTURE

Discussion of the artifact assemblages from Tres Bobos is presented according to material class: lithics, ceramics, and faunal remains.

Lithics

The lithic artifacts recovered from the occupation surfaces of all structures at Tres Bobos have been discussed in the descriptive sections concerning surface rooms and Pithouse 1. The data were insufficient to allow inferences concerning room function other than those already presented in the Room Function subsection.

The lithics of Tres Bobos will be discussed on a site-wide basis. An attempt to show cultural intrasite patterning (activity sets) based on the lithics present at the site would be neither valid nor meaningful, due to insufficient data. However, an overview of all lithic tools and flaked lithic debitage from the site will permit certain cultural interpretations (Appendix 3).

The data for the following interpretations are based on 294 flaked lithic tools, 3552 pieces of flaked lithic debitage, and 167 nonflaked lithic tools. Of the 294 flaked lithic tools recovered from Tres Bobos, there were 110 (37.4 percent) utilized flakes, 49 (16.7 percent) thin scrapers, and 48 (16.3 percent) cores. Bifaces (other than projectile points) numbered 26 (8.8 percent). Twenty-two (7.5 percent) chopper/scraper planes and 20 (6.8 percent) projectile points were recovered. There were 11 (3.8 percent) thick scrapers and three (1 percent) specialized forms. Five items were too fragmentary to categorize. These data are presented in the Lithic Analysis Data Summary Tables in Appendix 3.

By far the largest category of flaked lithic tools at Tres Bobos is utilized flakes (37.4 percent). Had these been the only tools found at the site, a low level of tool production technology would have been indicated, since these are tools which can be produced with little effort. However, the thinning techniques, as well as the final form of the biface tools, counter the conclusion of a low input flaked lithic tool technology. In addition, the number of small cores present (48 or 16.3 percent) suggests that the flaked tools were deliberately produced, and not the result of randomly selected flake by-products where more specialized tools were manufactured. Figures 2.45 and 2.46 depict the relatively complete projectile points recovered at Tres Bobos.

Because the site was abandoned and apparently "stripped," some of the more stylized flaked items such as projectile points, knives, drills, etc., which require more time and energy to produce, were probably removed. It is felt, however, that the actual count would not significantly alter the interpretion of the horticulturally-based economy proposed for the inhabitants of Tres Bobos.

The impression of an agriculturally based subsistence is also supported by the nonflaked tool assemblage from Tres Bobos. Of the 167 nonflaked tool recovered, 53 (31.7 percent) are pecking stones, grinding/polishing stones, lapstones, and anvils, and 52 (31.1 percent) are manos. Trough metates account for 7.4 percent, or 12, of the nonflaked items (only one of which was whole, the remainder were fragmentary). These data are presented in the Lithic Analysis Data Summary Tables in Appendix 3.

Almost all of these nonflaked items are large stone objects that, although portable, would be heavy and cumbersome for a nomadic people. If

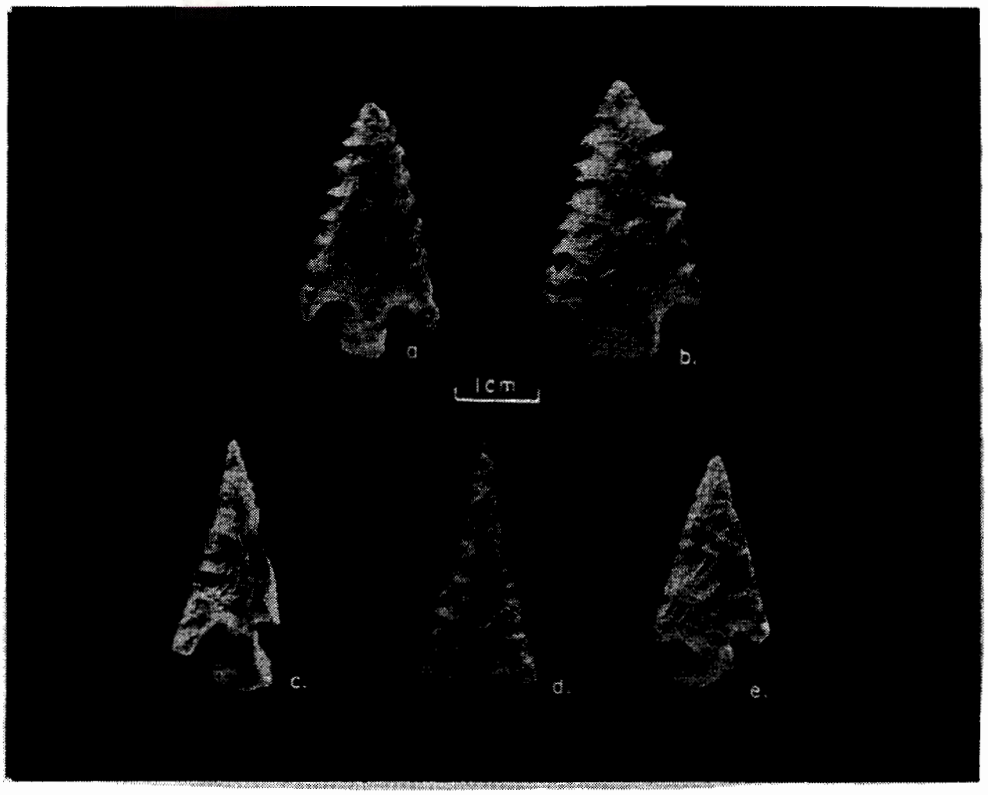


Figure 2.45 Selected projectile points recovered at Tres Bobos Hamlet; provenience: (a) 2 by 2 m grid 020-028 (D.A.P. 391-03-3); (b) 2 by 2 m grid 006-030 (D.A.P. 247-03-2); (c) pithouse fill (D.A.P. 232-03-6); (d) pithouse surface, bench (D.A.P. 277-03-3, PL 17); (e) pithouse fill (D.A.P. 181-03-4); (D.A.P. 1092).

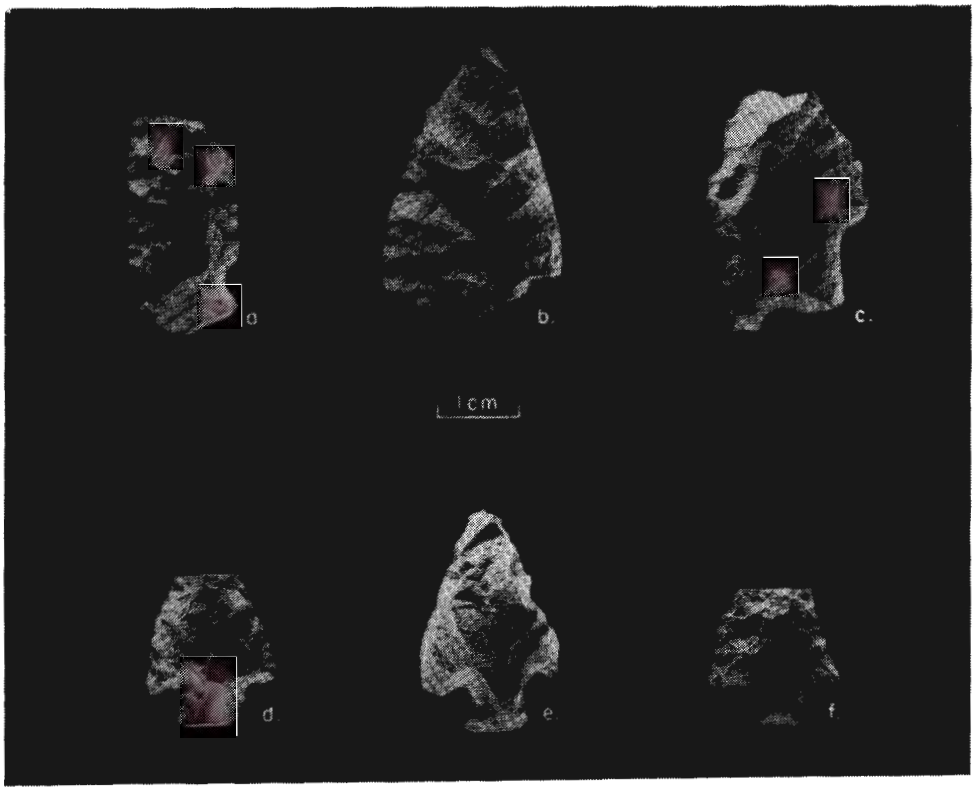


Figure 2.46 Selected projectile points recovered at Tres Bobos Hamlet; provenience: (a) 2 by 2 m grid 012-018 (D.A.P. 249-03-3); (b) room 10 fill (D.A.P. 518-03-2); (c) pithouse surface (D.A.P. 316-03-3, PL 33); (d) 2 by 2 m grid 030-054 (D.A.P. 161-03-4); (e) pithouse fill (D.A.P. 232-02-7); (f) bladed area (D.A.P. 620-03-13); (D.A.P. 1093).

a nomadic lifeway were practiced, then the large, domestic nonflaked lithic items would be expected to be substantially overshadowed by the (portable) flaked items in the lithic tool assemblage.

All of the nonflaked lithic material recovered from Tres Bobos is available locally either from the Dakota Sandstone, Burro Canyon, or Morrison Formation (sandstone, quartzite, and conglomerate), or as river cobbles from the Dolores River bed (andesite, diorite, quartzite, and sandstone). Many of the sandstone mano blanks were acquired from the terrace cobbles and shaped into their final form. Orthoquartzite is also locally available from the Burro Canyon Formation, which lies above the Morrison Formation and below the Dakota Sandstone Formation along the Dolores River canyon.

Faunal Assemblage

The nonhuman bone assemblage from Tres Bobos is composed of locally available economic species. Of the total faunal count (Appendix 4), 98.5 percent was identified as mammal bone. Cottontail rabbit (*Sylvilagus*- 7.1 percent) and jackrabbit (*Lepus*-9.4 percent) together account for 16.5 percent of the total nonhuman bone recovered from Tres Bobos. This may relect an increasing reliance on small game by the inhabitants of Tres Bobos, who had adapted a sedentary horticultural lifestyle; lagomorphs or other small game occur in large groups and are fairly easy to acquire.

The inhabitants of Tres Bobos also hunted large game in the form of mule deer (*Odocoileus hemionus*). Mule deer accounted for 5.1 percent of the 253 animal bones recovered from the site. Three explanations are suggested for this occurrence. First, deer are locally available in fairly large numbers. Sagehen Flats Locality is presently a wintering

ground for deer, and might also have been so in the early seventh century, if population density and hunting pressure were not too great. Second, the amount of meat produced (average 550 kg per deer) would have justified the time and effort involved in killing and processing two or three deer. Third, the metatarsal and metacarpal of the mule deer were apparently favored for the manufacture of bone awls at Tres Bobos. Of the 19 worked bones on the site, 12 were bone awls (Figure 2.47); of these 12, six (50 percent) have been identified as the metapodia of mule deer. The remaining 50 percent of the awls bone could only be identified as the long bone of a large mammal.

Most of the remaining bone found at Tres Bobos falls into the family Rodentia, including prairie dog (1.2 percent), gopher (1.0 percent), and squirrel (2.4 percent). All of the Rodentia represented at the site can and have been utilized as a food source by prehistoric and historic peoples (Beaglehole [26]). Whether any of these were used as a source of food at Tres Bobos is unknown. The sparse amount retrieved may indicate that the animals were introduced after the site was abandoned. It is probable that they represent both food scraps and natural introduction.

Only four bird bones were identified at the site: one grouse, two perching birds, and one turkey. Since only one turkey bone was identified at Tres Bobos, it would seem that the turkey (Maleagris gallopavo) was not yet in widespread use. In later periods (Pueblo II and Pueblo III), after the domestication of the turkey, the leg bone (tibiotarsus) was commonly fashioned into bone awls.

Table 2.21 lists all the faunal material collected at Tres Bobos by provenience. Of the total (253), 85 (73 percent) came from Pithouse 1, and only 20 (7.9 percent) of these 85 were in floor contact.

Figure 2.47 Bone awls recovered at Tres Bobos Hamlet (one-half actual size); provenience (left to right): (1) pithouse fill (D.A.P. 212-02-1); (2) pithouse surface, bench (D.A.P. 277-02-1, PL 4); (3) pithouse fill (D.A.P. 179-02-1); (4) pithouse surface (D.A.P. 377-02-1, PL 121); (5) pithouse fill (D.A.P. 190-02-1); (6) pithouse surface, bench (D.A.P. 272-02-1, PL 8); (7) pithouse surface (D.A.P. 314-02-1, PL 60); (D.A.P. 109433).

The surface rooms contained the next largest amount of bone: 51 (20.2 percent) of the total site inventory were recovered from the rooms; 21 (41 percent) of the 51 were in floor contact. Rooms 1, 4, 6, 7, 8, 9, 12, and 13 contained faunal remains.

Exterior features at the site contained only 3.2 percent of the total bone inventory; the remainder came from grid squares south and east of the pithouse.

Ceramics

Indigenous Mesa Verde Ceramics

Excavations a Tres Bobos yielded a total of 3535 sherds and one whole vessel. Additionally, 144 sherds were recovered from the site during the survey operations that located and recorded the site. Of the total number of sherds associated with the site (3689), 24 (0.6 percent) could not be assigned to a specific cultural category. Less than one percent of the total assemblage (four sherds) consists of nonlocal ceramics. The ceramic analysis system of the D.A.P. basically follows the type criteria prepared by Abel [27] and Breternitz, Rohn, and Morris [28], with some alterations made possible by the data base of the D.A.P.

A listing of the ceramics of Site 5MT4545 is presented in a series of tables in Appendix 5. The following data have been derived from those tables. Not all sherds could be assigned to a temporally diagnostic type; therefore, a general category named Early Pueblo Gray is used to account for gray ware body sherds and the category Early Pueblo White is used for all white ware body sherds. The term Early Pueblo refers to a time period of manufacture between A.D. 600-900. Of the total assemblage, 3290 (89.2 percent) of the ceramics fall into the Early Pueblo Gray category and 191

Table 2.21 Faunal Remains by Provenience, Tres Bobos Hamlet

Locus	# of Bones	Type
Pithouse 1:		
Main chamber fill:	20	Mammalia
	46	Mammal, large
	1	Mammal, small
	7	*Odocoileus hemionus*
	2	Sciuridae
	2	*Spermophilus spilosoma*
	2	Cricetidae
	1	Artiodactyla
	1	*Thomomys talpoides*
	4	*Sylvalligus* sp.
	4	*Lepus californicus*
	4	*Marmota flaviventris*
Main chamber floor:	4	*Odocoileus hemionus*
	2	Mammalia
	2	Artiodactyla
	1	Mammal, large
Main chamber features:		
Feature 36:	1	Passeriformes
Feature 26:	1	Lagomorpha
	1	Cricetidae
Antechamber fill:	1	*Cynomys gunnisoni*
	7	Mammal, large
	20	Mammal, small
	1	Artiodactyla
	10	Mammalia
	1	*Odocoileus hemionus*
	14	*Sylvilagus* sp.
	9	*Lepus californicus*
	2	*Marmota flaviventris*
	1	Sciuridae
	1	*Thomomys talpoides*
	1	*Corvus corax*
Antechamber floor:	4	*Lepus californicus*
	4	Mammal, small
	2	Mammal, large
	1	*Sylvilagus* spp.
Rooms:		
Room 1 fill:	1	*Odocoileus hemionus*
	3	Mammalia
Room 1 floor:	1	Rodentia
	2	*Cynomys gunnisoni*
Room 4 floor:	2	*Lepus californicus*
Room 6 fill:	1	*Meleagris gallopavo*
	1	Tetraonidae
Room 6 floor:	1	Sciuridae
Room 7 fill:	19	Mammal, small
	1	*Lepus californicus*
	1	*Dipodomys* sp.
Room 8 floor:	11	Mammalia
Room 9 floor:	2	Mammal, small
Room 12 fill:	1	Mammal, large
Room 12 floor:	1	Mammalia
	1	Rodentia
Room 13 fill:	1	Mammal, large
	1	*Marmota flaviventris*
Exterior Features:		
Feature 5 hearth fill:	51	Mammalia
Feature 92 fill:	1	Mammal, large
Feature 64 hearth:	2	Mammal, large
Feature 84 fill:	1	*Lepus californicus*
Feature 112, pit feature:	2	Lagomorpha
	1	Rodentia
Grids		
12S 48E:	1	Mammalia
28S 22E:	2	*Lepus californicus*
36S 40E:	2	Mammal, large
38S 42E:	1	Mammalia
42S 42E:	1	*Lepus californicus*

(5.2 percent) fall into the Early Pueblo White category. Chapin Gray jar rim sherds (116) are the most common temporally diagnostic type in the site assemblage (3.1 percent); 34 of those jar sherds represent seed jar fragments. Occasional gray ware sherds associated with later Pueblo occupations were not associated with the early occupation of the site. Chapin Black-on-white bowl sherds represent the predominate white ware type on the site (49, or 1.3 percent). White ware sherds of later Pueblo affiliation also occur in limited numbers at the site.

Trade ware

Only four sherds could be assigned a nonlocal provenience, and one of those items reflects use of the site location after A.D. 900. Three sherds of Lino Gray were found in site association, indicating possible contact with the Kayenta Region of the Anasazi.

Whole Vessels

A small Chapin Gray seed jar (Figure 2.48) was found in the fill of the main chamber of Pithouse 1 and is interpreted as being associated with Burial 1. The jar contained powdered hematite (iron oxide).

Summary

Tres Bobos is a site that was probably occupied by a single nuclear family, or possibly by an extended family during the later part of its occupation. It appears, as evidenced by the number of storerooms associated with Elements 1 and 2, that storage of food for extended periods was of prime importance to the site inhabitants. If this were the case, storage vessels, such as necked jars (ollas) and seed jars, would be expected to represent a larger portion of the total ceramic assemblage than would serving vessels such as bowls. Of the total number of sherds

in the site collection (3689), 3430 (93.0 percent) are jar fragments and 34 (0.95 percent) are seed-jar fragments, while 173 (4.7 percent) are bowl fragments, with three sherds (0.10 percent) assigned to some other cateory. This distribution results in a 15.6:1 ratio of jar sherds to bowl sherds. It is inferred from this ratio that jar forms (including seed jars) are the predominate vessel form, thus supporting the hypothesis.

The lack of foreign ceramics at Tres Bobos is not unusual for Basketmaker III sites. It is believed that this period was marked by the establishment of a sedentary pattern within a frontier context. The social organization is thought to have involved a noncomplex, survival-oriented coordination of small family groups. Thus, nonlocal trade would not have been of prime importance to the inhabitants of Tres Bobos.

CONCLUSIONS

Chronology

Both relative and absolute dating techniques were used to temporally place Tres Bobos. Relative methods used included comparison of the architecture and ceramics of the site with other well-dated sites; absolute dating was provided by two tree-ring samples from Room 1 and five archaeomagnetic samples.

Architecture

Three sites from Wetherill Mesa at Mesa Verde National Park fall into the later part of the Basketmaker III time period, or A.D. 600-700 (Birkedal [11]). From this group, four pithouses and one storage room were tree-ring dated. The earliest structures from Site MV1937 (two pithouses and one storage room) date to the first three decades of the seventh century. The single pithouse at Site MV1938 also dates from this period (A.D. 617). The latest structure is a single pithouse at Site MV1940, which has been dated to the eighth century. The pithouses from these sites, like the pithouse at Tres Bobos, have well-developed antechambers.

Two additional sites containing pithouses with well-developed antechambers have been reported by Birkedal [11]. Site MV1990 contains a pithouse dated to A.D. 729; Site MV1824-71 has a pithouse dated to A.D. 650-685.

Basketmaker III pithouses in the Mesa Verde region generally possess antechambers and are distinct from the succeeding Pueblo I pithouses, which by A.D. 750 have a vent-shaft complex. In the period between A.D. 700-750, pithouses are found with a southern extension representing the transition from an antechamber to a vent shaft (Hewitt et al. [31]).

Alleyways connecting the main chamber with the antechamber are no longer found. The connection is a horizontal tunnel that is usually large enough to crawl through. The vertical portion of the tunnel is quite often large and bell shaped, but only about one quarter of the size of an antechamber.

Architecturally, Pithouse 1 at Tres Bobos appears to fall into the same areal tradition as the four pithouses excavated on Wetherill Mesa that have been defined as Basketmaker III. The preceding comparisons, however, focus on the antechamber as the main criterion for placing the pithouse at Tres Bobos into the Basketmaker III period. Using the traditional Pecos Classification for the Basketmaker III period, Tres Bobos would have been dated between A.D. 450-750.

Ceramics

The ceramic complex found at Tres Bobos is composed primarily of Chapin Gray and Chapin Black-on-white. The temporal range for Chapin Gray is lengthy (A.D. 575-900), which does not narrow the time span at Tres Bobos. The lack of red ware, which apparently indicates a pre-A.D. 750 date, suggests that occupation ceased prior to the middle of the eighth century. The presence of Chapin Black-on-white (A.D. 600-750) as the major white ware supports the assignment of Site 5MT4545 to the span A.D. 600-750 in the Basketmaker III period.

Dendrochronology

The only datable tree ring samples were recovered from Room 1, which is a storage room associated with the Element 2 occupation. If, as has been argued, Element 2 is later than Element 1, then the dates derived from this room represent the later building phase at the site. The two dates are A.D. 552 vv and A.D. 598 vv (Table 2.22). Unfortunately, the vv

designation indicates that an unknown number of outer rings are missing and that the true date may actually be later. The 46(?)-year gap between the two specimens may indicate that the earlier date represents a reused beam or post from an Element 1 room; this would strengthen the argument for two sets of storage rooms that were temporally distinct. It is possible that the beam could have been salvaged from another site. There was no evidence to indicate that the site was occupied for 47 years; in fact, the evidence suggests that both elements at the site lasted for no more than 15-20 years. The tree-ring dates suggest that Tres Bobos was occupied toward the later part of the sixth century A.D. and in the early part of the seventh century A.D.

Table 2.22 Tree-ring Results, Tres Bobos Hamlet

Sample No.	Provenience	Species	Inside Date	Outside Date
1 (DAR-148)	Room 1 SE 1/4 Level 1*	Juniper	0432 fp	0552 vv
3 (DAR-149)	Room 1 NE 1/4 Level 1*	Pinyon	0457 fp	0598 vv

fp - the curvature of the inside ring indicates that it is far from the pithouse.
vv - there is no way of estimating how far the last ring is from the true outside.
*Level 1 - modern ground surface to 5 cm above room floor.

Archaeomagnetism

The final method of dating used is a relatively new technique which uses paleomagnetism as an indicator of age. For a complete discussion on this technique see Appendix 2.

Archaeomagnetic samples must be taken where the soil has been heavily oxidized. At Site 5MT4545 this criterion was met in five areas. Two

areas were in rooms which had burned surfaces, two samples came from the pithouse (hearth and wall) and the fifth was from Feature 5, an isolated heating pit in Nonstructural Unit 1.

The results of these samples are shown in Table 2.23. Only two of the samples yielded date which lies within the range indicated by the other dating evidence: the dates of A.D. 700 (± 50) from the hearth in Pithouse 1 and A.D. 670 (± 50) from the isolated heating pit (Feature 5). The remaining samples, dating from A.D. 760-1390, fall much later than the occupational span indicated for Tres Bobos by the architecture, ceramics, and tree-ring samples.

Table 2.23 Archaeomagnetic Sample Dates, Tres Bobos Hamlet

Sample #	Provenience	Date (A.D.)
2	Room 1, Surface 1	1390 (± 30)
3	Pithouse 1, Antechamber	760,985,1460 (±55)
4	Pithouse 1, Central Hearth	700 (± 50)
5	Heating Pit (Feature 5)	670 (± 50)
6	Room 3, Surface 1	1100, 1360 (±25)

Summary

The comparisons made between the tree-ring-dated Basketmaker III structures at Wetherill Mesa and the architecture at Tres Bobos indicate that Tres Bobos also dates to the late Basketmaker III period, between the years A.D. 600-750. The general site layout (loose and noncontiguous) at Tres Bobos, especially in Element 1, suggests that the site was probably occupied toward the early part of this 150-year span (Birkedal [11]).

The ceramics substantiate a pre-A.D. 750 date but do not narrow the temporal span any further. The tree-ring dates are the best temporal indicators, but apply only to Room 1 in Element 2. If Elements 1 and 2

are temporally separate components at Tres Bobos, then the tree-ring dates suggest that Element 1 predates A.D. 600. Due to the unknown number of missing tree-rings, it is doubtful that the temporal difference between the two elements is as great as the 47 years indicated. Based on available data, the only firm conclusion is that Tres Bobos was probably occupied at least between the years A.D. 590-610.

Adaptation and Economy

Agriculture was undoubtably an important activity at Tres Bobos. This assumption is based on evidence from the site, as well as on information from other Basketmaker III sites in the Anasazi region. Schiffer [32] estimates that cultigens constituted 50 percent of the Basketmaker diet. This seems to be a reasonable estimate for Tres Bobos too. The rooms at the site appear to have been used for food storage: corn was found on the floors of Rooms 1, 2, 3, and 7; and corn (*Zea*) pollen comprises 12 percent of the pollen record from Room 1 (Appendix 6). Twelve percent *Zea* pollen is the highest concentration of *Zea* pollen in a single sample in the entire Sagehen Flats Locality (Scott [33]). A pollen sample from Room 6 was also analyzed: only 2 percent of the pollen was *Zea*, and arboreal pollen was dominant. This difference in pollen counts may be explained by the different ways the two rooms were filled. Room 1 burned and the floor was covered very quickly, while Room 6 was abandoned and filled naturally by eolian and alluvial deposition. *Zea* is the only cultigen represented in the pollen analyzed at Tres Bobos.

Proximity to agriculturally productive land was probably the most important variable in determining the location of sites in the Sagehen Flats Locality. Most of the sites are located on hillocks in which the

soils have developed from eolian loess. Due to their high clay content, these soils are poorly drained and do not lend themselves to dryland farming techniques. The most productive agricultural soils for dryland farming are located in the swales between these hillocks (Leonhardy [34]). Ackmen loam is the soil type found in the swales; it is alluvium deposited by arroyos, and the profiles are deep and well drained. The limited availability of these soils, however, precludes the possibility of large-scale food production. The tracts of land in these swales would only support one or two families and buildings would have been on the hillocks rather than on the limited agricultural land.

As documented earlier in this report, 40 bushels of corn are required to support a family of five for a year. Estimates of corn yields per acre for dryland farming are 10-15 bushels (Castetter and Bell [19]). A family of five would thus require between 1 and 1.6 ha (2.7 and 4 acres) of land. The bottom land areas adjacent to Tres Bobos total approximately 30 acres of Ackmen loam; this would have filled the agricultural needs of the site's inhabitants.

The specific type of farming at Tres Bobos was probably dryland farming. Stiger [35] argues that swidden agriculture was the dominant technique at Mesa Verde. In the Sagehen Flats Locality, however, the pinyon and juniper cover was probably not dense enough for this method to be effective; there might not be enough organic material returned to the ground. Dryland farming on tracts of land cleared primarily of sagebrush may result in severe soil nutrient depletion. Overbank flooding in the intermittent drainages would deposit silts which would help to rejuvenate soils adjacent to the arroyos, but this would not be a reliable event. The Tres Bobos population might have coped with this problem by

periodically changing the tracts of land under cultivation. Over time, however, as population increased and soil depletion became more severe, simple dryland farming would not have been adequate, and there would have been pressure to develop more intensive agricultural methods. Floodwater irrigation, in addition to providing fields with moisture, would annually deposit silts over a more extensive area. The drainages in the Sagehen Flats Locality would be ideal for floodwater irrigation, and a complex social organization would not be required to implement such a technique.

Agriculture was not the only economic activity at Tres Bobos; wild plants and animals were doubtless important sources of food. Cleome (beeweed) was present in every pollen sample analyzed from Tres Bobos (Appendix 6). It is not certain whether Cleome was grown by the prehistoric inhabitants of Tres Bobos, or whether it was simply harvested along with other wild flora. Prehistorically as well as ethnographically, the plant has been used for food and in the manufacture of prayer sticks and paint (Fewkes [36], Hough [37], Nickens [38], Robbins et al. [25], Whiting [39], and Stevenson [40]). The faunal record at Tres Bobos indicates a preference for both cottontail and jackrabbit, followed by deer.

Both of the occupations at Tres Bobos seem to have adapted to a sedentary economy. Fixed permanent habitations would indicate that hunting and gathering were secondary options, while horticulture was probably the primary economic activity.

Paleodemography

Tres Bobos is a single-component Basketmaker III site which falls into the Sagehen Phase (A.D. 600-850) as defined by Kane [3] for the D.A.P. This small habitation site has one pithouse and 14 storage rooms,

as well as numerous food-processing features associated with the storerooms. Conclusions concerning total maximum population at any one time may be considered only after different elements at the site have been established. The possibility of two temporally distinct elements has already been discussed. It is inferred that the occupants of the single pithouse constructed both sets of storage rooms. Because the pithouse is the only dwelling unit on the site, inferences for total population size have been made from the usable floor area within the house.

Researchers have arrived at different methods for estimating population. Casselberry [41] estimates that 6 m^2 of floor space are required for each member of a household. Applying this formula to Tres Bobos, four people would be represented. This estimate, however, seems too low to account for the number of storage rooms in either Element 1 or 2 and their associated pit features. Rohn [18] suggest two individuals per surface room and 10-12 individuals per pithouse. With only 18.5 m^2 of total floor space in Pithouse 1, there would literally be standing room only. For this reason the above formula is not applicable for Tres Bobos.

Cook [42] and Flannery [17] both use methods that fit well for Tres Bobos. Flannery states that the early Mesoamerican house had 15-35 m^2 of roofed floor space and concludes that the dwellings were intended to house a single nuclear family (five individuals). Cook estimates that no house under 350 ft^2 (32.5 m^2) could have contained a family of more than six persons.

The 18.5 m^2 of floor space in Pithouse 1 fits into either of the formula given above. An estimated population of five or six for Tres Bobos seems to fit well with all other factors represented at the site.

Social Change and Organization

The social organization at Tres Bobos seems to have been organized along the lines of a single nuclear family operating within a horticultural subsistence framework. During the later part of the occupation, an increase in floor space in Element 2 storerooms may indicate the existence of an extended family.

The Basketmaker III period is thought by Steward [43] and Eggan [44] to be the period where the transformation from band to lineage organization occurred. It is felt that total sedentism with a greatly increased dependence on horticulture would require a lifeway more complex than a band situation; thus the lineage concept replaced the band type of social organization. According to Ogburn [45] and Clarke [46], it would be a mistake to think that this change in social organization occurred overnight. Social changes, especially among primitive peoples, are generally slow and occur at different rates.

The change from hunting and gathering to horticulture is apparent during the Basketmaker III period. During this early part of the shift to horticultural sedentism, more individualized characteristics are apparent than at any future period, where all levels of the society become more stylized and less individualized. This phenomenon of individual freedom has been noted by Birkedal [11].

Tres Bobos exhibits an individualistic flare in the storeroom arrangement in Element 1: however, the storerooms of Element 2 seem more orderly and stylized. Element 2 exhibits the beginnings of a trend that culminates in the multistoried apartmentlike complexes of the twelfth and thirteenth centuries, which are very rigid in nature and layout and show very little individuality.

Tres Bobos lies in this early phase of social organization, where the nuclear or extended family is the "center of the universe," and the rigidity and complexity of the commune are not yet apparent.

Culture Change

Tres Bobos was neither a long lived nor a multicomponent site, where major cultural change could be observed without difficulty. However, the beginning of a trend that culminated in the Pueblo III constructions can be observed.

This trend is observable in the alignment of the storage rooms in Element 1 when compared to that of the Element 2 storage rooms. In Element 1, the seven storerooms run east to west in a noncontiguous, unaligned arc. This nonaligned arrangement is quite typical of early Basketmaker III sites. On the other hand, in Element 2 the storerooms are aligned in a north-south arc, and Rooms 2, 3, and 9 are almost contiguous, as are Rooms 4, 5, and 6. This alignment trend becomes stronger with time; between A.D. 750-850 a contiguous row or arc of wattle-and-daub structures was common. Both living and storage rooms were found in the arc by that time. From A.D. 850-900, masonry and wattle-and-daub rooms appeared together and the pithouse was phasing into a kiva-like structure. The room alignment was then getting more angular and the curvature to the row of rooms was diminishing. After A.D. 900 most of the rooms were contiguous masonry structures, running east to west, and quite often exhibiting a single row of rooms extending southward from the west end. By A.D. 975 kivas were well developed and no longer served as family living units. This trend culminated in the thirteenth century when multistoried masonry pueblos made of household clusters (both living and

storage rooms) and the ceremonial kiva(s) were located in a courtyard or plaza directly in front (south) of the rooms. In larger pueblos the kivas were quite often enclosed within the roomblock.

Human Remains

After Tres Bobos was cleaned out and abandoned, the rooms, pits, and pithouse began their gradual, but steady, natural filling process. Approximately two to four years after this natural process had begun, one male, around 30 years of age, was buried in the accumulated fill of Pithouse 1.

The grave was scooped out of the accumulated fill in the northeastern corner of the main chamber (the upper right hand corner of Pithouse 1 as represented in Figure 2.49a and illustrated in detail in Figures 2.49b and 2.49c). At this time the fill had built up to the top of the bench around the edges, but to only 30 cm in the center of the house.

The scooped-out grave was dug down almost to floor level of the pithouse (due to heavy rodent activity the actual definitions of the grave were not clear). The individual was situated in a semirecumbent position, facing east with the knees flexed and the torso bent forward at the waist (Figures 2.49d and 2.50). The hands seemed to have been placed in the lap, and the chin was pressed against the chest.

From the area in and around the right wrist of this burial, a total of 155 whole shell beads and 37 fragments were recovered (Figure 2.51). These beads are made of unidentifiable shell and are of two types--round disc beads and bilobed beads. The mean diameter of the 117 whole round beads is 3.3 mm and the mean thickness is 1.2 mm, based on a 25 percent sample. A similar sample of the 38 whole bilobed beads has a mean length

Figure 2.49a Photograph locating human burial, excavation in progress, Tres Bobos Hamlet.

Figure 2.49b Photographic detail of human burial prior to excavation, Tres Bobos Hamlet.

Figure 2.49c Photograph of human burial, excavation in progress, Tres Bobos Hamlet.

Figure 2.49d Photograph of exposed human burial, Tres Bobos Hamlet.

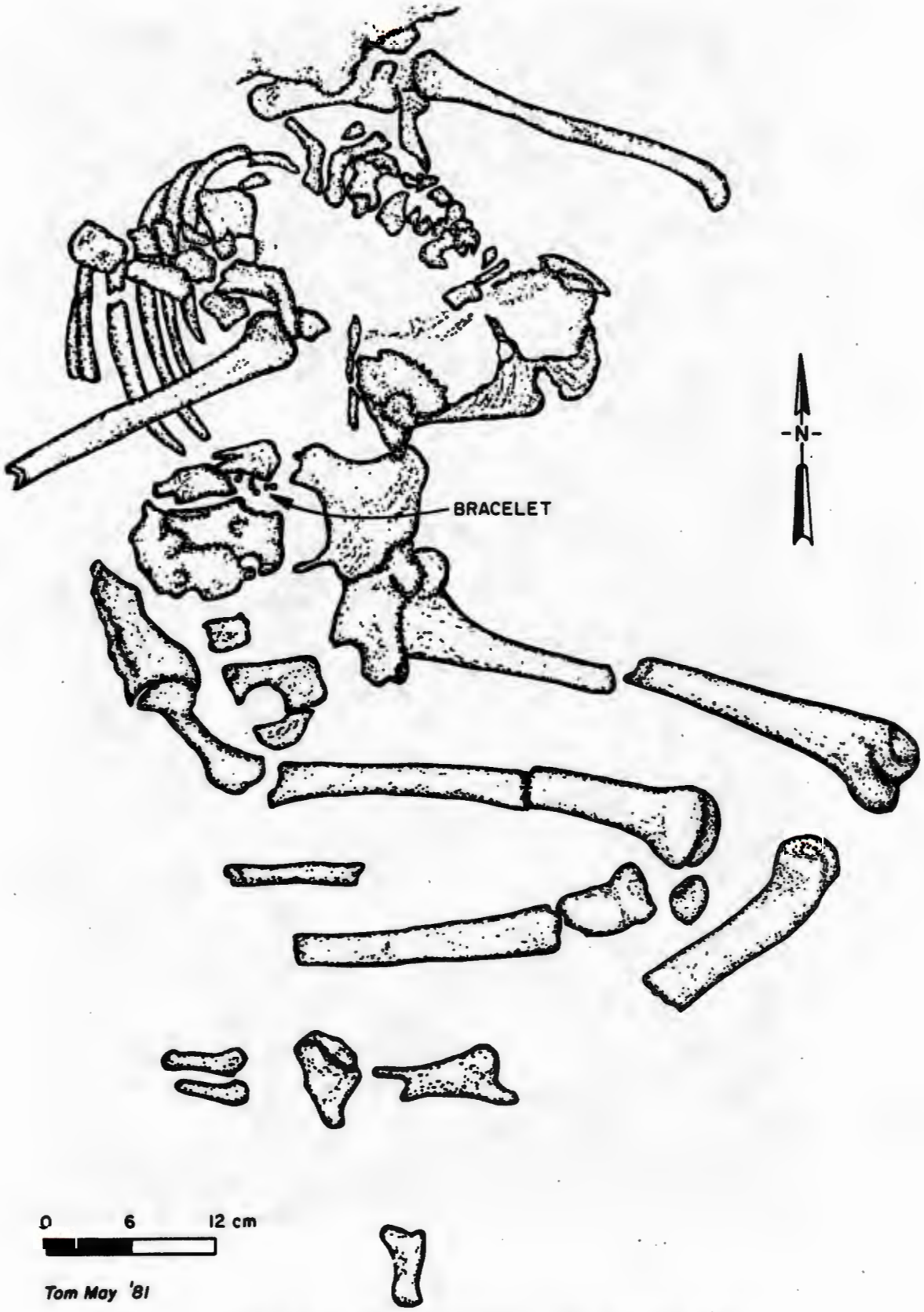


Figure 2.50 Human burial, Tres Bobos Hamlet.

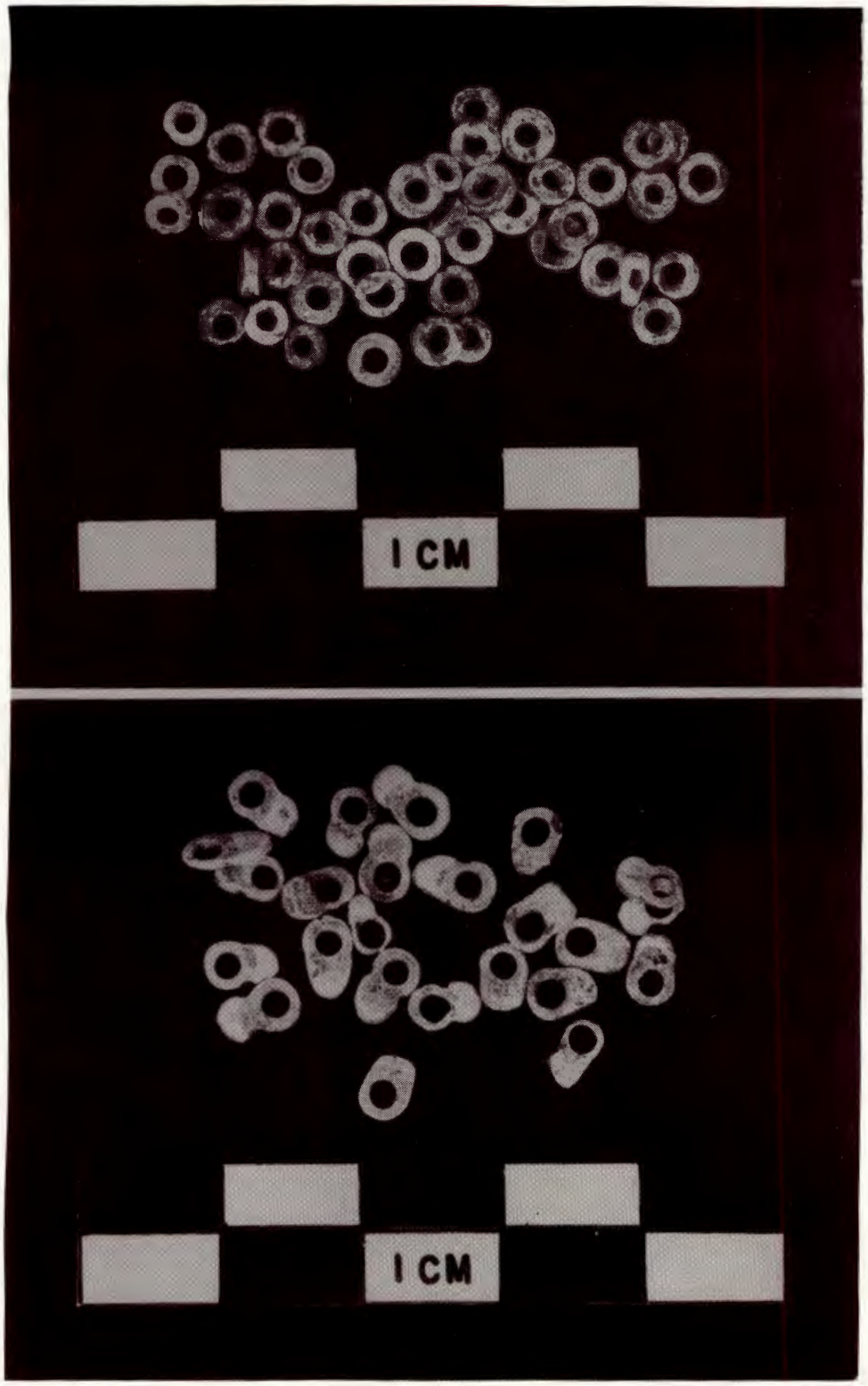


Figure 2.51 Shell beads associated with burial, Tres Bobos Hamlet; top, whole round beads, (D.A.P. 357-09-1); (D.A.P. bottom, whole bilobed beads (D.A.P. 375-09-1); D.A.P. 107317 and 107322).

of 5.5 mm, a mean width of 3.0 mm, and a mean thickness of 1.6 mm. Round disc beads occur throughout the Southwest (Jernigan [47:33]) but the bilobed beads seem to have a more restricted distribution. Bilobed beads (also called figure-eight beads) occur in many areas of the southern Southwest and northern Mexico (Haury [48:310], Jernigan [47:37]). In the Anasazi area bilobed beads have been noted, particularly in association with the Pueblo II occupation of Chaco Canyon (Jernigan [47:156]). In the Dolores area, one bilobed bead has been reported from the Dominguez Ruin (Site 5MT2148) (Reed [48:54]).

After interment of the individual, the pit was filled in and capped by eight large sandstone slabs and numerous smaller stones. The capping stones were probably a preventive measure against carnivore disturbance.

Certain aspects of this burial may indicate ritualism and need to be discussed at length here in the concluding remarks. During the course of excavation three items were exposed that appeared related to the burial. Below is a brief description of each of these items, followed by a discussion of their significance to the burial.

Item 1 - Lying on the pithouse bench just above and to the west of the burial was a gray ware sherd from the base of a Chapin gray bowl. This sherd has a localized hematite (red) stain on its interior face. Lying on top of this sherd was a bone awl,and under the sherd a flake and projectile point were found. (Figure 2.23, point locations 3, 4, 17, and 18).

Item 2 - Approximately 2 m west of the burial, a small Chapin gray seed jar was found (Figure 2.48). This vessel was found in the fill of a large rodent burrow. In the bottom half of this vessel was ground hematite pigment.

Item 3 - As previously mentioned, at the time of the interment, the area towards the center of the main chamber had accumulated only 30 cm of post-occupational fill. It was at that level that a localized area of very homogeneous white ash (Feature 137) was encountered over the fill, indicating some post-occupational use during the time the house was naturally filling in. It was the only disturbance other than natural (rodents) that indicated any use in the structure after final abandonment.

It is inferred that the pigment jar, the bowl sherd pallet, and the area of localized burning were all used in part of a ceremony concerned with the inhumation of the 30+ year old male, who might or might not have at one time resided at Tres Bobos.

If this house had not been so thoroughly stripped of its contents, but had instead burned while inhabited, these two artifact groups and the ash lens might have been totally overlooked as far as the burial is concerned. However, the very bareness of Pithouse 1 makes these three items and their possible association with the burial stand out. Fire and red pigment have been (and still are) associated with burial practices in numerous areas throughout the world, and may have been so in the case of the burial Tres Bobos.

There are many things about the everyday life and religious beliefs of these people that the archaeologist will never know. The above reconstruction of a socio-religious occurrence is admittedly based on inferential and intuitive evidence, but may actually be a glimpse at part of a religious practice that the archaeologist is seldom fortunate enough to see.

A brief report prepared by Louisa B. Flander discusses the buried individual and lists all recovered human bone. This report is found in Appendix 7 of this report.

SUMMARY

Tres Bobos has been shown to be a small Basketmaker III single-family habitation site occupied in the late part of the sixth and early part of the seventh centuries A.D.

The family unit occupying Tres Bobos had ample arable soil for their horticultural subsistence practices in the deep silty alluvial soil found between the small ridges to the west, north, and east of their hilltop site. The actual method employed to bring their crops to fruition is unknown. Floodwater farming along the margins of these drainages, without the aid of systematic irrigation channels, was probably the method employed.

After the domestic and wild foodstuffs were brought to the site, all the pits, basins, and hearths necessary to cook or prepare the food for storage were available, as well as surface rooms to store surplus food.

Initially seven storage rooms and one pithouse constituted the total site. These storage rooms were arranged in a loosely spaced east-west arc, north of Pithouse 1, that is characteristic of Basketmaker III times. As time went on, the original seven storerooms fell out of use and were replaced by seven new rooms.

The new storerooms, oriented in a north-south direction, were not contiguous but were aligned into a seemingly less random pattern than those found in Element 1. The single pithouse was occupied throughout both storeroom sequences. At some point during the use of the site, the antechamber of the pithouse was destroyed by fire. The antechamber was subsequently cleaned, rebuilt, and continued to be used. During final abandonment, the site was thoroughly stripped of most of its reusable

components. How much of this took place after total abandonment is not known. All of the wooden structural components were removed from Pithouse 1. If these structural members were in good condition, they were probably used in a new house; if not, they could have become firewood. Because the heavier stone objects, such as shaped slabs and metates, were not recovered, one would surmise that the new site was not far away.

Sometime after natural post-abandonment deposits had settled, a male individual around 30 years of age was buried in Pithouse 1.

APPENDIX 1

GEOLOGIC REPORT FOR TRES BOBOS HAMLET

by

Vickie Clay, Joel Brisbin, and Richard Glaser

Physiography, Hydrology, and Bedrock

Located on the eastern edge of the Colorado Plateau Physiographic Province (Fenneman [50]), Site 5MT4545 is situated on the southeast face of a hillock (elevation 2115 m) This landform is an erosional remnant of the Mancos Shale and is underlain by the Dakota, Burro Canyon, Morrison, Junction Creek, and Summerville formations. Mancos and Dakota formations outcrop close to Site 5MT4545. These Mesozoic sedimentary formations dip approximately 3° to the southwest of the northwest trending axis of the Dolores Anticline. The House Creek Fault displaces these formations for approximately 80 m, creating the Sagehen Flats open basin.

Parallel drainage patterns currently drain the structural dip slope. Accumulation presently occurs in the Sagehen Flats marsh south of Site 5MT4545. Two intermittent parallel drainages (presently arroyos) skirt the hillock where the site is located.

The site location might have been selected in part as a compromise between needing a steady water source (intermittent drainages, Dolores River 40 m lower and 3 km east of the site) and avoiding the apparently early frosts of the lower floodplain (Benz [51]). The drainages in this area might have been used for floodwater irrigation; however, no evidence currently exists for this prehistoric water control technique near the site.

Soils

Tres Bobos is constructed into and on the Witt loam (F. Leonhardy, personal communication). Taxonomically this soil is an Aridisol typical of arid climates, low soil moisture, and wide annual soil temperature regimes; it is characterized by loess parent material; A, Bu, Bt, Bca, and

Cca horizons; and loam to clay loam texture which is usually strongly structured. This loam is usually yellow-red in color.

Pitstructure 1 was prehistorically excavated into the Bca horizon of the natural soil profile. It has subsequently filled with sediments by mass wasting, and alluvial (sheet wash) and eolian processes.

Soils in the parallel drainages adjacent to the site are Ackmen loams (F. Leonhardy [34]). Taxonomically these soils are Mollisols characterized by upper organic-rich horizons and a higher moisture content than the Aridisols.

Prehistoric occupation of the site has created anthropic horizons which are dark gray in color and rich in phosphorus and calcium.

Prehistoric agriculture was probably not limited by the availability of soils.

APPENDIX 2

ARCHAEOMAGNETIC REPORT FOR TRES BOBOS HAMLET

by

J. Holly Hathaway

Archaeomagnetic dating is a relatively recent chronometric method employed by archaeologists. Archaeomagnetism is based on the fact that burned material can record the direction of the earth's magnetic field at that location at the time of incineration. By using the Southwest Master Curve (Dubois [52]) of independently dated magnetic poles and other known pole positions for the area under study, the magnetic orientations of cultural contexts can be relatively dated. For a complete discussion of laboratory and field methods employed by the D.A.P., as well as an evaluation of the applicability of the current Southwest Master Curve to the Dolores area, see Hathaway and Eighmy [53].

Sampling and Methods

Seven archaeomagnetic samples were collected from Site 5MT4545 during the 1979 field season. The site is located at 37.51° north latitude and 251.52° east longitude in the Sagehen Flats Locality of the Dolores valley. The site probably functioned as a unit hamlet during the early Sagehill Subphase (A.D. 600-760).

Sample 1 was collected from Strata 3 of a burned pit (Feature 27) located in grid unit 014 S, 016 E (Room 14). Samples 2 and 6 were collected from burned Rooms 1 and 3, respectively. Sample 2 was obtained from the north wall and Sample 6 from Surface 1. Sample 3 was collected from the northwest wall of the antechamber of Pithouse 1. Sample 4 was collected from the central hearth (Feature 17) of Pithouse 1 (Surface 1). Samples 5 and 7 were collected from surface hearths (Feature 5, Surface 1, grid unit 016 S, 026 E; and Feature 68, Surface 1, grid unit 010 S, 034 E, respectively).

Twelve specimens were collected for each of the samples. Each

specimen (an estimated volume of 3.4 cm^3) was encased in a 2.5 cm plaster cube (15.6 cm^3). The orientation of each specimen was maintained by leveling the cube and measuring the magnetic declination of one cube side. To control for current magnetic declination, the North Star was sighted on 2 September 1978. The average observed magnetic declination was 13.5°, one-half degree different than the U.S.G.S. 1965 Geological Map, and in substantial agreement with expected values estimated from the National Oceanic and Atmospheric Administration Map "Magnetic Declination in the United States - Epoch 1975."

Laboratory Results

Results from Samples 1-7 are reported in Table 2.24. Samples were demagnetized (DeGaussed) at 25 Oersted. Demagnetization is a laboratory process used to eliminate effects in a specimen from secondary components such as viscous or low temperature thermoremanent magnetizations.

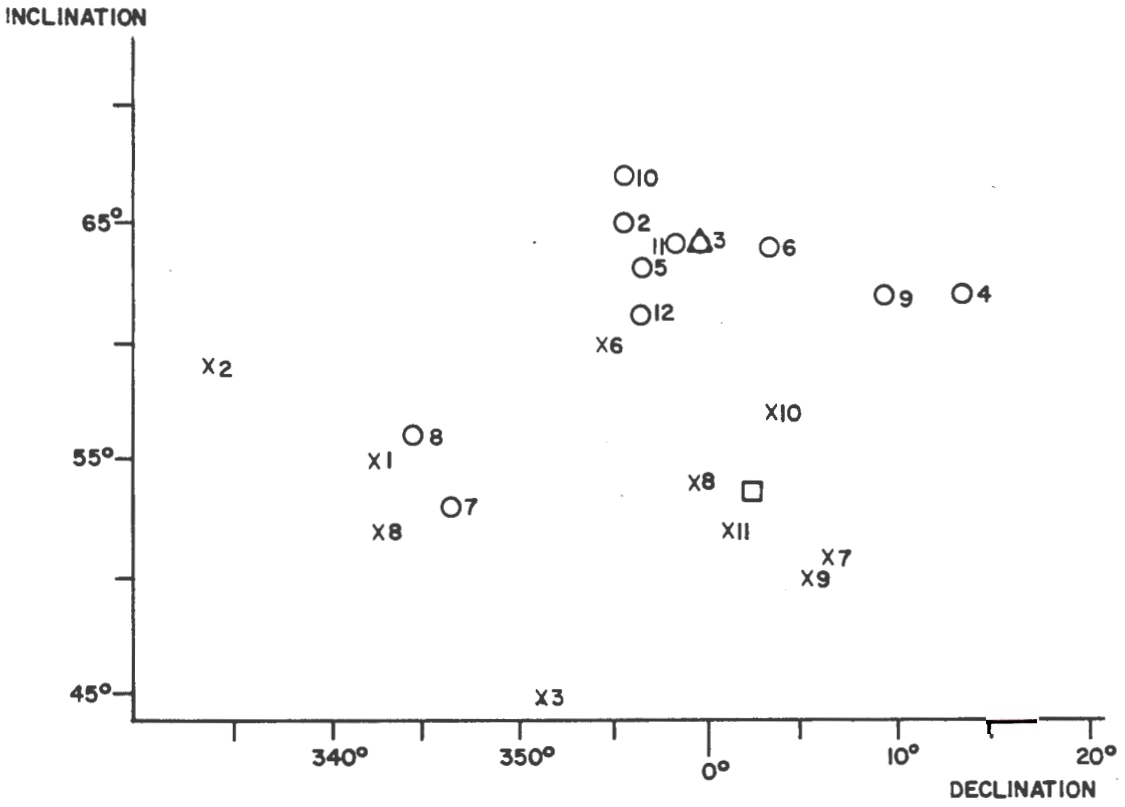
The individual magnetic directions were plotted in Figures 2.52a, b, and c. Samples 1 and 7 were too scattered and were not plotted. Four outliers were identified from Sample 2, six from Sample 3, one from Sample 4, none from Sample 5, and two from Sample 6. Samples with more than four outliers (33 percent of the population) are viewed skeptically and results based on those samples may not be an accurate representation of the true paleopole position. Outliers were determined in the following manner. The sample was rerun the with relatively extreme specimen excluded and a new mean and angular deviation calculated. The excluded specimens were defined as outliers of the new mean (small sample) if they fell beyond two standard deviations. It is felt that there is a strong possiblity that these "outliers" are not a part of the same population and that the new

Table 2.24 Archaeomagnetic Results from Tres Bobos Hamlet (Page 1 of 2)

Archaeomagnetic Designation	Sample Number 1	2	3	4
Feature and Provenience	Feature 27 Square 014016 Stratum 3	Room 1 N & NW wall	Pithouse 1 Ante-chamber NW wall	Feature 17 Pithouse 1 Main Chamber Surface 1
Specimens used in final analysis/total collected	12/12	8/12	6/12	11/12
Degauss level	25 Oersted	25 Oersted	25 Oersted	100 Oersted
Mean Inclination	57.76	63.65	54.15	59.27
Mean Declination	358.86	359.06	1.76	7.05
Mean Intensity	0.112×10^{-3}	0.722×10^{-4}	0.103×10^{-3}	0.55×10^{-4}
Mean Sample Vector	11.84	7.99	5.98	10.96
Precision Parameter (k)	69.52	696.28	330.76	237.31
Alpha 95	5.24	1.96	3.69	2.97
Paleolatitude	88.73	82.21	86.84	83.94
Paleolongitude	206.90	246.64	44.23	314.41
Error along great circle (EP)	5.66	2.47	3.64	3.33
Error perpendicular to great circle (EM)	7.70	3.11	5.18	4.45

Table 2.24 Archaeomagnetic Results from Tres Bobos Hamlet (Page 2 of 2)

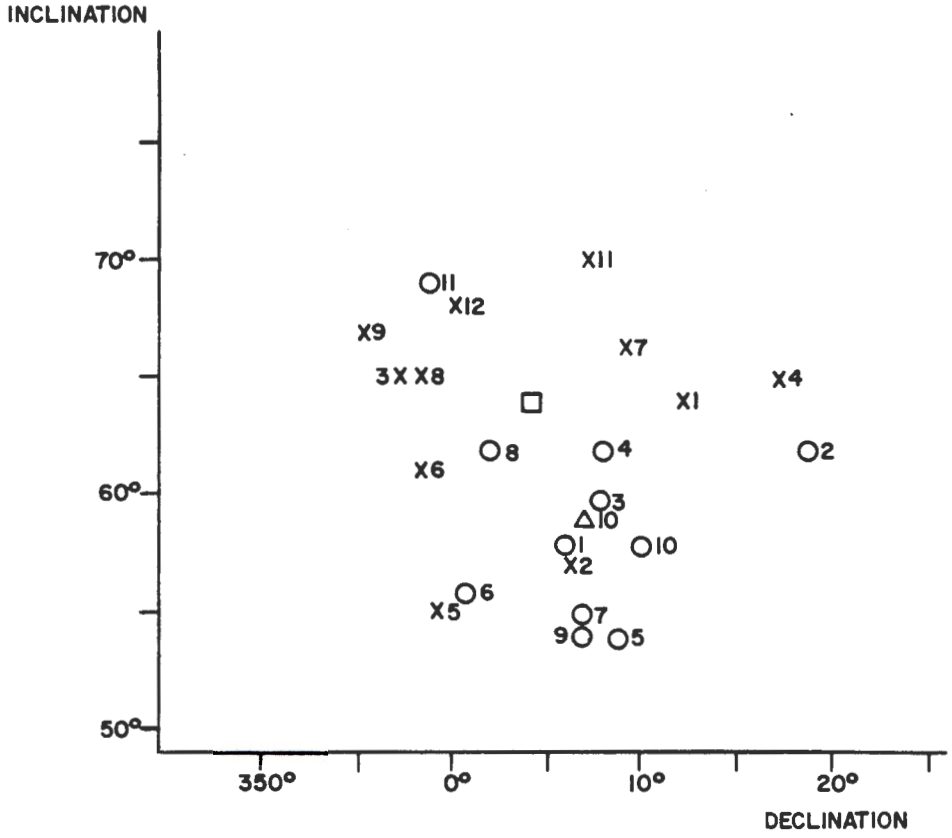
Archaeomagnetic Designation	Sample Number 5	6	7
Feature and Provenience	Feature 5 Square 016026 Surface 1	Room 3 Surface 1	Feature 68 Square 010034 Surface 1
Specimens used in final analysis/ total collected	12/12	10/12	12/12
Degauss level	25 Oersted	25 Oersted	25 Oersted
Mean Inclination	63.68	61.23	54.34
Mean Declination	3.85	354.84	351.17
Mean Intensity	0.625×10^{-4}	0.945×10^{-4}	0.295×10^{-4}
Mean Sample Vector	11.95	9.99	11.83
Precision Parameter (k)	212.93	869.47	63.18
Alpha 95	2.98	1.64	5.50
Paleolatitude	81.69	83.77	82.40
Paleolongitude	270.60	213.68	143.83
Error along great circle (EP)	3.75	1.93	5.45
Error perpendicular to great circle (EM)	4.73	2.52	7.74



O - Sample 2 Specimen 1 falls outside plotting surface. Specimens 1, 4, 7, and 8 were defined as outliers. Sample mean direction (Δ) determined from sample specimens, excluding outliers.

X - Sample 3 Specimens 4 and 12 fall outside plotting surface. Specimens 1-5, and 12 were defined as outliers. Sample mean direction (□) determined from sample specimens, excluding outliers.

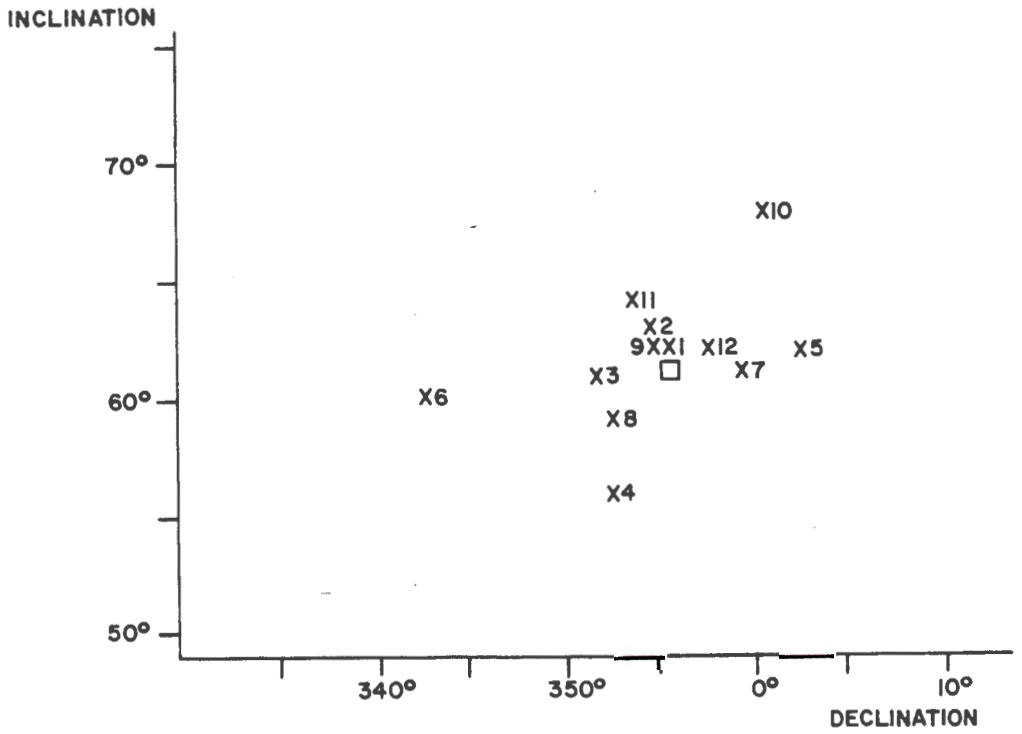
Figure 2.52a Individual magnetic directions of Samples 2 and 3, Tres Bobos Hamlet.



O - Sample 4 Specimen 12 falls outside plotting surface. Sample mean direction (Δ) determined from sample specimens, excluding outliers.

X - Sample 5 No outliers.
(□) indicates sample mean direction.

Figure 2.52b Individual magnetic directions of Samples 4 and 5, Tres Bobos Hamlet.



Sample 6 Specimen 6 and 10 were defined as outliers. Sample mean direction (□) determined from sample specimens, excluding outliers.

Figure 2.52c Individual magnetic directions of Sample 6, Tres Bobos Hamlet.

("cleaned") sample is a better representation of the true direction indicated by the ancient firing.

Three tests were used to determine sample reliability. Alpha 95 is defined as the radius of a circle centered on the observed mean direction within which the true mean will fall 95 percent of the time. Small values indicate tight clustering about the mean. A good archaeomagnetic sample was defined by Alpha 95 values of less than 3.5°. Provided this criterion was met, samples were then plotted and their relative position to the Southwest Master Curve reported (DuBois [52]). The precision parameter (k) is estimated by Fisherian statistics and values increase geometrically with internal consistency. The mean sample vector indicates internal consistency as the value approaches the number of specimens used for determination of the mean. Error along the great circle (Ep) and perpendicular to the great circle (EM) are functions of the Alpha 95 which have an oval distribution when plotted, with a short axis which runs along the great circle between the collecting side and paleopole position. The long axis is perpendicular to the short axis; both are centered on the paleopole. The range of error for each sample is determined from the value calculated for EM.

The paleopole positions of the demagnetized and cleaned results of Samples 2-6 were calculated and plotted on the virtual geomagnetic pole. This position was then compared to the current Southwest master curve (Figure 2.53); dates reported reflect correspondence with this curve. Because of the nature of this curve, several interpretations may be possible given a particular paleopole position. To properly assess these results, archaeological interpretations should be used in determining the most plausible alternative.

Sample 2 falls near the A.D. 1390 portion of the curve with a small range of error (± 30 years). Sample 3 has a large range of error (± 55 years) and the plot falls near several portions of the curve: A.D. 760, A.D. 985, and A.D. 1460. Sample 4 falls on the A.D. 700 portion of the curve with an error bar of ± 50 years. Sample 5 falls near the A.D. 670 portion of the curve with a ± 50 year error bar. A modern interpretation of this firing may also be possible. Sample 6 has a ± 25 year range of error and falls near the A.D. 1100 and A.D. 1360 portions of the curve.

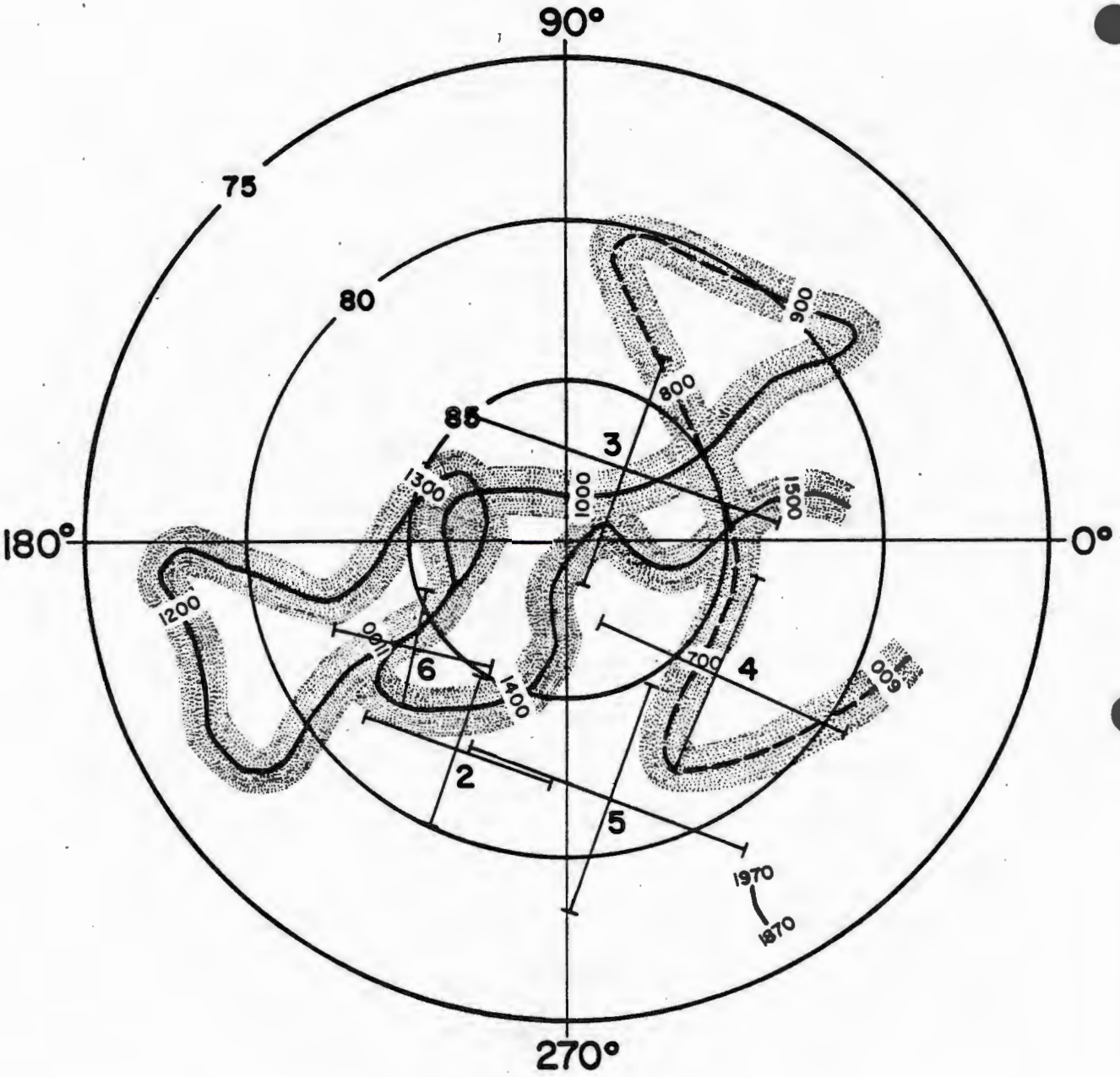
Hydrometer tests conducted on soils collected from the wall of the antechamber, Pithouse 1 (Sample 3), Feature 5 (Sample 5), and Surface 1 of Room 3 (Sample 6) by the Colorado State University soils laboratory (Fort Collins, Colorado) indicate the following radius:

Sample 3 - 29 percent sand, 37 percent silt, and 34 percent clay;

Sample 5 - 29 percent sand, 33 percent silt, and 38 percent clay; and

Sample 6 - 33 percent sand, 34 percent silt, and 33 percent clay,

which were all categorized as clays. Clays and clay-based soils are optimum for recording and retaining the ancient magnetic pole positions. Sand is less conducive to good archaeomagnetic results due to the size of the particles. The presence of clay is but one characteristic necessary for the production of good archaeomagnetic results. The firing atmosphere, maximum attained temperature, type of affected ferrous mineral, and amount of intrusive material all contribute to the resultant thermoremanent magnetization.



Solid portion based on Dubois [52]

Dashed portion is based primarily on Wolfman [54]

Modern portion is calculated from U.S.G.S. magnetic declination and inclination maps for the United States - Epoch and from Svendsen [55]

Figure 2.53 Southwest master curve, Tres Bobos Hamlet.

APPENDIX 3

LITHIC REPORT FOR TRES BOBOS HAMLET

by

Carl J. Phagan

The data presented in Tables 2.25, 2.26, and 2.27 represent part of the lithic reductive-technology analysis completed for Site 5MT4545; initial survey data are included. From a 12-attribute Flaked Lithic Tool (FLT) analysis system, four attributes were selected to illustrate general technological, functional, and raw-material variablity. A traditional morphological-use classification, a ranked estimation of production technology input for dorsal and ventral surfaces, and a grain-size evaluation are included. Six variables are included from the Flaked Lithic Debitage (FLD) analysis system: grain-size ranking, classification of items with cortex, items which retain a striking platform, obsidian items, mean weight, and total number of debitage items. The Nonflaked Lithic Tool (NFLT) analysis system is represented by four variables: traditional morphological-use item classification, production-input evaluation, indication of item completeness, and raw-material grain-size evaluation. The complete lithic-analysis systems are described elsewhere in D.A.P. publications (Phagan [56]).

During 1980 the D.A.P. lithic-laboratory personnel have repeatedly reviewed the utility and reliability of the lithic-analysis systems. In this review, a number of analysis variables have been modified, particularly the item morphological-use variables on both the FLT and NFLT systems. Analytical perspectives change as information accumulates and as models of tool production and use improve. In order to minimize the effects of this analytical modification on interpretation, the observed values of these variables have been regrouped into larger categories within which analytic consistency is reliable.

In addition to the individual site data, and for comparative purposes, the tables include data for a temporally and functionally

Table 2.25 Lithic Analysis Data Summary for Tres Bobos Hamlet, Flaked Lithic Tools (Page 1 of 2)

	Surface Collection (N=40)		Pit-house fill (N=49)		Pithouse floor (N=20)		Midden (N=53)		Elmt 1 Rooms (N = 4)		Elmt 2 Rooms (N = 1)	
	#	%	#	%	#	%	#	%	#	%	#	%
MORPHO-USE FORM, #2												
Indeterminate	1	2.5	2	4.1								
Utilized flakes	12	30.0	22	44.9	4	20.0	17	32.1	1	25.0		
Cores	12	30.0	10	20.4	8	40.0	2	3.8				
Chop, scraper planes	3	7.5	1	2.0	1	5.0	3	5.7	2	50.0		
Thick scrapers	2	5.0			1	5.0	5	9.4				
Thin scrapers	7	17.5	4	8.2	3	15.0	14	26.4	1	25.0	1	100
Bifaces	3	7.5	3	6.1	1	5.0	6	11.3				
Projectile points			7	14.3	2	10.0	4	7.5				
Specialized forms							2	3.8				
THINNING STAGE: DORSAL												
Indeterminate			1	2.0								
Nonfacial item	14	35.0	9	18.4	8	40.0	2	3.8				
Unthin item, w/ cortex	7	17.5	14	28.6	4	20.0	15	28.3	2	50.0		
Unthin item, no cortex	14	35.0	13	26.5	6	30.0	28	52.8	1	25.0	1	100
Prelim shap, w/ cortex							1	1.9				
Prelim shap, no cortex			1	2.0	1	5.0						
Primary thinning	1	2.5	1	2.0					1	25.0		
Secondary thinning			1	2.0			2	3.8				
Well-shaped	4	10.0	8	16.3	1	5.0	5	9.4				
Highly stylized			1	2.0								
THINNING STAGE: VENTRAL												
Indeterminate			1	2.0								
Nonfacial item	14	35.0	9	18.4	8	40.0	2	3.8				
Unthin item, w/ cortex												
Unthin item, no cortex	23	57.5	29	59.2	10	50.0	44	83.0	3	75.0	1	100
Prelim shap, w/ cortex							1	1.9				
Prelim shap, no cortex					1	5.0						
Primary thinning	1	2.5	1	2.0			1	1.9				
Secondary thinning			1	2.0					1	25.0		
Well-shaped	2	5.0	7	14.3	1	5.0	5	9.4				
Highly stylized			1	2.0								
GRAIN SIZE												
Medium (coarse)			1	2.0			2	3.8				
Fine			1	2.0	3	15.0	11	20.8	1	25.0		
Very Fine (detrital)	31	77.5	30	61.2	14	70.0	25	47.2	2	50.0		
Microscopic (nongranular)	9	22.5	17	34.7	3	15.0	15	28.3	1	25.0	1	100

Elmt - Element

Table 2.25 Lithic Analysis Data Summary for Tres Bobos Hamlet, Flaked Lithic Tools (Page 2 of 2)

	Borrow Pits (N = 9)		Total Other Excavated Units (N=118)		5MT4545 Total (N=294)		5MT4684 Total (N=341)		Anasazi Group (N=7048)
	#	%	#	%	#	%	#	%	%
MORPHO-USE FORM, #2									
Indeterminate			2	1.7	5	1.7	6	1.8	0.5
Utilized flakes	5	55.6	49	41.5	110	37.4	89	26.1	43.6
Cores	2	22.2	14	11.9	48	16.3	111	32.8	19.0
Chop, scraper planes	1	11.1	11	9.3	22	7.5	34	10.0	10.4
Thick scrapers			3	2.5	11	3.7	45	13.1	6.4
Thin scrapers			19	16.1	49	16.7	12	3.5	10.1
Bifaces	1	11.1	12	10.2	26	8.8	21	6.2	3.9
Projectile points			7	5.9	20	6.8	18	5.4	3.7
Specialized forms			1	0.9	3	1.0	4	1.2	2.3
THINNING STAGE: DORSAL									
Indeterminate					1	0.3	8	2.4	0.3
Nonfacial item	2	22.2	14	11.9	49	16.7	118	34.6	19.8
Unthin item, w/ cortex	3	33.3	36	30.5	81	27.6	123	36.1	31.7
Unthin item, no cortex	2	22.2	47	39.8	112	38.1	40	11.7	31.4
Prelim shap, w/ cortex	1	11.1	3	2.5	5	1 7	28	8.2	3.7
Prelim shap, no cortex	1	11.1	1	0.8	4	1.4	4	1.2	2.6
Primary thinning	1	11.1			3	1.0	5	1.5	1.2
Secondary thinning			3	2.5	6	2.0	8	2.3	1.1
Well-shaped			14	11.9	32	10.9	7	2.1	7.5
Highly stylized					1	0.3			0.7
THINNING STAGE: VENTRAL									
Indeterminate							8	2.4	0.2
Nonfacial item	2	22.2	14	11.9	8	15.1	118	34.6	19.5
Unthin item, w/ cortex			8	6.8	2	3.8	22	6.5	1.9
Unthin item, no cortex	5	55.6	46	39.0	33	62.3	148	43.4	64.4
Prelim shap, w/ cortex	1	11.1	1	0.8			9	2.6	1.4
Prelim shap, no cortex	1	11.1	1	0.8			19	5.6	3.4
Primary thinning			1	0.8	1	1.9	2	0.6	1.2
Secondary thinning			2	1.7	4	7.5	6	1.8	1.0
Well-shaped			16	13.6	5	9.4	9	2.6	6.4
Highly stylized									0.7
GRAIN SIZE									
Medium (coarse)			3	2.5	6	2.0	18	5.3	2.1
Fine	4	44.4	13	11.0	33	11.2	87	25.5	6.2
Very Fine (detrital)	3	33.3	65	55.1	170	57.8	202	59.2	65.3
Microscopic (nongranular)	2	22.2	37	31.4	85	28.9	34	10.0	26.3

Table 2.26 Lithic Analysis Data Summary for Tres Bobos Hamlet, Flaked Lithic Debitage (Page 1 of 2)

	Surface Collection (N=504)		Pithouse fill (N=849)		Pithouse floor (N=72)		Midden (N=973)		Elmt 1 Rooms (N =10)		Elmt 2 Rooms (N =14)	
	#	%	#	%	#	%	#	%	#	%	#	%
GRAIN SIZE												
Medium (coarse)	7	1.4	13	1.5	9	12.5	34	3.5	2	20.0	1	7.1
Fine	26	5.2	91	10.7	25	34.7	216	22.2	2	20.0	4	28.6
Very Fine (detrital)	377	74.8	621	73.1	28	38.9	485	49.8	4	40.0	1	7.1
Microscopic (nongranular)	94	5.0	124	14.6	10	5.0	238	24.5	2	20.0	8	57.1
Items w/ Cortex	129	25.6	221	26.0	24	33.3	180	18.5	3	30.0	5	35.7
Items w/ Platform	303	60.1	419	49.4	29	45.8	283	29.1	4	40.0	9	69.3
Obsidian Items			2	0.2			1	0.1				
Mean Weight (grams)	6.74		6.34		13.2		3.23		9.4		14.1	
Total Debitage	504		849		72		973		10		14	

Elmt - Element

Table 2.26 Lithic Analysis Data Summary for Tres Bobos Hamlet, Flaked Lithic Debitage (Page 2 of 2)

	Borrow Pits (N = 35)		Total Other Excavated Units (N=1095)		5MT4545 Total (N=3552)		5MT4684 Total (N=1011)		Anasazi Group (N=66095)
	#	%	#	%	#	%	#	%	%
GRAIN SIZE									
Medium (coarse)	3	8.5	63	5.8	132	3.7	31	3.1	3.2
Fine	10	28.6	215	19.6	589	16.5	301	29.8	21.4
Very Fine (detrital)	17	48.6	556	50.8	208	58.7	575	56.9	51.6
Microscopic (nongranular)	5	14.3	261	23.8	742	20.8	104	10.3	23.7
Items w/ Cortex	17	48.6	163	14.9	902	25.3	455	45.0	25.9
Items w/ Platform	21	60.0	482	44.0	155	43.5	575	56.9	38.8
Obsidian Items			1	0.1	4				18
Mean Weight (grams)	15.5		9.93		6.92		14.87		7.93
Total Debitage	35		1095		3552		1101		66095

Table 2.27 Lithic Analysis Data Summary for Tres Bobos Hamlet, Nonflaked Lithic Tools (Page 1 of 2)

	Surface Collection (N=21)		Pit-house fill (N=36)		Pit-house floor (N=28)		Midden (N = 6)		Elmt 1 Rooms (N = 4)		Elmt 2 Rooms (N = 6)	
	#	%	#	%	#	%	#	%	#	%	#	%
MORPHO-USE FORM												
Indeterminate	7	33.3	7	19.4	1	3.6					2	33.3
Generalized, unhafted	5	23.8	12	33.3	3	10.7	6	100	2	50.0	1	16.7
Hammerstones	1	4.8	1	2.8	6	21.4					2	33.3
Manos	7	33.3	6	16.7	10	35.7			1	25.0		
Slab Metates					4	14.2						
Trough Metates			8	22.2	2	7.1			1	25.0		
Unspec & Frag Metates	1	4.8			2	7.1						
Generalized, hafted			1	2.8								
Misc Specialized			1	2.8							1	16.7
PRODUCTION EVALUATION												
Indeterminate	1	4.8	2	5.6	2	7.1						
Nodule	11	52.4	22	61.1	13	46.4	6	100	3	75.0	3	50.0
Minimally Shaped	3	14.3	2	5.6	5	17.9					1	16.7
Well-shaped	6	28.6	10	27.8	8	28.6			1	25.0	2	33.3
Highly stylized												
ITEM COMPLETENESS												
Indeterminate												
Small Fragment	6	28.6	1	2.8								
Partial Implement	9	42.9	18	50.0	10	35.7	2	33.3	1	25.0	3	50.0
Complete (+ or -) Implement	6	28.6	17	47.2	18	64.3	4	66.7	3	75.0	3	50.0
GRAIN SIZE												
Indeterminate	9	42.9	5	13.9	2	7.1	1	16.7				
Coarse	3	14.3	10	27.8	2	7.1	2	33.3	1	25.0		
Medium	6	28.6	11	30.6	12	42.9	1	16.7	1	25.0	3	50.0
Fine	3	14.3	10	27.8	12	42.9	2	33.3	2	50.0	3	50.0
Nongranular												

Table 2.27 Lithic Analysis Data Summary for Tres Bobos Hamlet, Nonflaked Lithic Tools (Page 2 of 2)

	Borrow Pits (N = 7)		Total Other Excavated Units (N = 59)		5MT4545 Total (N=167)		5MT4684 Total (N=160)		Anasazi Group (N=4318)
	#	%	#	%	#	%	#	%	%
MORPHO-USE FORM									
Indeterminate			9	15.3	26	15.6	31	19.4	9.2
Generalized, unhafted	4	57.1	20	34.0	53	31.7	43	26.9	24.0
Hammerstones			2	3.4	12	7.2	22	13.7	9.9
Manos	2	28.6	26	44.1	52	31.1	32	20.0	33.5
Slab Metates					4	2.4			2.1
Trough Metates			1	1.7	12	7.2	23	14.4	9.4
Unspec & Frag Metates	1	11.1			3	1.8	3	1.9	5.2
Generalized, hafted			1	1.7	2	1.2	4	2.5	2.5
Misc Specialized					3	1.8	2	1.2	4.0
PRODUCTION EVALUATION									
Indeterminate			8	13.6	13	7.8	40	25.0	8.4
Nodule	5	71.4	36	61.0	99	59.3	80	50.0	53.5
Minimally Shaped	1	14.3	6	10.2	18	10.3	23	14.4	16.7
Well-shaped	1	14.3	9	15.3	37	22.2	15	9.4	21.1
Highly stylized							2	1.2	0.1
ITEM COMPLETENESS									
Indeterminate							18	11.2	0.9
Small Fragment			3	5.1			24	15.0	3.3
Partial Implement	4	57.1	35	59.3	10	6.0	49	30.6	45.6
Complete (+ or -)					72	43.1			
Implement	3	42.9	31	52.5	85	50.9	69	43.1	50.8
GRAIN SIZE									
Indeterminate	1	14.3	10	16.9	28	16.8	50	31.3	8.1
Coarse			16	27.1	34	20.4	11	6.9	16.5
Medium	2	28.6	17	28.8	53	31.7	61	38.1	39.4
Fine	4	57.1	16	27.1	52	31.1	38	23.8	34.5
Nongranular									1.2

similar D.A.P. site, Site 5MT4684, as well as for all D.A.P. Anasazi sites analyzed prior to the 1980 field season. These latter "Anasazi group" data have been generated from computer files which have not undergone complete editing, and final figures may differ slightly from those presented. Comparisons and interpretations presented here, particularly those of an intersite nature, are based on a qualitative assessment of lithic profile variation, since significance has not been statistically established.

Site 5MT4545 compares well with the Anasazi group and with the similar site data. Though a number of differences are apparent in the profiles, all the tables suggest that an expedient technology was utilized at the sites. The Anasazi flaked lithic technology is composed chiefly of utilized flakes and cores with characteristic low technological input. The nonflaked lithic tools are dominated by generalized tools and manos that exhibit relatively little technological input. Unit hamlets normally have roughly 60 percent flaked lithic tools to 40 percent nonflaked lithic tools. In this case, Site 5MT4545 contains about 64 percent flaked lithic tools, while the Anasazi group contains 62 percent flaked lithic tools, and the similar site (Site 5MT4684) contains 68 percent flaked lithic tools. These consistencies may be interpreted as representing economically independent households with similar economic orientations.

The flaked lithic tools from Site 5MT4545 are similar to the other unit hamlet and to the group of Anasazi sites. Small differences are apparent in the different profiles. Site 5MT4545 is dominated by utilized flakes, cores, and thin scrapers. However, high input items, such as thin scrapers, bifaces, and projectile points are somewhat overrepresented in Site 5MT4545. Site 5MT4545 differs slightly from the similar site; cores are overrepresented and utilized flakes and thin scrapers are under-

represented in the similar-site data. These differences might reflect sampling bias or slightly different technologies. Technological input values are considerably higher for Site 5MT4545 and the Anasazi group than for Site 5MT4684. These differences in technological input, as well as in raw material grain sizes, probably reflect differences in locally available raw materials. Site 5MT4545 and most of the sites in the Anasazi group are in the southern portion of the project area where very fine grained and microscopic Burro Canyon materials are readily available. Some of the differences in grain size frequencies and technological input values may be a reflection of cultural selection of raw materials.

The flaked lithic debitage follows the same basic pattern observed in the flaked tool profile. The Anasazi group and Site 5MT4545 are very similar, with both of them somewhat different than the similar-site profile. Site 5MT4545 contains primarily finer grained raw materials with lower mean debitage weights. The similar-site data is composed of relatively coarser grained raw materials with a very high mean debitage weight. These differences, along with the different relative percentages of cortex and platform counts, might be related to the utilization of different raw materials. An important difference between the data groups is the flaked tool to flaked debitage ratio. Site 5MT4545 has 7.6 tools per 100 flaked lithic items, the Anasazi group has 9.6 tools per 100 flaked lithics, while Site 5MT4684 has 25.3 tools per 100 flaked lithics. The large difference has no apparent explanation, though different raw material frequencies or differing sampling intensities may have contributed to this difference.

The nonflaked lithic tools from Site 5MT4545 are comparable with the Anasazi group and the similar site. Thirty-six percent of the tools from Site 5MT4545 are nonflaked lithics, the Anasazi group has 38 percent, and Site 5MT4684 data group, 32 percent nonflaked lithic tools, respectively. Though Site 5MT4545 and the Anasazi group are very similar in their profiles, small differences are apparent when compared to the similar-site profile. The consistency found in the nonflaked lithics from unit hamlet sites may tentatively be interpreted as representing self-sufficient economic units reliant upon cultigens for a significant portion of their food resources. Most of the nonflaked lithic tools reflect the preparation of these cultigens.

Small differences in the lithic profiles are suggested to reflect slightly different strategies of raw material procurement at specific sites. A certain portion of the differences in the profiles may reflect the different sampling strategies used in the D.A.P. field operations. These differences do not change the general interpretation of Anasazi unit hamlets using an expedient technology with economic self-sufficiency.

APPENDIX 4

FAUNAL REMAINS FROM TRES BOBOS HAMLET

by

Steven D. Emslie

This report presents the analysis of faunal remains collected from Site 5MT4545 during the 1979 field season. All material was collected through excavation and passed through one-quarter-inch screens.

Faunal remains were identified using modern comparative skeletons collected in the D.A.P. region. All bones were identified to species when possible. Bones of the cottontail, Sylvilagus sp., were identified only to genus as several species occur in the D.A.P. region which are not osteologically recognizable.

Minimum number of individuals (MNI) for each species represented in the entire site collection were calculated by counting the most numerous element of the same side. MNI's could not be calculated for specific time periods, in the case of multiple occupation sites, until other analyses are completed.

A total of 253 bones representing 7 species and 20 taxonomic catagories were identified from the site (Table 2.28). Unidentifiable mammal bones form the bulk of the sample, followed by rabbits, rodents, and deer. Identifications of worked bone, point locations (PL's) of bone, and bone displaying cut marks are provided in Tables 2.29, 2.30 and 2.31 respectively.

The relatively small sample of bone from this site allows few interpretations. All identified species, with the exception of the turkey, currently occur or have historically occurred in the D.A.P. region. Many of the rabbit and rodent remains in the site may be intrusive and not related to the cultural remains, as these species are common in the D.A.P. region and prefer areas of deep light soil.

Table 2.28. Taxa Identified at Tres Bobos Hamlet

Taxon	Number of Bones	MNI*
Black-tailed Jackrabbit (*Lepus californicus*)	24	3
Cottontail (*Sylvilagus* sp.)	18	4
Lagomorpha	3	
Rodentia	3	
Sciuridae	4	
Yellow-bellied Marmot (*Marmota flaviventris*)	7	1
Gunnison's Prairie Dog (*Cynomys gunnisoni*)	3	1
Spotted Ground Squirrel (*Spermophilus spilosoma*)	2	1
Pocket Gopher (*Thomomys* sp.)	2	1
Kangaroo Rat (*Dipodomys* sp.)	1	1
Cricetidae	3	
Artiodactyla	4	
Mule Deer (*Odocoileus hemionus*)	13	1
Tetraonidae:	1	1
Common Turkey (*Meleagris gallopavo*)	1	1
Passeriformes	1	
Common Raven (*Corvus corax*)	1	1
Other Mammalia (undifferentiated)	50	
Other Mammalia, small	50	
Other Mammalia, large	62	
Total	253	

*MNI - Minimum number of individuals

Table 2.29 Worked Bone Identified for Tres Bobos Hamlet

FS/Cat., PL	Taxon	Element
129/02-1	Artiodactyla	right tibia, proximal epiphysis only
177/02-1	Mammalia	long bone shaft fragment
179/02-1	*Odocoileus hemionus*	metatarsal, distal half
179/02-2	Mammalia, large	long bone shaft fragment
190/02-1	*Odocoileus hemionus*	metatarsal, distal half
201/02-1	Mammalia	unidentifiable fragment
212/02-1	Mammalia, large	long bone shaft fragment
212/02-2	Mammalia, large	long bone shaft fragment
232/02-1	Mammalia, large	long bone shaft fragment
256/02-1	Mammalia, large	long bone shaft fragment
256/02-2	Mammalia, large	long bone shaft fragment
272/02-1, PL 8	*Odocoileus hemionus*	metatarsal shaft fragment
277/02-1, PL 4	*Odocoileus hemionus*	metacarpal, distal half
305/02-1	Mammalia, large	long bone shaft fragment
314/02-1, PL 60	*Odocoileus hemionus*	metapodia, distal quarter
362/02-1	Mammalia, large	long bone shaft fragment
363/02-1, PL 96	Mammalia	long bone shaft fragment
365/02-1	Mammalia, large	long bone shaft fragment
369/02-1, PL 133	Mammalia, large	long bone shaft fragment
377/02-1, PL 121	*Odocoileus hemionus*	metatarsal w/ proximal end broken, split

Table 2.30 Point Locations (PL's) of Bone Identified for Tres Bobos Hamlet

FS/Cat., PL	Taxon	Element
245/02-1, PL 4	*Cynomys gunnisoni*	right 2nd lower molar
272/02-1, PL 8	*Odocoileus hemionus*	metatarsal shaft fragment
277/02-1, PL 4	*Odocoileus hemionus*	metacarpal, distal half
286/02-1, PL 3	*Lepus californicus*	right humerus, distal quarter
289/02-1, PL 2	*Lepus californicus*	right tibia, distal half
289/02-2, PL 3	Mammalia, small	three long bone shaft fragments
289/02-3, PL 6	*Lepus californicus*	right mandible, proximal end broken
290/02-1, PL 27	Mammalia, small	long bone, medial fragment
290/02-2, PL 27	Mammalia, large	long bone shaft fragment
291/02-1, PL 20	Mammalia, large	unidentifiable fragment
293/02-1, PL 2	*Sylvilagus* sp.	left mandible
293/02-2, PL 5	*Lepus californicus*	right femur, proximal quarter
296/02-1, PL 36	*Lepus californicus*	right scapula
314/02-1, PL 60	*Odocoileus hemionus*	metapodia, distal quarter
316/02-1, PL 34	Mammalia	long bone, medial fragment
327/02-1, PL 7	*Lepus californicus*	left innominate, medial
345/02-1, PL 68	Artiodactyla	right humerus, proximal end
363/02-1, PL 96	Mammalia	long bone shaft fragment
369/02-1, PL 133	Mammalia, large	long bone shaft fragment
370/02-1, PL 71	Artiodactyla	femur, proximal epiphysis
377/02-1, PL 121	*Odocoileus hemionus*	metatarsal, proximal end broken, split

Table 2.31 Bones Displaying Cut Marks, Tres Bobos Hamlet

FS/Cat. No.	Taxon	Element
179/02-1	*Odocoileus hemionus*	metatarsal, distal half, split and worked; two perpendicular cuts, distal anterior shaft
179/02-3	*Odocoileus hemionus*	right astragalus; one medial perpendicular cut anterior and posterior, and four medial oblique cuts, lateral
190/02-1	*Odocoileus hemionus*	metatarsal, distal half, split and worked; three perpendicular cuts, lateral condyle
277/02-1	*Odocoileus hemionus*	metacarpal, distal half, worked; one perpendicular cut, distal anterior shaft
380/02-3	*Odocoileus hemionus*	left metatarsal shaft fragment; three distal perpendicular cuts, posterior shaft

However, these species are known to be used by modern tribes for food and skins. The Common Turkey was a domesticated animal kept by the Anasazi; the one bone of this species from the site might indicate it was kept as a domesticate. Worked bones and bones with cut marks establish the cultural use of deer for food and for bone tools.

Comparison of this site with other sites in the D.A.P. region, once all analyses are complete, may reveal further information on prehistoric faunal exploitation at Site 5MT4545.

APPENDIX 5

CERAMIC REPORT FOR TRES BOBOS HAMLET

by

William A. Lucius

Preliminary (inventory) analysis of the ceramic complement from Site 5MT4545 was accomplished subsequent to the field operations by members of the Additive Analysis Laboratory of the D.A.P. and is presented in this appendix. Description of the preliminary analysis procedures, structure, and data interpretability is available in Lucius [57]. Familiarity with the inventory analysis program will aid in the understanding of the data and interpretations provided below.

Table 2.32 summarizes the ceramic frequencies for the entire site; the ceramics collected during the initial survey are included. Sherds are grouped by "culture categories and wares" (Lindsay et al. [58]). Apart from four sherds of nonlocal (Kayenta) origin, all ceramics were assigned to wares of the Mesa Verde Culture Category and reflect a local (Mesa Verde region) manufacturing tradition and exchange system. Pottery types within each ware are listed sequentially from early to late, the grouped types (e.g., Early Pueblo Gray) are listed last and include sherds not assignable to specific types (e.g., gray ware body sherds).

Ten partially or wholly reconstructable ceramic vessels were found at Tres Bobos; their counts and weights are excluded from Table 2.32. As indicated in Table 2.33, seven were assigned to Mesa Verde Gray Ware types and three to Mesa Verde Late Pueblo White.

With the exception of Vessel 1, which was found in the fill of the main chamber of Pithouse 1(possibly associated with the intrusive burial), the items represent fragmentary bowl and jar forms that apparently were broken before site abandonment. Vessel 4, a large sherd, has been tentatively coded as an ash scoop. Its location in the main chamber of the pitstructure and the worn and rounded edges are interpreted as evidence that the item was used to scoop ashes from the fire pit or ash pit.

Table 2.32 Summary of Descriptive Frequencies of Ceramics at Tres Bobos Hamlet

WARE TRADITIONAL TYPE	BY COUNT												WEIGHTS	
	BOWL		JAR		OTHER		TOTAL		RIMS		MODIFIED			
	#	%	#	%	#	%	#	%	#	%	#	%	gram	%
Mesa Verde Gray														
Chapin Gray			82	2.4	34	91.9	116	3.1	116	60.1			1656	7.8
Moccasin Gray			2	.1			2	.05					6	.03
Mancos Gray			1	.03			1	.02					1	<1
Dolores Corr			1	.03			1	.02	1	.5			12	.06
Early Pueblo			3290	95.1			3290	89.2					17541	82.7
Mesa Verde White														
Chapin B/W	49	22.1					49	1.3	5	2.6			259	1.2
Cortez B/W	5	2.3					5	.1	1	.5			22	.1
Mancos B/W	2	1					2	.05					16	.1
Early Pueblo	158	71.2	30	.9	3	8.1	191	5.2	67	34.7			42	.2
Late Pueblo	4	1.8					4	1					1568	7.4
Kayenta Gray														
Lino Gray			3	.1			3	.1	3	1.6			3	.01
Late Pueblo	1	.5					1	.02					6	.03
Indeterminate Gray			17	.5			17	.5					57	.3
Indeter White	3	1.4	4				7	.2					26	.1
TOTALS	222		3430		37		3689		193				21215	

Note: This table includes ceramics collected during initial survey of the site.

Table 2.33 Reconstructable Vessels Listed by Traditional Type for Tres Bobos Hamlet

	VESSEL NUMBER									
	1	2	3	4	5	6	7	8	9	10
MESA VERDE GRAY WARE										
Chapin Gray	X				X				X	X
Moccasin Gray										
Mancos Gray										
Mancos Corrugated										
Dolores Corrugated										
Mesa Verde Corrugated										
Early Pueblo Gray		X				X	X			
Late Pueblo Gray										
Corrugated Body Sherds										
Dolores Brown										
MESA VERDE WHITE WARE										
Chapin B/W										
Piedra B/W										
Cortez B/W										
Mancos B/W										
McElmo B/W										
Mesa Verde B/W										
Early Pueblo White			X	X				X		
Late Pueblo White										
MESA VERDE RED WARE										
Abajo R/O										
Bluff B/R										
Deadmans B/R										
Dolores Red										
Early Pueblo Red										
Late Pueblo Red										
TRADE WARE										
Cibola										
Chuska										
Kayenta										
OTHER										
TOTALS										
VESSEL FORMS										
Bowl			X							
Jar	X	X			X	X	X	X	X	X
Other				X						

Relative weights of temporally diagnostic types have been extracted from Table 2.32 and are presented graphically in Figure 2.54. Each type is expressed as a percentage of its ware total (excluding sherds not identifiable to type and excluding sherds from reconstructable vessels). The relative contribution of each ware to the classifiable site total is listed on the left. Temporal spans for the diagnostic types are based on Breternitz et al. [30] with some adjustments based on dating results from within the D.A.P. This figure illustrates the intensity of occupation as well as the temporal range of occupation, and it can be compared with similar figures prepared for other D.A.P. sites.

Tables 2.34-2.39 present ceramic frequencies for selected proveniences at Tres Bobos. The data reflect a range of site use of 550 years (A.D. 600-1150). However, the occupation of the site was apparently concentrated between A.D. 600 and 750. The lack of red wares in the site indicates that the occupation ceased prior to A.D. 750. Determination of the specific time of occupation within the 150 year period by ceramics is not possible due to the lack of temporal distinctiveness in the two temporally diagnostic types (Chapin Gray and Chapin Black-on-white). The ceramic dating places the site into the Sagehill Subphase of the Sagehen Phase of the D.A.P. temporal framework (Kane and Robinson [59]).

A total of 92.7 percent of the sherds (by weight) contain the ubiquitous crushed river cobble temper characteristic of ceramics of local manufacture. Crushed sandstone temper represents 6.6 percent of the sherd total, possibly indicating intraregional contact with populations outside of the immediate Dolores River area. The quartz sand temper of the Kayenta types in the site represent only 0.3 percent of the total, signifying an insularity of the site occupants during this time period. Other mis-

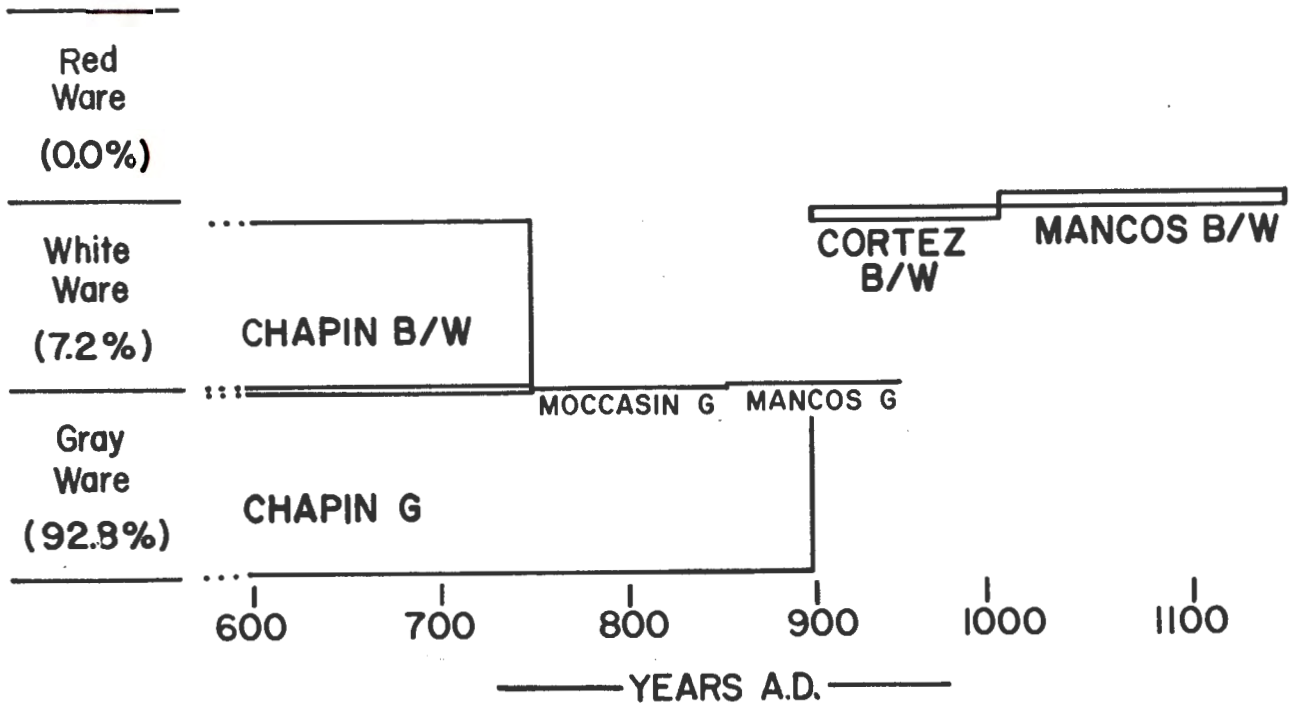


Figure 2.54 Diagnostic type occurrences for ceramic materials, Tres Bobos Hamlet.

Table 2.34 Ceramics from Selected Surface Proveniences, Tres Bobos Hamlet

	Room-block Emt 1 N=57	Room-block Emt 2 N=33	Units Over PH N=41	Units Over BP N=34	Units Over Mid N=128	SW Peri-phery N=16	Total	
	%	%	%	%	%	%	#	%
MESA VERDE GRAY								
Chapin Gray	1.8		2.4	8.8	4.7	6.3	12	3.9
Early Pueblo	94.7	90.9	92.7	91.2	89.1	93.7	282	91.3
MESA VERDE WHITE								
Chapin B/W	1.8	6.1	2.4				4	1.3
Early Pueblo	1.8	3.0	2.4		4.7		9	2.9
TRADE WARES								
Cibola					1.6		2	0.6
TOTALS							309	100
VESSEL FORMS								
Bowl	3.5	9.1	2.4		3.9		11	3.6
Jar	96.5	90.9	97.6	94.1	95.3	93.7	294	95.1
Other				5.9	0.8	6.3	4	1.3

Emt - Element PH - Pithouse BP - Borrow Pits Mid - Midden

Table 2.35 Ceramic Assemblage, Room Fill, Tres Bobos Hamlet

	Element 1, Floors of Surface Structures N = 41	Element 2, Floors of Surface Structures N = 32	Total	
	%	%	#	%
MESA VERDE GRAY WARE				
Chapin Gray	4.9	12.5	6	8.2
Mesa Verde Corr			59	80.8
Early Pueblo Gray	80.5	81.3		
MESA VERDE WHITE WARE				
Early Pueblo White	9.7	3.1	5	6.8
OTHER	4.9	3.1	3	4.1
TOTALS			73	99.9
VESSEL FORMS				
Bowl	7.3	3.1	4	5.5
Jar	90.2	90.6	66	90.4
Other	2.4	6.3	3	4.1

Table 2.36 Ceramic Assemblage, Midden Fill, Tres Bobos Hamlet

	Midden N = 479 #	%
MESA VERDE GRAY WARE		
Chapin Gray	6	1.3
Mancos Gray	1	0.2
Early Pueblo Gray	431	90.0
MESA VERDE WHITE WARE		
Chapin B/W	15	3.1
Early Pueblo White	22	4.6
TRADE WARES		
Cibola	1	0.2
OTHER	3	0.6
TOTALS	479	
VESSEL FORMS		
Bowl	37	7.7
Jar	441	92.1
Other	1	0.2

Table 2.37 Ceramic Assemblage, Borrow Pit Fill, Tres Bobos Hamlet

	Feature 1 N = 40 %	Feature 92 N = 90 %	Total #	%
MESA VERDE GRAY WARE				
Chapin Gray	5.0	5.6	7	5.4
Mesa Verde Corr			118	90.8
Early Pueblo Gray	90.0	91.1		
MESA VERDE WHITE WARE				
Early Pueblo White	5.0	3.3	5	3.8
TOTALS			130	100
VESSEL FORMS				
Bowl	5.0	3.3	5	3.8
Jar	95.0	95.6	124	95.4
Other		1.1	1	0.7

Table 2.38 Ceramic Assemblage, Pithouse Fill, Tres Bobos Hamlet

	Fill N = 1074 %	Total #	Total %
MESA VERDE GRAY WARE			
Chapin Gray	3.7	40	3.7
Early Pueblo Gray	88.4	949	88.4
MESA VERDE WHITE WARE			
Chapin B/W	1.2	13	1.2
Early Pueblo White	6.1	66	6.1
Late Pueblo White	0.1	1	0.1
OTHER	0.5	5	0.5
TOTALS		1074	100
VESSEL FORMS			
Bowl	6.1	66	6.1
Jar	92.9	998	92.9
Other	0.9	10	0.9

Table 2.39 Ceramic Distribution by Cultural Divisions, Pithouse Floor, Tres Bobos Hamlet

	Hrth Area N=5 %	East of Hrth N=39 %	West of Hrth N=34 %	South of Hrth N=28 %	Bench N=7 %	Ante-Chmbr Bench N=3 %	Ante-Chmbr N=20 %	Total #	Total %
MESA VERDE GRAY									
Chapin Gray	1.8		2.4	8.8	4.7	6.3		5	3.7
Early Pueblo	94.7	90.9	92.7	91.2	89.1	93.7		108	79.4
MESA VERDE WHITE									
Chapin B/W			2.9	3.6				2	1.5
Early Pueblo	20.0	5.1	29.4	7.1			2.0	19	14.0
Late Pueblo			2.9					1	0.7
OTHER				3.6				1	0.7
TOTALS								136	100
VESSEL FORMS									
Bowl	20.0	2.6	35.3	7.1			5.0	17	12.5
Jar	80.0	97.4	64.7	89.3	100	100	95.0	118	86.8
Other				7.1				1	0.7

Hrth - Hearth Antechmbr - Antechamber

cellaneous temper types recorded in the ceramics account for 0.4 percent of the total.

In summary, the ceramics from Site 5MT4545 represent the earliest excavated occupation of the river valley. Placement of the occupation within the 150 year period is not presently possible due to the longevity of the diagnostic types associated with the early occupation of the area. The amount of foreign interaction (as evidenced by nonlocal temper types) is minimal. Abandonment of the site was such that fragmentary vessels, perhaps still useful, were left in various structures of the site. The only whole vessel recovered from excavations was found in post-occupational context--in possible association with an intrusive human burial.

APPENDIX 6

POLLEN REPORT FOR TRES BOBOS HAMLET

by

Linda J. Scott

Pollen samples were collected at various sites to obtain information concerning the prehistoric environment and potential economic resources used by the prehistoric peoples. Discussion of the methodology involved and intersite comparisons are presented in the Pollen Administrative Report (Scott [60]). Not all the pollen recovered is discussed in detail in that report, but mention is made of the various types and the entire pollen record is graphically represented.

Seven pollen samples were submitted for analysis from Site 5MT4545, including two floor-contact samples from two of the surface structures, two floor-contact samples from the pithouse main chamber and antechamber, and two samples from a Chapin Gray jar.

The floor-contact samples (Samples 5 and 8) from the two surface structures were taken from under rocks or slabs. Sample 5 was taken from under a large slab in the southwest quadrant of Room 1, while Sample 8 was taken from underneath a rock directly on the floor in the north half of Room 6 (Table 2.39).

Sample 5, from Room 1, contains a relatively small amount of arboreal pollen (9 percent) and a large amount of Artemisia pollen (50 percent). The surface structures at this site might have been used as storage units (J. Brisbin, personnal communication), and the economic pollen present in this sample supports this hypothesis. Cleome pollen is present as one percent of the total pollen, but Zea contributes 12 percent of the total pollen observed. This frequency of Zea pollen is the highest observed in this study and suggests that this structure might have been used to store corn.

Pollen sample 8, from Room 6, contains more arboreal pollen (particularly Pinus pollen) and less economic pollen than does Sample 5.

Table 2.40 Provenience of Pollen Samples from Tres Bobos Hamlet

POLLEN SAMPLE #	FS #	PITHOUSE/ ROOM STRUCTURE #	PROVENIENCE AND COMMENTS
5	239	Room 1	SW quad., Surface 1, under large slab
6	239	Pithouse 1	Antechamber, under flat rock on floor
7	366	Pithouse 1	Main chamber, under rock NE of hearth
8	497	Room 6	North half of floor, Surface 1, directly on floor under rock
9	232	Pithouse 1	Main chamber, hematite fill of small Chapin Gray jar
10	521	Room 12	North half of floor, Surface 1, under under rock, no pollen
11	232	Pithouse 1	Main chamber, control fill sample from small Chapin Gray jar containing hematite

Sample 8 contains 2 percent Cleome and 1 percent Zea pollen, which is not sufficient (when compared to PNI from Room 1) to indicate that this surface structure was also used for storage. Room 6 had not burned and apparently was abandoned while it was intact, which would allow the continued accumulation of pollen in the structure after abandonment. The pollen in Sample 8 represents primarily ambient pollen, particularly in the absence of any evidence of large quantities of economic pollen.

Pollen Sample 6, taken from the antechamber of Pithouse 1, contains a relatively small amount of arboreal pollen (11 percent), which is similar to the amount noted in Sample 5 from Room 1. The nonarboreal pollen consists of a larger amount of Cleome pollen (7 percent) than noted elsewhere in the site, as well as one percent Zea pollen. The larger amount of Cleome, pollen might indicate the storage or preparation of Cleome, and possibly other food items, in this area. Zea pollen was regularly noted as 1 or 2 percent of the pollen record in most of the samples taken at this site.

Pollen Sample 7, taken from under a rock northeast of the hearth in the main chamber of Pithouse 1, contains a much larger frequency of arboreal pollen (31 percent) than does Sample 6 (from the antechamber). This large amount of Pinus pollen near the hearth might reflect the use of Pinus as fuel in the hearth or, alternatively, the use of Pinus in the construction of the roof. It is also possible that this sample contains primarily ambient pollen similar to that in Room 6. Small amounts of both Cleome and Zea were noted in this sample, but neither occurred as more than 2 percent of the pollen record.

As Cleome and Zea were noted as 1 or 2 percent of the total pollen in almost every sample from this site, it is difficult to ascertain whether the low frequencies of these pollen grains might be attributed to their general presence at the site, or whether they indicate limited use in specific areas sampled.

Pollen Samples 9 and 11 represent the hematite fill and a control fill sample from a small Chapin Gray jar found in the fill of the main chamber of the pithouse. The hematite sample contains more arboreal pollen, again primarily Pinus pollen, than does the control fill sample from this same vessel. Both the hematite and control fill samples from this vessel contain small amounts of Cleome and Zea pollen. Although these two pollen samples differ in the frequencies of some of the pollen types noted, there is not sufficient difference to indicate that pollen, or any plant substance, was added to the hematite found in the bottom of this vessel. Both samples appear representative of ambient or background pollen at this site.

Pollen evidence of the prehistoric resources available near Site 5MT4545 and/or utilized at the site include: Juniperus, Pinus, Quercus, short-spined Compositae, Artemisia, high-spined Compositae, Cheno-ams, Cleome, Ephedra nevadensis-type and Ephedra torreyana-type, Eriogonum, Graminae, Polygonum sawatchensis, Rosaceae, Sphaeralcea, and Zea. The only cultigen noted at this site was Zea, which occurred in small frequencies (3 percent or less). Cleome pollen was noted consistently in the samples from this site, although it also usually occurred in small frequencies (2 percent or less). The presence of 7 percent Cleome in the antechamber of the pithouse suggests the use of that area for food preparation. The large frequency of Pinus pollen from Sample 7 might

indicate its use as a fuel, or in the construction of the roof of the pithouse. The large frequency of *Pinus* pollen observed in Room 6 (Sample 8) is tentatively ascribed to the accumulation of ambient pollen in the room, or possibly to construction activities.

APPENDIX 7

HUMAN REMAINS FROM TRES BOBOS HAMLET

by

Louisa Beyer Flander

Excavations at Site 5MT4545 revealed the skeletal remains of one adult male. These fragmentary remains show some destruction by animals, particularly on the long bone shafts, and substantial damage by root and soil movements. However, the bony thorax remains articulated, suggesting a primary inhumation.

Dental age is in the 30s, judging by attrition on the maxillary and mandibular molars, which corroborates the appearance of the pubic symphyseal surface (Todd system [61, 62]). There is no gross pathology nor abnormality apparent in these remains, nor is the cause of death apparent from the skeleton.

Inventory

F.S. 232 - Phalange, hand.

F.S. 256 - Metatarsal, fifth, with bony spur on proximal end, possibly reflecting the attachment of tarsometatarsal or metatarsal ligaments, or some unusual articulation with the proximal fourth metatarsal.

F.S. 304 - Calcaneus, right.

F.S. 354 - Rib fragments.

F.S. 357 - Rib fragments.

F.S. 363 - P.L. 92, unidentifiable fragments.

F.S. 369 - P.L. 102, rib fragment.

F.S. 370 - P.L. 142, Metacarpal.

F.S. 375 - Feature 25:

Cranium. Calvarium fragments include mastoid, occipital, parietal and petrous temporal; mastoid and nuchal crest appear male; extra ossicle in lambdoid suture; facial fragments include maxillae, malar, and orbit

fragments; mandible appears male and includes right mandibular and maxillary first, second, and third molars, and maxillary first and second premolars; and left mandibular and maxillary first and second molars, and maxillary first premolar.

Humerus. Right and left, with marked muscle attachments.

Radius. Right radius shaft and distal fragments.

Ulna. Left distal shaft fragment.

Hand. Navicular, metacarpal, phalanges.

Femur. Right and left, with apparent rodent marks on linea aspera.

Tibia. Right and left fragments; rodents marks on anterior crest.

Fibula. Shaft fragment.

Foot. Left calcaneus, talus, metatarsals.

Clavicle. Right.

Scapula. Right and left fragments.

Sternum. Manubrium, unfused.

Ribs. Fragments.

Vertebrae. Five lumbar, 12 thoracic, 4 cervical, and fragments of the atlas and axis; some ribs still articulated with vertebrae.

Sacrum. Six segments; first and second sacral vertebrae incompletely fused; male in appearance.

Os coxae. Right and left fragments, male in appearance; mature pubic symphysis.

F.S. 632 - Metacarpal.

APPENDIX 8

BOTANICAL REPORT FOR TRES BOBOS HAMLET[1]

by

Mark Varien

[1] This appendix was prepared 1 August 1983. The data presented was not available for the original report submission to funding agency.

Following is a discussion on the botanical remains recovered from a few of the bulk soil samples collected from Tres Bobos Hamlet (Site 5MT4545). These samples were collected from all aspects at the site including plaza features, storage room fills, and floors, as well as pithouse fills, floor, and features.

The botanical taxa identified from analyzed bulk soil samples and vegetal remains are reported in tables 2.41, 2.42, and 2.43. Two factors which may result in the contamination of prehistoric contexts should be noted prior to a discussion of these results. Most significant is the historic activity, primarily farming and grazing, which took place at the site. Plowing removed all trace of the prehistoric ground surface. The pithouse, surface rooms, and features in the plaza could be detected only after the plow zone was removed and the top of the sterile B horizon was exposed. Therefore, the upper portions of the features and rooms have been truncated, and many are quite shallow. The more shallow a cultural deposit the more likely extraneous material could be incorporated into it by pedoturbative processes and insect and rodent disturbances.

Further, both the historic activity and the prehistoric occupation of the site would perpetuate the growth of ruderal plants. For example the analysis of bulk soil sample 103, (table 2.41) which was collected from the plow zone, contained numerous noncharred seeds and fruits. This includes 204 Amaranth seeds, 85 Chenopodium fruits, 207 Polygonum fruits, and 14 Portulaca seeds. These plants are all documented in the ethnobotanical literature (Elmore 1944; Stevenson 1945; Whiting 1939) as being economic plants and may have been utilized prehistorically as food resources. In this case, however. because the specimens are noncharred and given the disturbed nature of this open site, it is doubtful that they

Table 2.41. Bulk soil sample results, Tres Bobos Hamlet

Taxon Family Genus species Plant part	Pithouse 1 upper control BS 76	Pithouse 1 Feature 17 (hearth) Stratum 2 BS 129	Room 1 roof fall upper control BS 15	Room 1 floor scrape BS 19	Room 2 SE Quad floor scrape BS 14	Room 2 SW Quad floor scrape BS 17
Amaranthaceae						
Amaranthus sp.						
seed						
Chenopodiaceae						
Chenopodium sp.						
fruit		3/C				3/N
"Cheno-am"		4/C	1/C			
fruit						
Salsola sp.						
seed						
Compositae						
Artemisia sp.						
fruit		1/C				
wood	<1g/C	<1g/C	>1g/C		<1g/C	<1g/C
Helianthus sp.						
fruit						
Cupressaceae						
Juniperus sp.						
wood			3.4g/C	<1g/C		
J. scopulorum						
scale		1/C				
Gramineae						
fruit	5g/C					
leaf	1/C					
stem part						<1g/C
Oryzopsis sp.						
fruit						1/C
Zea mays						
cob			1X/C			
cupule	9X/C	1/C	32/C	4/C	6/C	
kernel	<1g/C		<1g/C	<1g/C	<1g/C	<1g/C
Leguminosae						
Phaseolus sp.						
cotyledon		1/C				
Liliaceae						
Yucca sp.						
leaf		1/C				
Loasaceae						
Mentzelia sp.						
seed		1/C				
Malvaceae						
seed	1/N	1/C				
Pinaceae						
Pinus sp.						
bark				<1g/C		
wood	<1g/C					
P. edulis						
needle		1/C				
Polygonaceae						
fruit	2/N		1/N		2/C	
Polygonum sp.						
fruit			2/C			
Portulacaceae						
Portulaca sp.						
seed						
Rosaceae						
wood, nfs	<1g/C	<1g/C				
Amelanchier sp.						
wood	<1g/C					
Salicaceae						
Populus sp.						
wood	<1g/C	<1g/C	<1g/C			
Solanaceae						
Solanum sp.						
seed						
Umbelliferae						
fruit						
Gymnospermae						
wood, nfs	<1g/C	<1g/C				
Dicotyledoneae						
leaf	2/N	2g/C				
seed	2/C					
Monocotyledoneae						
fruit	1/C					

NOTE: C - Charred.
N - Noncharred.
X - Fragments; actual number not accessible.

Table 2.41. Bulk soil sample results, Tres Bobos Hamlet--Continued

Taxon Family Genus species Plant part	Rom 14 fill BS 204	Feature 27 fireplace Room 14 fill Stratum 3 BS 165	2X2 m^2 020,028 plowzone upper control BS 103	Plaza Feature 5 pit with burning fill BS 72	2X2 m^2 014,022 plowzone upper control BS 101	2X2 m^2 012,022 plaza Feature 24 pit with burning fill BS 17
Amaranthaceae						
Amaranthus sp.						
seed			204/N	1/C	17/N	
Chenopodiaceae						
Chenopodium sp.						
fruit			85/N	4/N	49/N	1/C
Cheno-ams						
fruit				4/N		
Salsola sp.						
seed			5/N			
Compositae						
Artemisia sp.						
fruit						
wood	<1g/C	<1g/C		<1g/C	<1g/C	<1g/C
Helianthus sp.						
fruit			3/N			
Cupressaceae						
Juniperus sp.						
wood						
J. scopulorum						
scale						
Gramineae						
fruit						
leaf						
stem part						
Oryzopsis sp.						
fruit						
Zea mays						
cob						
cupule				13/C		
kernel				<1g/C		
Leguminosae						
Phaseolus sp.						
cotyledon						
Liliaceae						
Yucca sp.						
leaf						
Loasaceae						
Mentzelia sp.						
seed						
Malvaceae						
seed						
Pinaceae						
Pinus sp.						
bark				<1g/C		
wood				<1g/C		
P. edulis						
needle				1/C		
Polygonaceae						
fruit						
Polygonum sp.						
fruit			207/N		29/N	2X/N
Portulacaceae						
Portulaca sp.						
seed			14/N		2/N	
Rosaceae						
wood, nfs						
Amelanchier sp.						
wood						
Salicaceae						
Populus sp.						
wood		<1g/C	<1g/C			
Solanaceae						
Solanum sp.						
seed			11/N		46/N	
Umbelliferae						
fruit			1X/C			
Gymnospermae						
wood, nfs		<1g/C	<1g/C		<1g/C	<1g/C
Dicotyledoneae						
leaf			1/C			
seed						
Monocotyledoneae						
fruit						

Table 2.42. Vegetal Remains from Rooms and Pithouse, Tres Bobos Hamlet

Taxon Family Genus species Plant part	Room 1 Level 1	Room 1 Surface 1	Room 2 Level 1	Room 2 Surface 1	Room 3 Surface 1	Room 6 Level 1	Room 6 Surface 1	Room 7 upper fill
Compositae								
Artemisia sp.								
wood					1.5g/C	<1g/C	<1g/C	
Cupressaceae								
Juniperus sp.								
seed								
bark	<1g/C							1/C
wood	41.8g/C 8.4g/P	*2.7g/C			<1g/C	1.5g/C	<1g/C	
Fagaceae								
Quercus gambelii								
wood					<1g/C			
Gramineae								
Zea mays								
fruit	12.7g/C	*57.9g/C	13.6g/C	38.5g/C				
cupule	7/C	*233/C *37X/C	3/C	49/C	3.5/C 9X/C			
cob		*71X/C	2X/C	10X/C				2X/C
ear		*9X/C		1X/C				
Phragmites sp.								
stem part								
Pinaceae								
Pinus sp.								
bark	<1g/C	*<1g/C						
wood		*<1g/C			3.1g/C	14.2g/C	1.6g/C	
Rosaceae								
Amelanchier sp.								
wood						<1g/C		
Salicaceae								
wood, nfs								
Populus sp.								
wood		*1g/C						
Salix sp.								
wood						<1g/C		
Gymnospermae								
bark		*1g/C					<1g/C	
wood, nfs		*1g/C			1g/C	1g/C	1g/C	
Dicotyledoneae								
wood, nfs						1g/C	<1g/C	1/C

NOTES: C - Charred.
N - Noncharred.
P - Partially charred.
X - Fragments.
A - Adobe impression.

Table 2.42. Vegetal Remains from Rooms and Pithouse, Tres Bobos Hamlet--Continued

Taxon Family Genus species Plant part	Room 7 roof fall	Room 7 Surface 1	Room 8 Surface 1	Room 10 Stratum 2	Room 12 Stratum 2	Room 12 Surface 1	Pithouse 1 Surface 1
Compositae							
Artemisia sp.							
wood	<1g/C		<1g/C	4.4g/C	<1g/C		
Cupressaceae							
Juniperus sp.							
seed							
bark							
wood					<1g/C		
Fagaceae							
Quercus gambelii							
wood							
Gramineae							
Zea mays							
fruit							
cupule	21/C						
cob	10X/C						1X/C
ear							
Phragmites sp.							
stem part							
Pinaceae							
Pinus sp.							
bark							
wood			<1g/C		1g/C		
Rosaceae							
Amelanchier sp.							
wood							
Salicaceae							
wood, nfs	6.5g/C						
Populus sp.							
wood	5.5g/C						
Salix sp.							
wood			<1g/C				
Gymnospermae							
bark							
wood, nfs					1g/C	1g/C	
Dicotyledoneae							
wood, nfs				2g/C	<1g/C		

Table 2.42. Vegetal Remains from Rooms and Pithouse, Tres Bobos Hamlet--Continued

Taxon Family Genus species Plant part	Pithouse 1 bench Surface 1	Pithouse 1 Feature 36 wall cist	Pithouse 1 Feature 19 posthole NE main support	Pithouse 1 Feature 20 posthole SE main support	Feature 70 posthole/ associated with Room 3	Feature 105 posthole/ associated with Room 3	Feature 109 posthole/ associated with Room 3
Compositae							
Artemisia sp.							
wood							
Cupressaceae							
Juniperus sp.							
seed							
bark							
wood						<1g/C	
Fagaceae							
Quercus gambelii							
wood							
Gramineae							
Zea mays							
fruit							<1g/C
cupule							
cob							
ear							
Phragmites sp.							
stem part		A					
Pinaceae							
Pinus sp.							
bark							
wood	7.8g/P		1.9g/C <1g/N	2g/C 1g/N	1.2g/C	1.5g/C	
Rosaceae							
Amelanchier sp.							
wood							
Salicaceae							
wood, nfs							
Populus sp.							
wood							
Salix sp.							
wood							
Gymnospermae							
bark							
wood, nfs						<1g/C	
Dicotyledoneae							
wood, nfs							

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Table 2.43. Vegetal Remains from the plaza, Tres Bobos Hamlet

Taxon Family Genus species Plant part	2X2 m^2 022,020 Stratum 1	2X2 m^2 022,022 Stratum 1	2X2 m^2 020,022 Stratum 1	Feature 2 hearth	Feature 3 posthole	Feature 4 pit feature w/ burning	Feature 5 pit feature w/ burning
Compositae *Artemisia* sp. wood				<1g/C		<1g/C	7.6g/C
Cupressaceae *Juniperus* sp. wood, nfs					5.5g/C	1.5g/C	
Fagaceae *Quercus gambelii* wood							
Gramineae *Zea mays* glume fruit cupule cob	4.5g/C	11/C 19.1g/C 29/C 6X/C	<1g/C				<1g/C
Pinaceae *Pinus* sp. wood, nfs *Pinus edulis* wood				<1g/C		4.6g/C	2.6g/C
Rosaceae wood, nfs							
Salicaceae *Populus* sp. wood, nfs							
Gymnospermae wood, nfs		<1g/C					
Dicotyledoneae wood, nfs							

NOTES: C - Charred.
N - Noncharred.
X - Fragments.

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Table 2.42. Vegetal Remains from the plaza, Tres Bobos Hamlet--Continued

Taxon Family Genus species Plant part	Feature 7 hearth	Feature 13 fireplace Stratum 2	Feature 13 fireplace Stratum 3	Feature 14 hearth	Feature 15 fireplace	Feature 24 pit feature w/ burning	Feature 27 fireplace Stratum 2
Compositae *Artemisia* sp. wood	<1g/C	1.5g/C	1g/C		<1g/C	<1g/C	1g/C
Cupressaceae *Juniperus* sp. wood, nfs							
Fagaceae *Quercus gambelii* wood	<1g/C						
Gramineae *Zea mays* glume fruit cupule cob							
Pinaceae *Pinus* sp. wood, nfs *Pinus edulis* wood	<1g/C			3.4g/C			<1g/C
Rosaceae wood, nfs							
Salicaceae *Populus* sp. wood, nfs							2g/C
Gymnospermae wood, nfs	<1g/C						
Dicotyledoneae wood, nfs		<1g/C					

Table 2.43. Vegetal Remains from the plaza, Tres Bobos Hamlet--Continued

Taxon Family Genus species Plant part	Feature 27 Stratum 3	Feature 41 posthole	Feature 42 posthole	Feature 44 pitfeature w/o burning	Feature 65 pit w/ burning	Feature 68 fireplace	Feature 82 posthole
Compositae Artemisia sp. wood	78.4g/C			<1g/C	<1g/C	<1g/C	
Cupressaceae Juniperus sp. wood, nfs	2g/C						1g/C
Fagaceae Quercus gambelii wood							
Gramineae Zea mays glume fruit cupule cob							
Pinaceae Pinus sp. wood, nfs Pinus edulis wood	25g/C	1.9g/C	2.6g/C		9g/C	9.7g/C	
Rosaceae wood, nfs							
Salicaceae Populus sp. wood, nfs	10.5g/C						
Gymnospermae wood, nfs		<1g/C	<1g/C		1.2g/C	<1g/C	<1g/C
Dicotyledoneae wood, nfs	<1g/C						

Table 2.43. Vegetal Remains from the plaza, Tres Bobos Hamlet--Continued

Taxon Family Genus species Plant part	Feature 83 pit w/ burning	Feature 84 pit w/o burning	Feature 86 pit w/o burning	Feature 87 pit w/o burning	Feature 96 posthole associated w/ Room 3	Feature 101 pit w/ burning
Compositae *Artemisia* sp. wood	1g/C	<1g/C	<1g/C			8.1g/C
Cupressaceae *Juniperus* sp. wood, nfs	<1g/C	1g/C	3.1g/C	<1g/C		
Fagaceae *Quercus gambelii* wood						
Gramineae *Zea mays* glume fruit cupule cob		1/C				
Pinaceae *Pinus* sp. wood, nfs *Pinus edulis* wood		<1g/C	<1g/C		<1g/C	
Rosaceae wood, nfs						<1g/C
Salicaceae *Populus* sp. wood, nfs						
Gymnospermae wood, nfs	<1g/C	<1g/C	<1g/C		<1g/C	<1g/C
Dicotyledoneae wood, nfs		<1g/C				

relate to the prehistoric occupation at Tres Bobos. The contents of this sample illustrates the potential for the contamination of prehistoric contexts.

Charred botanical remains recovered from features and structures supports an interpretation of the prehistoric exploitation of the particular genera. Charring often results from the human modification or manipulation of the plant resource. It should be noted that there are several ways in which ruderal plant remains could become accidently incorporated into cultural contexts in a charred condition (Bohrer 1980; Dennell 1976; Keepax 1977). Therefore, while a charred condition enhances the interpretation of cultural utilization, it is not absolute proof that this inference is correct.

The following taxa of wood were recovered from burned roof fall strata or in the fills of postholes, and are interpreted as construction materials: Artemisia sp., Juniperus sp., Pinus sp., Saliacaceae, and Gymnospermae. Also Phragmites sp. was identified from an adobe impression and is also interpreted as a construction material. In addition to these materials the charred remains of Quercus gambelii, Amelanchier sp., Salix sp., Rosaceae, and Dicotyledoneae were found in the fills or on the surfaces of rooms and may have also been used as construction materials.

Many of these same taxa were found in hearths, fireplaces, and burned pit features. In this case the wood is interpreted as having been used for fuel. These field resources include Artemisia sp., Juniperus sp., J. scopulorum, Populus sp., Pinus sp., P. edulis, Quercus gambelii, Rosaceae, and indeterminate genera within the classes of Gymnospermae and Dicotyledoneae.

Only two cultigens, Zea mays and Phaseolus sp., are represented at Tres Bobos. Since Curcurbita does not preserve well (Gasser and Adams 1981) its absence does not mean that it was not being propagated. Charred Zea mays was found in the pithouse fill, on the pithouse floor, and in the pithouse hearths. It was found in the fills of Rooms 1, 2, and 7, and on the floors of Rooms 1, 2, and 3. Finally, it was found in the fills of two burned pit features in the plaza and at the base of the plow zone in three 2- by 2-m squares. These squares were above Room 2, and the corn may have been stored in that room. The presence of cob fragments in hearth fills may reflect an accident of food preparation, or their use as fuel after the kernels had been removed. The presence of Zea mays in food preparation and storage contexts supports the interpretation that the inhabitants of Tres Bobos practiced horticulture.

The problem of interpreting ruderal plants was mentioned above. The prehistoric occupation and the historic utilization of Tres Bobos Hamlet would have encouraged the growth of these disturbance plants. Their proximity increases the chance of their being incorporated into prehistoric contexts by noncultural processes. The plants however are potentially economic resources. The charred remains of Amaranthus sp., Chenopodium sp., Helianthus sp., Oryzopsis sp., Mentzelia sp., Polygonum sp., Malvaceae, and Umbelliferae were found associated with storage rooms and pits interpreted as food processing features. All of these plants may have been utilized as food resources. A yucca leaf was also found in the pithouse hearth, and this plant was probably exploited as an economic resource and used in a variety of ways.

Finally, it should be noted that funding was sufficient to analyze only a small portion of the bulk soil samples that were collected. The

remaining samples have been processed and are being curated. The analysis of these samples would provide additional information on the range of plants exploited, and how they were utilized by the inhabitants of Tres Bobos Hamlet.

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