DOLORES ARCHAEOLOGICAL PROGRAM TECHNICAL REPORTS

Report Number: DAP-085

Excavations in Area 3, Grass Mesa Village (Site 5MT23), 1979 and 1980, a Pueblo I habitation

by

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Prepared for
Cultural Resources Mitigation Program: Dolores Project
Bureau of Reclamation, Upper Colorado Region
Contract No. 8-07-40-S0562

Under the supervision of
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Final Submission

15 March 1984

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PREFACE

The editing staff gratefully acknowledges the contributions of James Neal Morris to the final report production of Area 3, Grass Mesa Village. His insight and lengthy field experience at this complex village site have resulted in clarification of both descriptive and interpretive sections of this report. Mr. Morris has also made significant contributions to the illustration of Area 3 by refining extant maps and by producing the plan maps of Pithouse 3.

ACKNOWLEDGMENTS

The contributions made to the production of the Area 3 report are gratefully acknowledged. While serving as assistant crew chief during the summer of 1979, Maria Campbell directly supervised the excavation of Pithouse 5 and immensely aided the production of this report by compiling all of the Subarea 1 surface structure data into an interpretable format. Ken Decker compiled data and constructed many of the tables summarizing the 1980 excavation data from Pithouse 3. The staff and field school participants of the Washington State University crew on Grass Mesa and members of the Dolores Archaeological Program staff are acknowledged for their assistance during fieldwork and the extended writing period. Appreciation is specifically extended to William Lipe, Timothy Kohler, Christine Robinson, Jane Ward, Eric Blinman, and Tim Gross, who have helped smooth the arduous task of writing this report.

ABSTRACT

Excavations conducted in Area 3 of Grass Mesa Village (Site 5MT23) included a probability sample and intensive excavations of roomblock and pithouse subareas. Excavated roomblock and pithouses span the Periman and Grass Mesa Subphases of the McPhee Phase. Historic looting and rodent disturbance had damaged much of the roomblock subarea, preventing detailed description and interpretation. However, at least two major construction episodes are represented by small, probably jacal, rooms overlain by later rooms with masonry-footed walls. Neither of these construction episodes can be dated. Other building episodes may have occurred through this time period, but disturbance has been too great to define specific rooms or stratigraphic relationships.

Portions of four pithouses were excavated, three in the center and one at the southern edge of the area. Pithouse 3 is a large subrectangular structure that was extensively remodeled. A tree-ring date of A.D. 856r from a burned timber in the ventilator may mark the construction date of Pithouse 3. Ceramic types associated with the latest floor in Pithouse 3 suggest abandonment after A.D. 875. Two smaller rectangular pithouses (Pithouses 1 and 5) were dug partially into the fill of Pithouse 3. They appear to have been occupied simultaneously and may have been functionally complementary; both were abandoned before A.D. 910. Pithouse 8, located at the southern edge of the area, was partially excavated and associated ceramics indicate that it was abandoned sometime between A.D. 860 and 910.

INTRODUCTION

Area 3 at Grass Mesa Village (Site 5MT23) encompasses roughly 1512 m^2 along the northeastern edge of the 2.25-ha site (figs. 1 and 2). Boundaries between Area 3 and adjacent areas were defined on the basis of topography, surface rubble, and artifact distributions; the boundaries were intended to approximate those of underlying archaeological units. Area 3 surface indications suggested a typical Pueblo I space utilization: a single or double row of surface rooms along the northern periphery of the area, a series of shallow depressions denoting pithouses to the south of the rooms, and a trash area south of these depressions. Administrative subdivisions of Area 3 were defined according to these idealized divisions, with Subareas 1, 2, and 3 encompassing the roomblock, pitstructure, and midden areas, respectively (fig. 3). The northern half of Area 3 (Subareas 1 and 2) slopes gently to the southwest, and the slope steepens sharply immediately south of the pithouse depressions. Area 3 is bounded on the north by the drop-off of the nearly vertical escarpment of Grass Mesa; the view north from Subarea 1 overlooks Beaver Creek.

Excavations in Area 3 were carried out by the DAP (Dolores Archaeological Program) during the 1979 and 1980 summer field seasons. The majority of the work in 1979 was completed between 11 June and 28 September, and 4150 person-hours, or 518.75 person-days, were expended. The limited excavations in 1980 amounted to a total of 824 person-hours, or 103 person-days. The work in Area 3 was completed under the supervision of Cory Breternitz, crew chief, and Maria Campbell, assistant crew chief. The crew consisted of WSU (Washington State University) personnel who were assisted for part of each season by WSU field school

Figure 1. View of Area 3, Grass Mesa Village (DAP 10019).

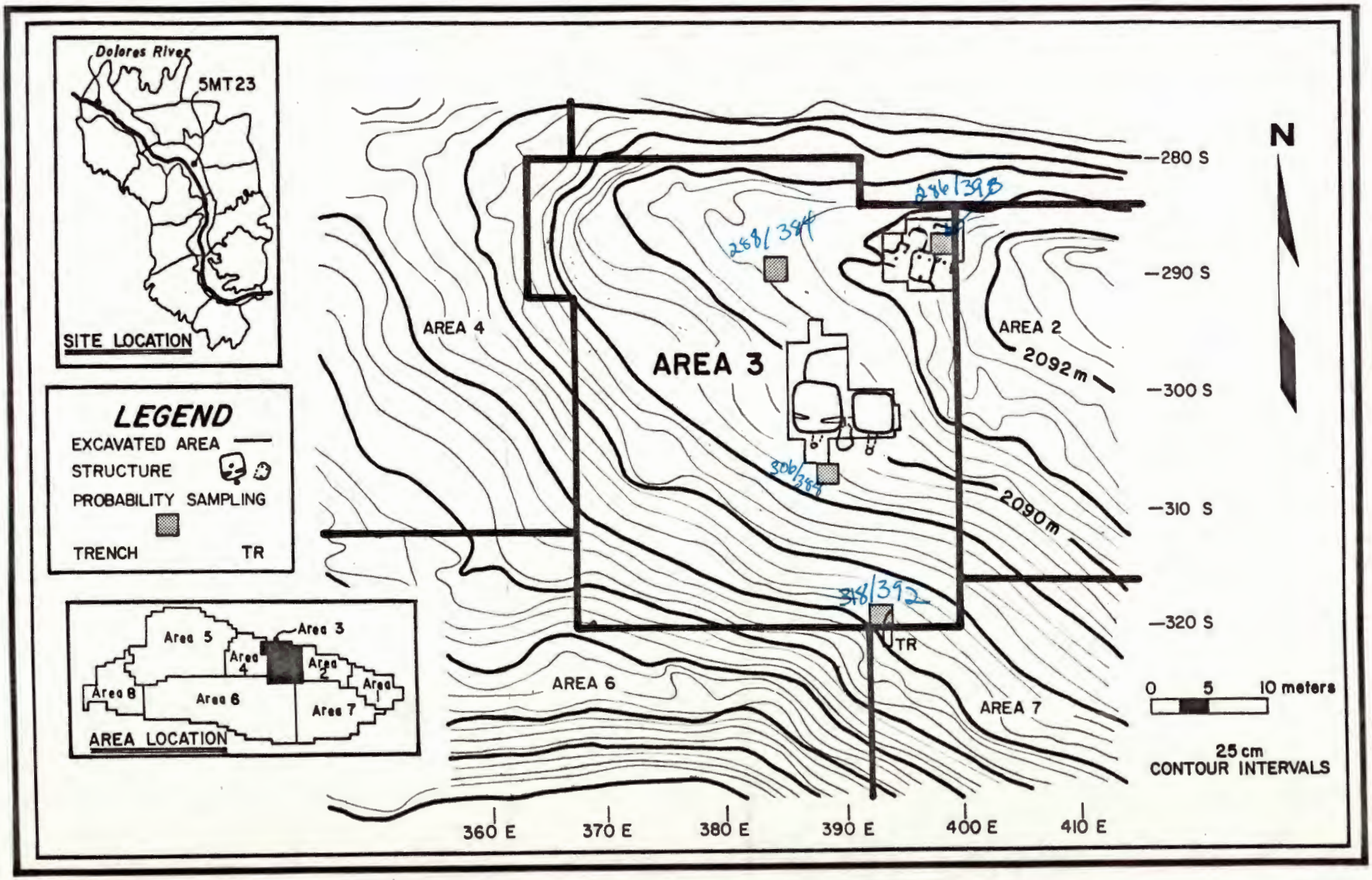

Figure 2. Topographic map and excavated areas in Area 3, Grass Mesa Village.

students and in 1979 by a local Youth Conservation Corps labor force. The following crew members worked at Area 3: Rick Ahlstrom, Ted Bara, Mike Bartholomew, Bill Batterman, Gail Bash, Gary Beck, Nathan Bender, Eric Blinman, Jennifer Jones-Brooks, Meloney Brunner, Wanda Carver, Larry Childs, Curtis Cowan, Harley Crain, Richard Darsie, Karen Dohm, Alice Emerson, Melissa Hagstrum, Joy Harper, Claudia Hemphill, Tom Hoague, Ed Huber, Jamie Jones, Shelly Miller, Jeff Murray, Sean Olsen, Dean Pederson, Dave Ptolmey, Lynn Sebastian, Howard Wallace, and Luann Wandsnider.

Archaeological investigations in Area 3 consisted of a systematic surface collection, excavation of a probability sample, and judgmental excavations of selected structures and surfaces. Horizontal provenience control was maintained using a grid system that was established for the entire Grass Mesa site, with the zero-zero point located to the north and west of the site proper. The highest elevation at the site (in Area 1) was assigned an arbitrary elevation of 100 m and was the reference for vertical provenience control. The systematic 50-percent surface collection of artifacts from the area was conducted using 4- by 4-m grid squares as checkerboard sampling units. All ceramic, flaked and nonflaked lithic, and bone items were collected from these units; building materials, both stone and jacal, were classified, counted, and weighed. Upon completion of the surface collection, a random 1-percent sample of four 2-m grid units in Area 3 was chosen for probability sample excavation. Expansions around the probability units and additional judgmental excavations were carried out in Subareas 1 and 2.

Investigations in Area 3 revealed the presence of four pithouses in Subareas 2 and 3; two of these (Pithouses 1 and 5) were completely excavated, and two others (Pithouses 3 and 8) were partially excavated

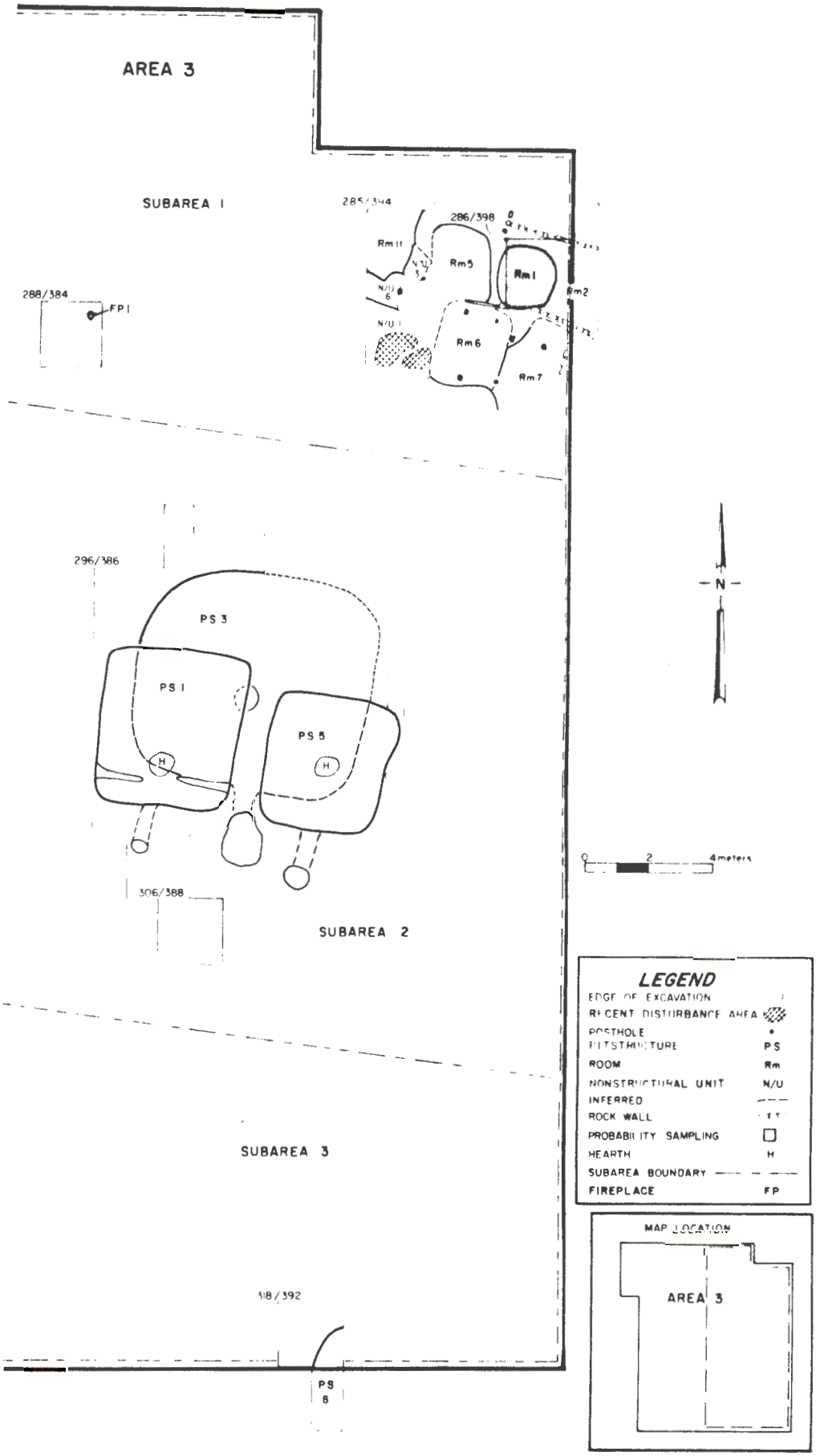

Figure 3. Sampling plan and study unit locations, Area 3, Grass Mesa Village.

(structures and features are numbered on a site-wide basis). In Subarea 1, portions of six rooms and three nonstructures (unbounded cultural surfaces) were exposed (fig. 3). The results of tree-ring, archaeomagnetic, and ceramic dating indicate that these structures represent occupations that began in the first decades of the 9th century and that were terminated as late as the first decades of the 10th century. These occupations belong to the Periman and Grass Mesa Subphases of the McPhee Phase (Kane 1981).

This report summarizes the two seasons of excavation in Area 3. Detailed architectural descriptions of all structural and nonstructural units are provided along with descriptions of the sediments and stratigraphy encountered during excavation. Also included is a summary of the procedures employed for each excavation unit. Finally, excavations in Area 3 are summarized and data from this area is compared to that from other areas at Grass Mesa Village and to known contemporary villages and hamlets in the DAP study area. The majority of the artifact data is contained in appendixes at the end of the report. Environmental descriptions of Grass Mesa Village and a discussion of the surface artifact collection at this site are presented in Kohler (1983a, 1983b).

PROBABILITY SQUARES

As part of the 1-percent stratified cluster sample strategy employed at Grass Mesa Village, four 2- by 2-m units were randomly chosen for excavation in Area 3. Two probability squares, 286S/398E and 288S/384E, fell in Subarea 1; Subareas 2 and 3 are represented by one probability square each, 306S/388E and 318S/392E, respectively (fig. 3). When a probability square fell in an area not sampled by the 50-percent surface collection, the square was subjected to an intensive surface artifact collection prior to excavation. Excavation of the probability squares was begun in arbitrary 20-cm levels using, in most cases, the existing ground surface at the northwest corner of the grid square as a temporary datum. Due to the slope of the mesa, the first level of each square did not always cover the entire 2- by 2-m unit. Where natural strata could be defined, they were followed; in cases where strata were thicker than 20 cm, they were subdivided into arbitrary 20-cm levels. Fill removed from the probability squares was screened through one-quarter-inch wire mesh, and all units were excavated until the culturally sterile substrate of the mesa was present across the entire area of the grid square. The presence of culturally sterile deposits was verified by using a soil auger to test beneath the lowest limit of excavation. Excavation was extended beyond the boundaries of the 286S/398E and 318S/392E probability squares when it became obvious that structures had been encountered. Square 288S/384E was not expanded at all, but 306S/388E was eventually connected to the excavations of Pithouses 1, 3, and 5. A more detailed discussion of the probablity sampling strategy at Grass Mesa Village and of the results of the probability sample is in preparation for the DAP.

Probability Square 286S/398E (Subarea 1)

This probability square was located in an area of suspected surface rooms near the edge of the mesa (fig. 3). Prior to excavation, an arbitrary vertical datum was established using the southeast grid stake (288S/400E), which was chosen in place of the northwest grid stake because of its higher elevation. The modern ground surface in Subarea 1 is highly irregular due to extensive looting in the area.

Levels 1 and 2 consisted of brown sandy silt with inclusions of charcoal and cultural material and a scattering of sandstone blocks and cobbles. Level 3 included mixed trash and carbonate-bearing soil. At the base of Level 3, culturally sterile sediment was encountered in the four corners and along the north and east edges of the probability square. During the removal of this level, the earth walls of Room 1 were discovered. Several natural strata were delineated in the profiles of the probabilty square and were described as Strata 1, 2, and 3, roughly corresponding to Levels 1, 2, and 3. (Refer to the discussion of Subarea 1 architecture for a description of the strata in Room 1.) Room 2 was also present in this probability square, a fact that was not discovered until after the excavation of Room 1.

Probability Square 288S/384E (Subarea 1)

Probability square 288S/384E was located west of the surface rooms (fig. 3). Excavation followed the natural stratigraphy, which was subdivided, where appropriate, into arbitrary levels (each 20 cm thick to the extent permitted by the configuration of the stratum boundaries). An arbitrary datum was designated at the top of the grid stake in the

northwest corner instead of at the present ground surface. Stratum 1 was excavated in three numbered levels: Level 1 consisted of highly disturbed, loose topsoil that appeared to be looters' spoil dirt; and Levels 2 and 3 contained scattered shaped building blocks (including metate and mano fragments), cobbles, and lumps of jacal that may have been wall fall from adjacent but unexcavated surface structures. Level 3 of Stratum 1 terminated approximately 60 cm below the datum at an irregular contact with a mottled brown and gray surface.

A slab-lined fireplace (Feature 1) was encountered at this contact zone in the northeast quadrant of the probability square (fig. 3). This feature measured 30 by 36 by 14 cm and had been dug into a mottled cultural deposit composed of charcoal and jacal in a dark brown matrix. The feature was constructed of several long, narrow sandstone slabs and river cobbles set upright, side by side, to form a conical pit nearly twice as wide at the top as at the base. Some loose sandstone slabs, probably wall fall, were recovered from the fill of the feature.

Sterile fill was encountered 3 to 5 cm below the top of Stratum 2, Level 1, in the western half of the excavation unit. A darker, mottled brown fill with trash, jacal, and charcoal inclusions continued down the eastern half. Feature 1 was pedestaled by excavation and then removed when it was determined that cultural fill continued beneath it. Excavation of Stratum 2 continued in the eastern half of the square in three arbitrary 20-cm levels. Below this, Stratum 3 consisted of a mixed deposit of trash with a high artifact density in a light brown, sandy matrix. The cultural deposits of Stratum 3 continue to the north, south, and east of the excavation unit, but time limitations did not allow any further expansion in these directions. Stratum 4 was encountered 150 cm

below datum in the eastern portion of the probability square. This stratum was a culturally sterile substrate with a high percentage of carbonate and evidence of rodent activity.

An irregular face of earth connected the sterile sediments in the two halves of the square, defining the edge of an aboriginal pit. No structural remains could be defined, and this feature may have functioned as a borrow pit.

Probability Square 306S/388E (Subarea 2)

Probability square 306S/388E is located near the boundary between Subareas 2 and 3 (fig. 3) and was the first unit to be excavated at the site. This square was excavated in four arbitrary 20-cm levels to a depth of 80 cm below the ground surface at the northwest grid corner. Due to the natural slope of the terrain, Level 1 included only the north half of the square. Levels 2 through 4 covered the entire grid unit.

Five natural strata were defined in the profiles of the north and west trench walls. Stratum 1 was the surface duff, with large quantities of organic debris and rootlets. Strata 2 and 3 were dense trash deposits containing dark, ashy fill with high densities of nonhuman bone, ceramics, and lithic debitage. Stratum 4 was a reddish-orange deposit that included pockets of mottled trash and disturbances made by small animals. Stratum 5 was defined as the culturally sterile substrate of the mesa.

Probability Square 318S/392E (Subarea 3)

This study unit is on the steep, southwest-facing slope at the southern boundary of Area 3. The stratigraphy in the north half of the square differed noticeably from that in the south. In the north half, only two

strata were evident: a dark gray-brown loam with charcoal inclusions and an underlying dark yellowish-brown culturally sterile substrate. In the south half of the study unit, the substrate was overlain by a succession of dark brown and dark gray-brown loams with charcoal and other cultural inclusions. The boundary between the dark loam and the substrate dropped off abruptly at the south edge of the unit.

Levels 1, 2, and 3 were removed as arbitrary 20-cm levels. Artifact density was low, and small concentrations of charcoal and jacal (attributed to slope wash) were present. Small sandstone fragments were dispersed throughout the levels, but a sharp dividing line was noticed within the south half of the excavation unit. At the base of Level 3 the contrast between relatively sterile soil on the north half of the square and the dark loam with cultural material along the southern periphery of the unit prompted the removal of Level 4 in the south half of the square only.

A 1-m-wide trench was extended 2 m southward from the southeastern corner of the probability square to facilitate the removal of the remaining cultural material in the southeast quadrant of the square. It was evident that this part of the probability square and the trench had intercepted a pithouse. The natural strata in the trench were removed and defined as follows:

1. Stratum 1 was the upper, loose, organic topsoil.
2. Stratum 2, subdivided into two arbitrary 20-cm levels, consisted of a postoccupational deposit of highly organic material with low artifact density.
3. Stratum 3, subdivided into three arbitrary 20-cm levels, consisted of a thick, laminated deposit of alternating organic lenses and well-sorted alluvial sands. This stratum is typical of the postoccupational fill present in other pithouses at the site.

4. Stratum 4, was defined as a cultural deposit of roof fall containing a high density of burned jacal, charcoal, and large quantities of burned wood; the roof fall layer was underlain by a trash layer in the northwest corner of the structure.

At this point, excavation in the trench was discontinued and the encountered structure was designated Pithouse 8.

After the trench was completely excavated, the remaining cultural material in the probability square was removed. The northwest wall of Pithouse 8 proved to pass through the southeast corner of the probability square. Within the pithouse, the probability square fill between the north wall of the structure and the trench was removed in a continuation of the 20-cm levels initiated for the probability square. Levels 5 through 10 were removed rapidly to the level of the roof fall. Further discussion of Pithouse 8 can be found in the architectural descriptions for Subarea 3.

Artifact Analysis

Ceramic data for each of the probability squares are presented in table 1. Although the volume of fill removed from each of the probability squares is nearly equal, the number of ceramics from each square increases from Subarea 1 to Subarea 3. These differences in artifact density may be explained by both cultural and natural processes: the Anasazi tended to deposit trash to the south of structures, and the inclination of the ground surface encouraged downslope movement of artifacts.

The total number of ceramics recovered from the probability squares increases from north to south in Area 3, though relative percentages of various wares and vessel forms represented are similar. The vast majority

Table 1. Selected ceramic data, probability squares, Area 3, Grass Mesa Village

Culture category: Ware / Type	Subarea 1				Subarea 2		Subarea 3	
	286S/398E		288S/384E		306S/388E		318S/392E	
	N	%	N	%	N	%	N	%
Mesa Verde:								
Gray Ware								
Chapin Gray	27	6.8	13	1.7	55	5.2	58	3.8
Moccasin Gray	35	8.8	74	10.0	30	2.8	99	6.5
Mancos Gray	9	2.3	15	2.0	1	0.1	26	1.7
Early Pueblo Gray	292	73.4	571	76.9	876	82.2	1,202	79.4
White Ware								
Chapin Black-on-white					2	0.2	2	0.1
Piedra Black-on-white			1	0.1	1	0.1		
Cortez Black-on-white					1	0.1	1	0.1
Early Pueblo White	14	3.5	36	4.8	24	2.3	55	3.6
Late Pueblo White					1	0.1	2	0.1
Red Ware								
Abajo Red-on-orange			1	0.1	11	1.0	3	0.2
Bluff Black-on-red					4	0.4		
Early Pueblo Red	21	5.3	30	4.0	54	5.1	64	4.2
Cibola			2	0.3			1	0.1
Indeterminate affiliation					6	0.6		
Total ceramics	398	100.0	743	100.0	1,066	100.0	1,513	100.0
Vessel form:								
Bowl	25	6.3	45	6.1	93	8.7	92	6.1
Jar	370	93.0	698	93.9	972	91.2	1,419	93.8
Other	3	0.8			1	0.1	2	0.1

of sherds are from gray wares and are classified as Chapin Gray, Moccasin Gray, Mancos Gray, and Early Pueblo Gray (body sherds that cannot be assigned to a specific type). White ware accounts for less than 5 percent of the total ceramic assemblage in all of the grid units. There are very few identifiable white wares, but of those that are identified (Chapin Black-on-white, Piedra Black-on-white, and Cortez Black-on-white), most occurred in rich trash deposits in the two southernmost probability squares. Red ware frequencies vary between 4.1 and 6.5 percent, with the

greatest frequency cooccurring with the predominance of Chapin Gray over Moccasin Gray in Subarea 2. The presence of three Cibola Culture Category sherds is of interest, but is not interpretable in this context. The ratio of jar sherds to bowl sherds is very consistent at nearly 15 to 1 for all but square 306S/388E (10 to 1) but does not accurately reflect the ratio of vessels since jars are generally larger than bowls and can be expected to produce more sherds per vessel.

Although frequencies of wares are generally similar, the relative frequencies of the different gray ware types are dissimilar and suggest temporal differences between the deposition of materials in the squares. Although Moccasin Gray was introduced into the project area by A.D. 770, it remained rare relative to Chapin Gray until sometime after A.D. 825. By A.D. 840, Moccasin Gray was several times more common than Chapin Gray. Mancos Gray became consistently present in ceramic assemblages after A.D. 860 but remained less common than Moccasin Gray until the introduction of corrugated ceramics in the early 10th century (Blinman 1982). Gray ware type frequencies from squares 288S/384E and 318S/392E suggest deposition between A.D. 840 and 910, with most deposition after A.D. 860. Square 286S/398E contained a higher proportion of Chapin Gray than is consistent with the presence of Mancos Gray, suggesting some deposition prior to A.D. 825. This evidence of earlier deposition is even stronger in the ceramic assemblage from square 306S/388E, with the majority of the materials dating to the A.D. 775 to 840 time period. Red war sherd frequencies tend to support this inference, as they are slightly more common in sites dating within two decades of A.D. 800 than either earlier or later sites. White ware sherd frequencies tend to be highly variable and are a weak base for dating arguments in the A.D. 725 to 910 time period.

The distribution of lithic artifacts in the probability squares is varied (table 2). The types of artifacts represented are similar, though the numbers and proportions vary a great deal. As expected, the two probability squares with the most dense trash deposits (306S/388E and 318S/392E) had the greatest number of flaked lithic items. The nonflaked lithic tool distribution is the reverse of the flaked lithic tool distribution; most of the nonflaked lithic tools occur in probability square 286S/398E (Room 1). This is largely due to the number of nonflaked lithic tools that were incorporated into the masonry foundations of the surface structures. The reversal in dominance of the flaked lithic and nonflaked lithic tools from Subarea 1 to Subareas 2 and 3 may be attributed to size: nonflaked lithic artifacts are generally larger and therefore are more resistant to sheet wash and downslope movement than are flaked lithic tools and flaked lithic debitage.

Table 2. Selected lithic data, probability squares, Area 3, Grass Mesa Village

	Probability squares							
	286S/398E		288S/384E		306S/388E		318S/392E	
	N	%	N	%	N	%	N	%
Flaked lithic tools								
Total tools:	21	100.0	19	100.0	145	100.0	54	100.0
Tool morpho-use								
Indeterminate					1	0.7		
Utilized flake	8	38.1	10	52.6	88	60.7	35	64.8
Core	2	9.5	1	5.3	24	16.6	4	7.4
Used core, cobble tool					1	0.7		
Thick scraper	1	4.8			7	4.8	1	1.9
Thin scraper	6	28.6	4	21.1	18	12.4	8	14.8
Biface	1	4.8	1	5.3	1	0.7	2	3.7
Projectile point	3	14.3	2	10.5	3	2.1	4	7.4
Specialized form			1	5.3	2	0.7		
Flaked lithic debitage								
Flakes/flake fragments	314	100.0	402	100.0	2,154	100.0	2,164	100.0
Nonflaked lithic tools								
Total tools:	17	100.0	8	100.0	12	100.0	4	100.0
Tool morpho-use								
Indeterminate	3	17.6	1	12.5	3	25.0		
Miscellaneous	3	17.6	1	12.5	2	16.7		
Hammerstone	2	11.8					1	25.0
Mano	9	52.9	5	62.5	6	50.0	2	50.0
Metate fragment, nfs			1	12.5				
Slab metate					1	8.3	1	25.0

DEPOSITIONAL SETTING

The geomorphic and physiographic setting of Grass Mesa Village and the Grass Mesa Locality have been described by Kohler (1983a) and Hogan (1981). This section will provide a brief depositional history and description of the sediments in Area 3. The depositional sequence in the major study units in Subareas 2 and 3 is discussed, and the individual strata defined during excavation are described. Strata were numbered sequentially as they were encountered and were traced between study units where possible. Unconsolidated sediments accumulated in and over the four pithouse depressions and provided the most extensive profiles in the area. Deposition in these structures represents a variety of both cultural and natural formation processes.

The depositional sequence in Subarea 1 cannot be generalized and is discussed under each major study unit in the section of architectural descriptions. Artifact distribution is discussed in detail in later sections of the report but is mentioned briefly here when appropriate to the composition of the individual strata.

Subarea 1

Descriptions of the natural strata encountered in Subarea 1 are discussed by structure study units rather than by profiles of specific exposures. The reasons for this are twofold. First, three different crews worked in Subarea 1 at the start of the 1979 field season, which compounded the problem of obtaining consistency in definition and description of the stratigraphy and in overall excavation and note-taking strategies. The second reason is based on the disturbed nature of the

deposits themselves. The rooms and nonstructures in Area 3 are quite shallow, lying, for the most part, within 35 to 50 cm of the present ground surface. The present surface is uneven, bearing evidence of numerous looters' pits and much rodent activity. In some cases, these disturbances cut into the surfaces of the structures. Rodent burrows and looters' pits riddled the fill above Rooms 5, 6, 7, and 11 and above Nonstructure 1. In some cases, e.g., the southern part of the surface of Nonstructure 1 (fig. 3), the aboriginal surface was almost destroyed.

Subarea 2

The stratigraphy and depositional sequence in Subarea 2 is represented by two profiles through the complex of Pithouses 1, 3, and 5 (fig. 4). Profile A (fig. 5) depicts the east wall of the initial trench through the subarea and includes both Pithouses 1 and 3. Profile B (fig. 6) is a composite of several excavation profiles and includes portions of the stratigraphy of all three pithouses. Strata are discussed in a number sequence that roughly corresponds to a reverse order of the deposition of fills in Pithouses 3, 1, and 5, respectively.

Stratum 1 (Pithouses 1, 3, and 5)

This stratum (figs. 5 and 6) comprises the modern ground surface across the entire site area and represents a modern Ah soil horizon. It is a loose, fine, sandy soil with a weak, platy structure. The stratum, which was dark brown (7.5YR 3/2 dry) and 5 to 10 cm thick, is defined by a layer of abundant roots, the result of the dense cover of sagebrush and various grasses. Inclusions consisted mainly of rootlets, fragments of sandstone and river cobble building stone, and a mixture of artifacts resulting from slope wash, rodent disturbance, and looters' activity.

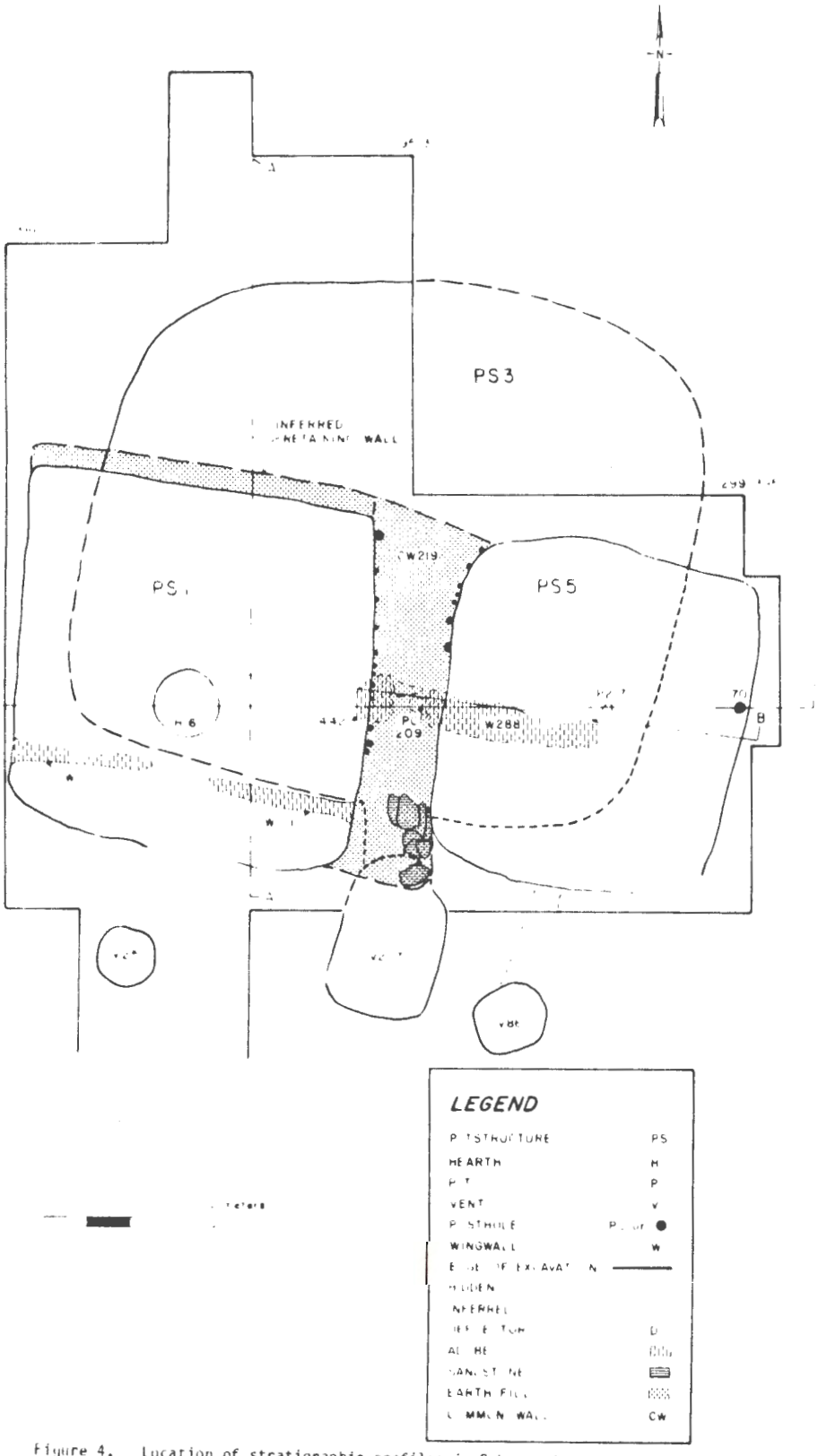

Figure 4. Location of stratigraphic profiles in Subarea 2, Grass Mesa Village. Stratigraphic profiles are shown in figures 5 and 6.

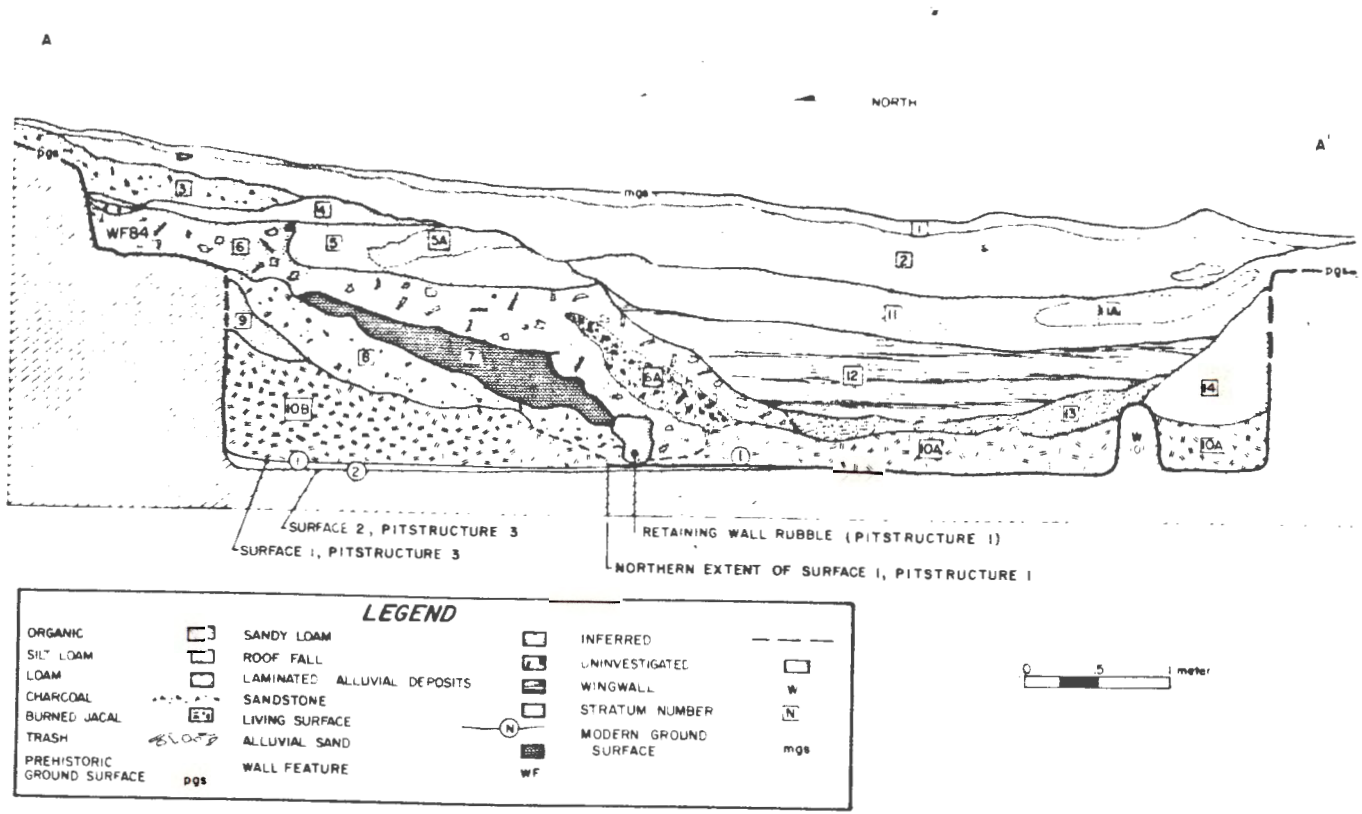

Figure 5. Stratigraphic profile A through Pithouses 1 and 3, Grass Mesa Village. Location of profile is shown in figure 4. The profile was mapped prior to the excavation of the structures.

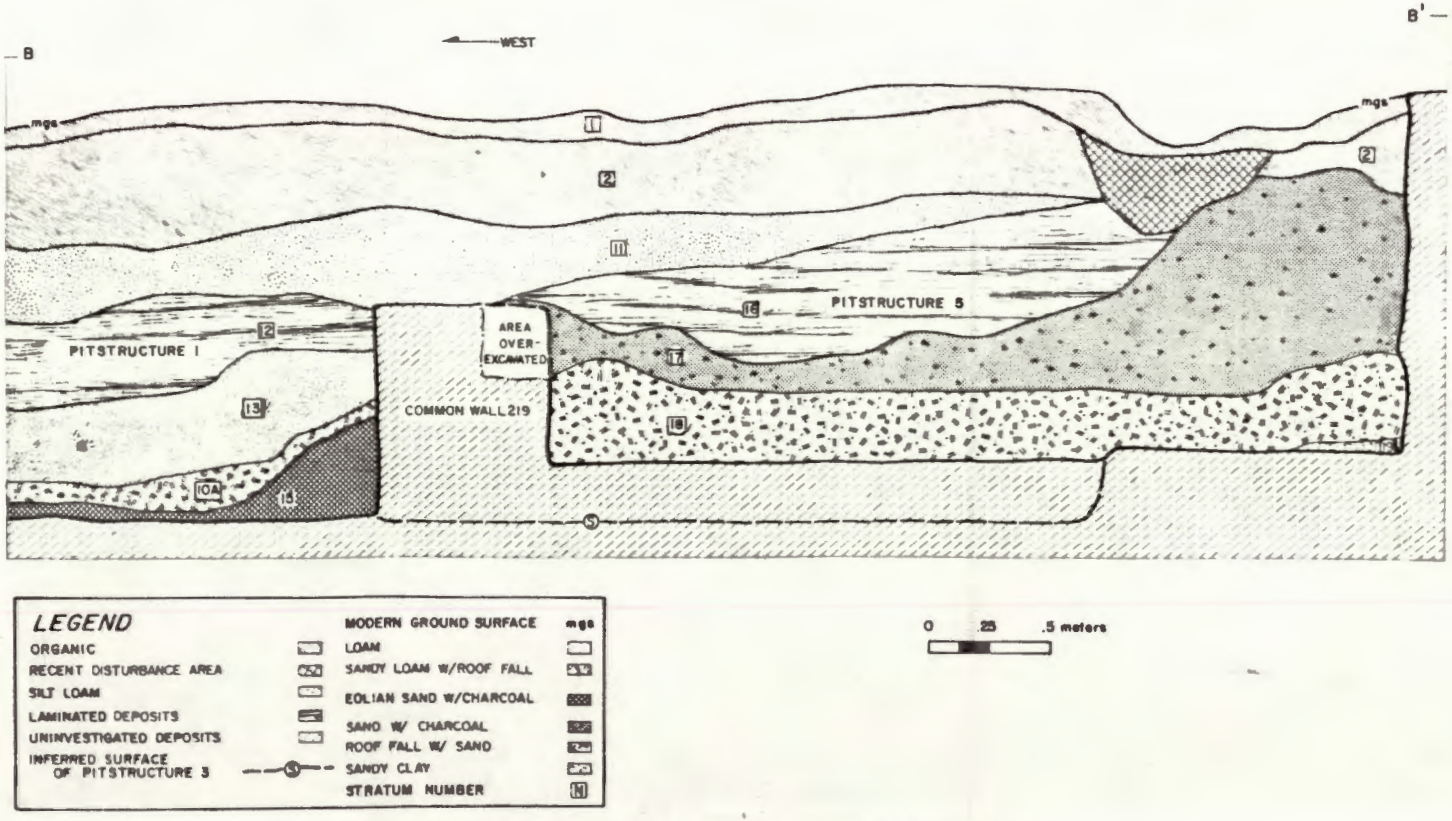

Figure 6. Stratigraphic profile B through Pithouses 1, 3, and 5, Grass Mesa Village. Location of profile is shown in figure 4. The profile was mapped prior to the excavation of the structures.

Stratum 2 (Pithouses 1, 3, and 5)

Stratum 2 is much the same as Stratum 1 in both texture and color (figs. 5 and 6). It is distinguished from Stratum 1 by a more massive structure and by the absence of a heavy root mat. The stratum is more compact than Stratum 1 and has a weak, coarse, granular structure. Stratum 2 also shows a greater degree of weathering than Stratum 1. Stratum 2 varies between 0 and 100 cm in thickness, with the thickest accumulations occurring in the pithouse depressions. The dark reddish-brown color (5YR 3/2 dry) is indicative of a high organic content, but the organic components are more decomposed than in Stratum 1 and contain far fewer roots and rootlets. Inclusions are generally rare and artifact density is low, though an occasional building stone fragment is present.

Stratum 3 (Pithouse 3)

This stratum is a short, narrow, wedge-shaped deposit between Strata 2 and 4 above the north wall of Pithouse 3 (fig. 5). At its northernmost exposure it directly underlies Stratum 1. Stratum 3 is a dark brown (7.5YR 4/2 dry) silt loam with a weak, coarse, granular structure ranging from 5 to 25 cm thick. Rootlets, charcoal flecks, and some artifacts are present.

A scatter of rocks and artifacts sloping into Pithouse 3 above the north wall may be related to the deposition of Stratum 3. This south-sloping, double row of concentric stones (designated Feature 48) partially rested on an erosional surface and partially rested on Stratum 6. The artifacts noted in association with this feature consists of one notched axe, one abrading stone, two two-hand manos, and a shaped stone slab. Feature 48 probably represents trash washing into Pithouse 3 after the abandonment of Pithouses 1 and 5.

Stratum 4 (Pithouse 3)

Stratum 4 directly underlies Stratum 3 and has a similar morphology (fig. 5). Present only above the north wall of Pithouse 3, Stratum 4 is thinner than Stratum 3 and extends further out into the fill of the pithouse. Stratum 4 is a brown loam (7.5YR 5/3 dry) with moderate, coarse, subangular blocky structure and is approximately 15 cm thick. Stratum 4 contained very few inclusions and appears to reflect rapid deposition over Strata 5 and 6.

Stratum 5 (Pithouse 3)

Stratum 5 (fig. 5) is interpreted as the secondary or tertiary deposition of sterile material with an included trash lens (Stratum 5A). The stratum is approximately 30 cm thick and consists of a silt loam with a weak, coarse, granular structure. This stratum was probably deposited rapidly. Its distinct upper boundary indicates quick burial by Stratum 4, and the sharp contact with Stratum 6 along its northern boundary suggests that Stratum 5 represents the rapid filling of an aboriginal excavation into the fill of Pithouse 3. No artifacts were recovered from Stratum 5, and its reddish-brown color (5YR 5/4 dry) is similar to the sterile substrate on the mesa. Stratum 5A is an artifact-rich, reddish-brown (5YR 4/3 dry) trash lens that is completely surrounded by, and was deposited in conjunction with, Stratum 5.

Stratum 6 (Pithouses 1 and 3)

As with Stratum 5, Stratum 6 has been subdivided into two distinct, yet inseparable, depositional units (fig. 5). Stratum 6 appears to have been a much more extensive deposit than is represented here. It represents a depositional event closely following the burning and collapse of the roof of Pithouse 1. Covering the north wall remnant of Pithouse 1,

Stratum 6 is resting directly on roof fall from this structure. It is possible that Stratum 6 is part of Pithouse 3 fill, but that it slumped into Pithouse 1 when the latter was filling. Alternatively, the southern boundary of this stratum may represent a portion of an upper wattle and daub retaining wall that once formed part of the north wall of Pithouse 1.

Stratum 6 overlies the north wall of Pithouse 3 and the primary, undisturbed deposits of this structure. To the south, Stratum 6 dips down into the depression of Pithouse 1 and merges with Stratum 13 (see Stratum 13 discussion). The stratum, as exposed in the profile, is partially cut at its midpoint by Stratum 5. Stratum 6 is a silt loam with a weak, coarse, granular structure; this deposit contains abundant cultural material and charcoal. Two PL's (point locations) were recovered from this stratum, fragments of a Chapin Gray jar (PL 1) and of a Moccasin Gray jar (PL 2). The deposit has a mottled appearance due to numerous inclusions, and it varies in color (5YR 5/3 to 7.5YR 5/4 dry). Stratum 6A, a brown (7.5YR 5/4 dry) deposit of burned wood and intensely burned jacal within Stratum 6.

Stratum 7 (Pithouse 3)

Stratum 7 (fig. 5) represents secondary deposition following the burning and collapse of Pithouse 3. The deposition of this stratum preceded the construction of Pithouse 1. Stratum 7 is an irregular deposit ranging from 10 to 40 cm in thickness and is composed primarily of sand with a weak, coarse, granular structure. The stratum contains some charcoal and other cultural material but does not appear to represent primary or secondary trash disposal. It is very similar in color (7.5YR 5/4 dry) to Stratum 6; the primary feature distinguishing Stratum 7 from Stratum 6 was the sandy texture of the earlier deposit.

Stratum 8 (Pithouse 3)

This stratum is a dark reddish-gray (5YR 4/2 dry) uniform deposit that rests for the most part on roof fall (fig. 5). It angles down approximately 30° from the top of the north wall of Pithouse 3 to the north wall of Pithouse 1 and terminates abruptly 5 to 10 cm above Surface 1 of Pithouse 3. Stratum 8 is a massive sandy loam without apparent structure and has a maximum thickness of 45 cm. It represents a primary or secondary trash deposit containing a high density of organic and artifactual material in the form of charcoal, burned logs, sherds, lithics and numerous nonhuman bones.

Stratum 9 (Pithouse 3)

Stratum 9 is a small, wedge-shaped stratum sandwiched between Strata 8 and 10 (fig. 5). It is a brown (7.5YR 5/4 dry), culturally sterile deposit representing a single depositional event of either slope wash or a section of roof falling in on top of the primary roof fall of Pithouse 3. The stratum is a massive silt loam with no apparent structure and no inclusions.

Stratum 10 (Pithouses 1 and 3)

Stratum 10, roof fall, initially appeared to be a continuous layer along the base of profile A (fig. 5). When the stratigraphic relationships of Pithouses 1 and 3 were discovered, what had originally been designated Stratum 10 was divided into two roof fall strata--one associated with Pithouse 1 (Stratum 10A; figs. 5 and 6) and the other with Pithouse 3 (Stratum 10B; fig. 5). These strata are uneven in thickness, with the thinnest area occurring near the north wall of Pithouse 1. Stratum 10 was burned and consists of sandy loam in a massive deposit with no apparent structure. Charred roof beams, large quantities of burned jacal,

and numerous artifacts are included in Stratum 10. In Pithouses 1 and 3 this stratum is resting directly on the floor surface.

A single, small (35 by 25 by 14 cm), slab-lined pit (Feature 206) was present approximately 40 cm north of the ventilator tunnel opening and is located in the roof fall stratum of Pithouse 3. Three small slabs formed walls on the three of the sides and a single slab formed the base of the feature. The slabs were resting in fill and showed no signs of having been plastered or held together with any adobe. The feature appeared to be floating within the roof fall stratum, approximately 3 to 5 cm above Surface 1, and may have been a fortuitous arrangement of rocks that originally rested on the roof.

Stratum 11 (Pithouse 1 and 5)

Stratum 11 (figs. 5 and 6) contained a substratum (11A) (fig. 5) within the main deposit. Stratum 11A is approximately 20 cm thick and is distinguished primarily by its higher charcoal content and by the presence of a higher density of cultural inclusions. The sharp boundaries of the substratum and the nature of its outline suggest that it was associated with the main depositional event of Stratum 11. Stratum 11 is a silt loam with a weak, coarse, granular structure and includes a few roots and some charcoal. The color of the deposit is dark brown (7.5YR 4/2 dry) to brown (7.5YR 5/4 dry). Stratum 11 represents a stage of postoccupational filling following the deposition of Stratum 12 in Pithouse 1 and preceding the deposition of Stratum 2 in both pithouses. No internal laminations could be detected in the 40-cm-thick deposit.

Stratum 12 (Pithouse 1)

Stratum 12, the thick, postoccupational fill of the Pithouse 1 depression, is a deposit that accumulated after the burning and collapse

of the roof (figs. 5 and 6). Overlying Stratum 13 (a probable roof fall layer), Stratum 12 represents alternating alluvial and eolian deposition of sediment in the newly formed depression. Hundreds of thin, alternating laminae are represented in this 60-cm-thick deposit. The stratum terminates in a relatively level surface that grades into Stratum 11. Sedimentary structure is apparent in the alternating laminae of sand and loam. These alternating laminae appear to represent a series of varves, or single depositional events, gradually filling the large depression and culminating in the deposition of Stratum 11. The dark grayish-brown (10YR 4/2 dry) organic layers resemble a loam similar to both Strata 2 and 11, though Stratum 12 has a moderate to medium, angular, blocky structure. The sand layers are brown (7.5YR 5/4 dry), structureless massive deposits.

Stratum 13 (Pithouse 1)

Stratum 13 is mounded along the southern end of Pithouse 1, north of the wingwalls (figs. 5 and 6). It is approximately 20 cm thick, tapering to less than 10 cm thick across the middle of the structure. The stratum appears to merge with Stratum 6 to the north, where there is diffuse contact between the two. Stratum 13 is a brown (7.5YR 5/4 dry) loam with moderate to medium angular structure similar to the loam laminae of Stratum 12. Stratum 13 exhibits sedimentary structure in the upper part of the unit but grades to inclusions of burned wood and jacal toward the base. This stratum may have resulted from fall of marginal roof remnants through eolian and alluvial processes following the burning and collapse of Pithouse 1 and the deposition of Stratum 14.

Stratum 14 (Pithouse 1)

Stratum 14 is a large, wedge-shaped stratum deposited south of the

wingwalls of Pithouse 1 and is mounded up to the top of the present height of the south wall of Pithouse 1 (fig. 5). Stratum 14 is resting directly on roof fall and appears to have been deposited prior to Stratum 13. Stratum 14 is a brown (7.5YR 5/4 dry) silt loam with a weak, coarse structure.

Stratum 15 (Pithouse 1)

Stratum 15 is a sandy stratum that is confined to the northeast corner of Pithouse 1 and that rests below the roof fall (Stratum 10A; fig. 6). The sand is light tan and is devoid of any artifacts, but it does contain a small amount of charcoal. Mounded in the northeast corner to a height of 40 cm, the sand layer tapers off to meet the floor level near the middle of Pithouse 1. Some steeply dipping laminae were noted, indicating that this stratum may be an eolian deposit of postoccupational materials that entered the structure through the hatchway prior to the burning and collapse of the roof. The prevailing winds are out of the southwest and could cause such a deposit to accumulate in the northeast corner of the pithouse. There is a similar deposit in Pithouse 5 (Stratum 19).

Stratum 16 (Pithouse 5)

This stratum resembles Stratum 12 in Pithouse 1 and appears to represent the same sequence of depositional events (fig. 6). The stratum is composed of laminae of brown (7.5YR 5/4 dry) sand and a dark brown (7.5YR 4/2 dry) sediment similar to that of Stratum 12. As with Stratum 12, alternating thin layers of slightly different composition, texture, and color are repeated. Rhythmic bedding such as this can be the result of seasonal changes in weather conditions (Reineck and Singh 1975:108). There were few artifacts present in Stratum 16. It should be noted that

the transition from this stratum to the overlying Stratum 11 was gradual, and the boundary definition was based primarily on the appearance of closely spaced laminae flecked with charcoal.

Stratum 17 (Pithouse 5)

Stratum 17 covers the entire area of Pithouse 5 (fig. 6), is mounded approximately 80 cm high against the east wall, and tapers to an average of 20 cm across the middle of the structure. The stratum is dark brown (7.5YR 4/2 dry) massive, and sandy with small charcoal fragments. This stratum appears to represent a relatively rapid postoccupational filling of the pithouse depression, primarily through slope wash from the north and northeast. It is similar in morphology and depositional sequence to Stratum 13 in Pithouse 1.

Stratum 18 (Pithouse 5)

Stratum 18 is the roof fall of Pithouse 5. The deposit is shallow in the center of the structure, and mounded to an average of 30 cm along the sides (fig. 6). The stratum was burned over the greater portion of the structure and consists largely of yellowish-red (5YR 4/6 dry) sandy fill with concentrations of burned jacal fragments. In places, the stratum is loose and crumbly due to burning. In the central and southern portions of the structure, the roof fall contained a great number of carbonized sticks and twigs.

Stratum 19 (Pithouse 5)

Stratum 19 is isolated along the southern and western walls of the pithouse (fig. 6). It is a light tan, sandy clay, devoid of artifacts and apparently similar in morphology and origin to Stratum 15 in Pithouse 1. Pollen analysis of a sample from this stratum (appendix A) revealed a high count of *Ambrosia*-type pollen. This type is indicative of weeds occupying

an area of recent disturbance, and the earth covering the pithouse roof and the area surrounding the pithouse could well have supported a weedy growth if the pithouse was not in use. The pollen could have become incorporated in Stratum 19 by being blown in through the hatchway, the ventilator shaft, or holes in the roof.

Stratum 20 (Pithouse 1)

Stratum 20 is the hard-packed, prepared floor of Pithouse 1. It is present only in the northern one-third of Pithouse 1 in the portion superimposed over Pithouse 3. The stratum is composed of puddled, densely compacted adobe of fine-grained, homogeneous sand and originates at the northern wall of Pithouse 1. About 2 cm thick at this point, Stratum 20 tapers gradually and disappears approximately 2 m south of the north wall of Pithouse 1. The wedge-shaped deposit made the north portion of the floor level with that of the south half of Pithouse 1 and effectively sealed off the floor surface and features of Pithouse 3. Due to its thinness, Stratum 20 does not appear on the profile of Pithouses 1 and 3 (fig. 5). It contains no artifacts but does have some minute charcoal flecks.

Stratum 21 (Pithouse 3)

Stratum 21 is an isolated concentration of clean alluvial sand deposited in a somewhat circular mound on the upper floor surface (Surface 1) of Pithouse 3. Located to the east of profile A and approximately 1 m from the north wall, the stratum reached a maximum thickness of 10 cm and had a diameter of 100 cm. The stratum was devoid of any cultural material and exhibited no internal structure. It was apparently deposited in a single event. The deposit was unburned, although it had to have been deposited prior to the burning and collapse of the pithouse roof. It may

have been deposited intentionally for use in filling the hearth or for spreading over a section of the floor. This sand is very similar in grain size, texture, and physical appearance to the sand layers present in the hearths of Pithouses 1, 3, and 5.

Subarea 3

Stratigraphy in Subarea 3 was exposed only during the excavation of probability square 318S/392E (see discussion of probability squares) and the adjoining 1- by 2-m test trench associated with the investigation of Pithouse 8. A generalized profile was constructed for the eastern exposures, and this profile (fig. 7) illustrates seven distinct stratigraphic units exposed in the side walls. These stratigraphic units were not defined until the fill from the test trench was removed; only four major stratigraphic divisions were recognized during excavation. Arbitrary division of the natural strata into 20-cm levels, assignment of field specimen numbers, and the collection of artifacts were based on these four gross depositional units.

Numbered according to the sequence in which the fill was actually removed, Strata 1 and 2 are morphologically identical to Strata 1 and 2 described in conjunction with profile B in Subarea 2 (fig. 6). Stratum 3 was removed as three arbitrary levels during excavation of the 1- by 2-m trench. Stratum 3 corresponds to Strata 3, 4, and 5 in figure 7 and includes all of the postoccupational deposits below Stratum 2. Stratum 3 is above the primary roof fall of Pithouse 8 and corresponds in mode of deposition to Strata 11, 12, 16 and 17 in Subarea 2. Stratum 4 consists of two arbitrary levels and corresponds to Strata 6 and 7 in figure 7. Stratum 4, the only cultural deposit encountered in the exposed portion of

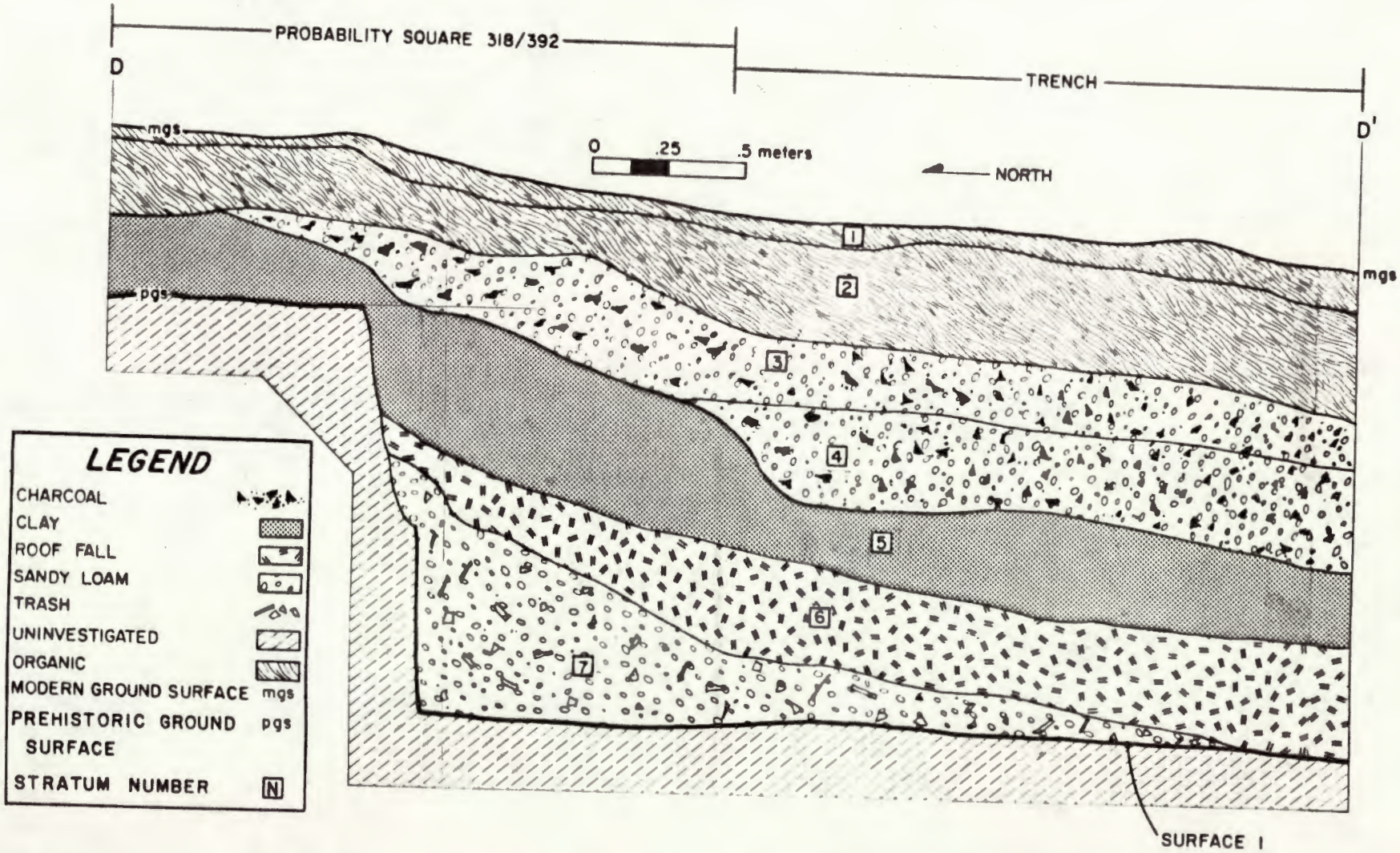

Figure 7. Stratigraphic profile of probability square 318S/392E and Pithouse 8, Grass Mesa Village. Location of profile is shown in figure 23.

Pithouse 8 fill, is roof fall characterized by burned jacal and charred beams. It is a massive deposit, without apparent structure, that rests directly on the floor surface near the center of the pithouse. In the northwest corner, the roof fall rests on a sandy trash layer that tapers off toward the center of the pithouse and terminates short of the south end of the profile.

ARCHITECTURAL DESCRIPTIONS

Subarea 1

The degree of disturbance in Subarea 1 was such that no single architectural unit remained intact (figs. 8 and 9). All six of the surface rooms are damaged to some extent. They either are superimposed over each other, are cut by looters' pits and rodent burrows, or, as in the case of Room 2, are damaged by excavation. The poor condition of the structures hinders their interpertation, and the architecture in Subarea 1 is presented in a primarily descriptive fashion with only a brief interpretive discussion.

Room 1

Room 1 (figs. 8 and 9) was discovered through the excavation of probability square 286S/398E, which was subsequently expanded to facilitate complete excavation of the structure. Three observable natural strata comprised the fill of Room 1. Stratum 1 was a dark brown (7.5YR 3/2 dry), modern Ah soil horizon that was present in variable thicknesses above the remains of the surface structures. This stratum underlies the modern ground surface across the entire site, and more complete discussion of the physical properties of this stratigraphic unit appeared previously under Subareas 2 and 3. Stratum 2 was gray-brown and mottled with red and orange hues. Cultural material was usually less common than in Stratum 1, but charcoal was present. Stratum 2 was present over most of Room 1, but varied in thickness. Stratum 3 was a homogeneous, orange deposit that contained charcoal and few artifacts and that appeared to be a natural deposit that had accumulated over a long period of time. Stratum 3 was present over all of Room 1, with a maximum thickness of approximately 30 cm.

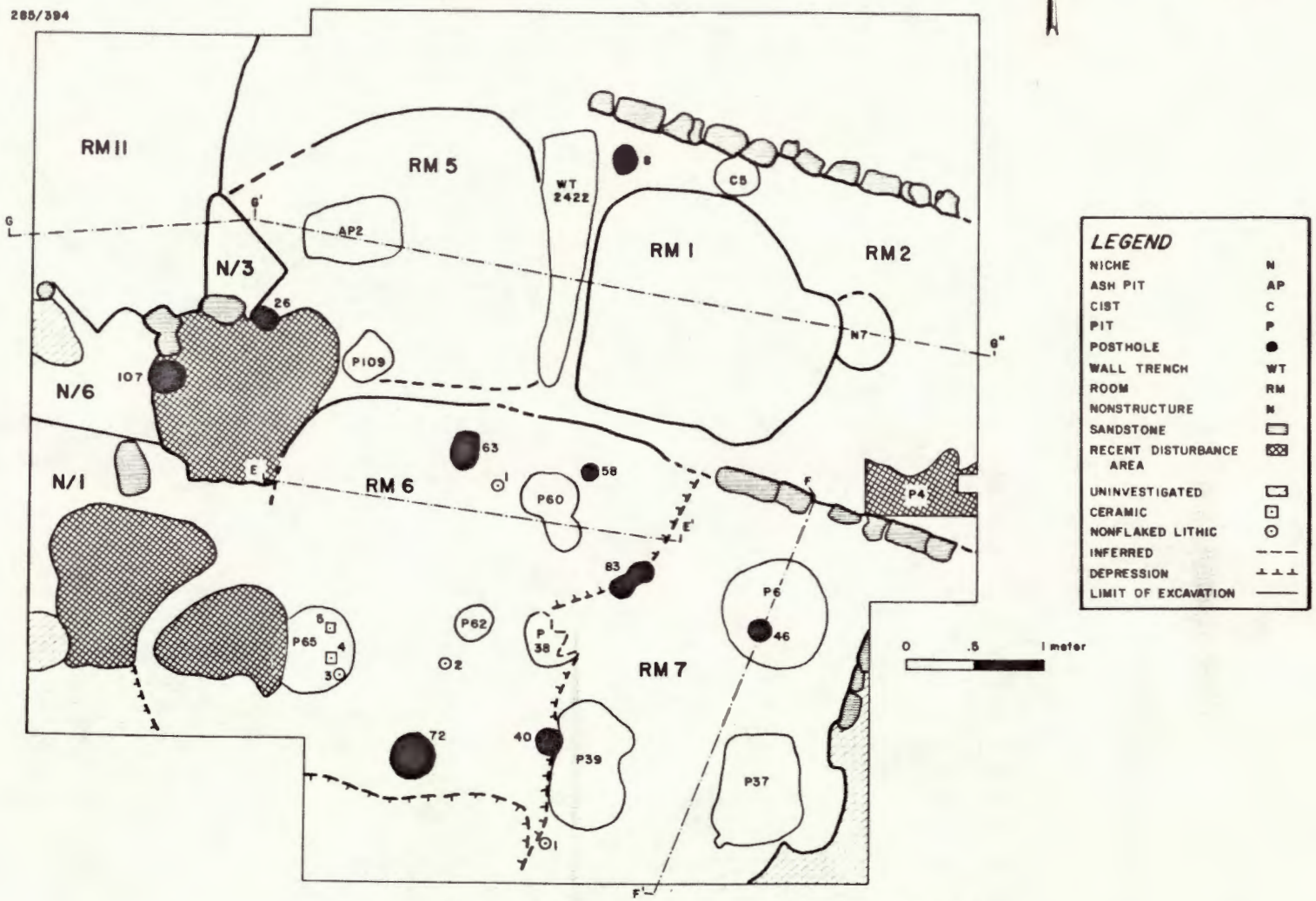

Figure 8. Plan map of surface rooms, Grass Mesa Village. Locations of profiles are shown in figure 9.

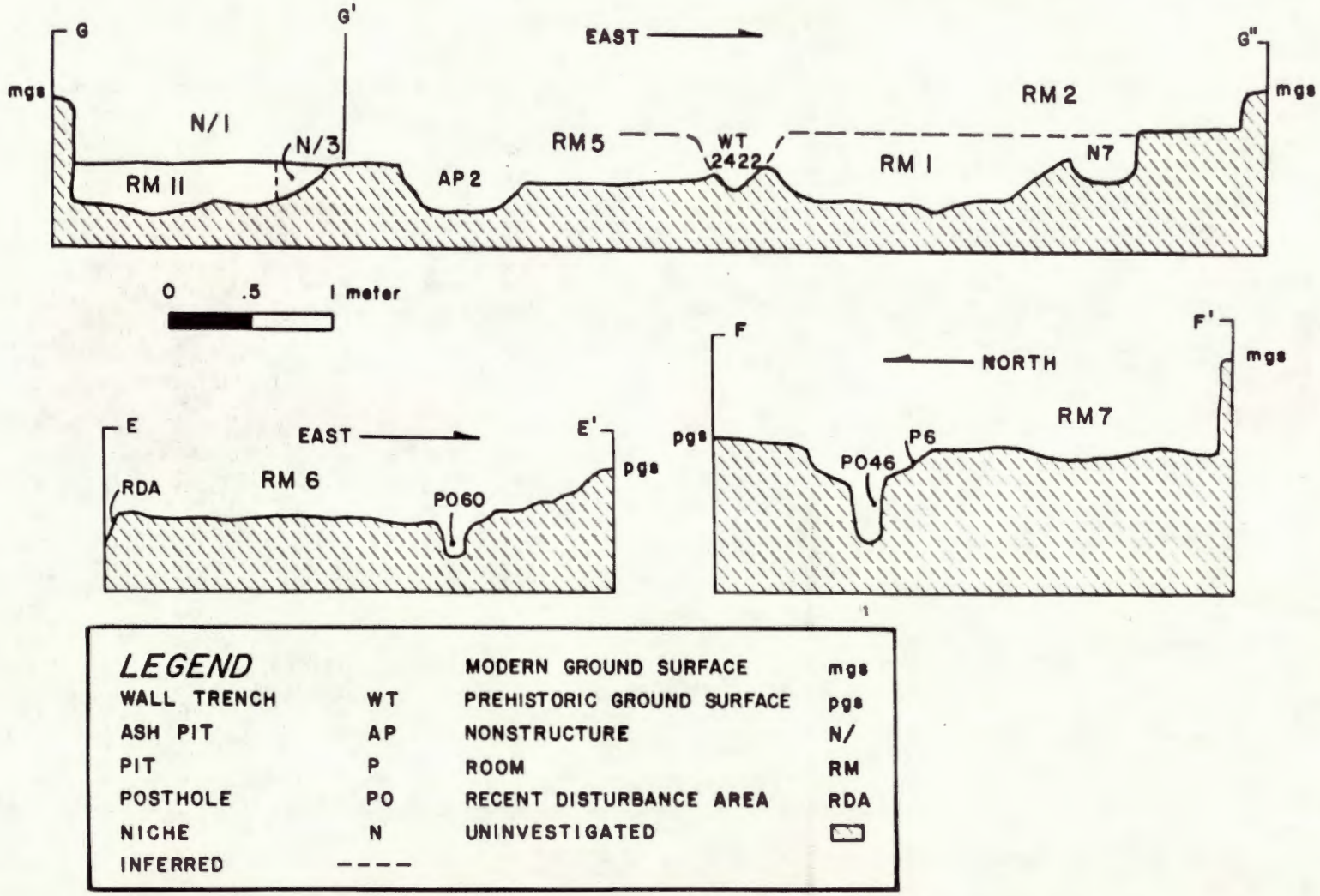

Figure 9. Architectural profile of surface rooms, Grass Mesa Village. Locations of profiles are shown in figure 8.

The existing surface and walls of the structure represent a single construction event that formed a roughly rectangular pit with rounded corners and a basin-shaped profile (see table 3 for structure dimensions). The pit had been excavated into culturally sterile sediments to a depth of approximately 30 cm below the prehistoric ground surface. There is no evidence of walls above the sterile sediments and no postholes are present. South of the west wall, a north-south trench (Feature 2422) extends the length of and between Rooms 1 and 5 (refer to the discussion of Room 2 for a description of this wall feature).

Table 3. Dimensions of study units in Subarea 1, Area 3, Grass Mesa Village

Study unit	North-south diameter (m)	East-west diameter (m)	Depth below prehistoric ground surface (m)
Room 1	1.59	1.48	0.28-0.48
Room 2	*2.50	*3.50	...
Room 5	2.50	2.30	...
Room 6	2.70	2.80	...
Room 7	3.00	2.08	0.19
Room 11	†2.35	†1.75	...
Nonstructure 1	*5.00	†2.00	...
Nonstructure 3	0.85	0.75	...
Nonstructure 6	0.90	†0.80	...

* Inferred dimension.
† Excavated dimension.

NOTE: ... - Information not available.

One Moccasin Gray sherd was point located just above the surface but could not be directly associated with it and is not mapped. Feature 7 (table 4) was located in the eastern wall of Room 1. The feature is a D-shaped and basined pit containing Stratum 3 deposits and one charred corn cob fragment. This feature may have been associated with Room 2 rather than Room 1.

Table 4. Feature summary, Subarea 1, Area 3, Grass Mesa Village

Study Unit Feature No.	Type	Plan	Profile	Length (cm)	Width (cm)	Depth/ height (cm)
Room 1						
7	Wall niche	D-shaped	Basin	51	18	22
Room 2						
4						
4	Unburned pit	Irregular	Complex	*120.0	50.0	35.0
5	Small floor cist	Oval	Cylindrical	35.0	27.0	54.0
8	Posthole	Round	Cylindrical	25.0	25.0	27.0
2422	Wall feature: construction trench			*185.0	*25.0	*22.0
Room 5						
2	Ash pit	Oval	Basin	70.0	40.0	30.0
109	Unburned pit	Oval	Basin	33.0	32.0	17.0
Room 6						
40	Posthole	Round	Cylindrical	15.0	14.0	33.0
58	Posthole	Round	Cylindrical	7.0	7.0	21.0
60	Unburned pit	Complex	Complex	51.0	31.0	44.0
62	Unburned pit	Oval	Basin	23.0	18.0	17.0
63	Posthole	Round	Cylindrical	21.0	18.0	65.0
65	burned pit	Round	Complex	70.0	62.0	42.0
72	Posthole	Round	Cylindrical	29.0	28.0	62.0
83	Posthole	Complex	Complex	34.0	15.0	18.0
Room 7						
6	Burned pit	Round	Basin	80.0	75.0	24.0
37	Burned pit	Complex	complex	79.0	64.0	17.0
38	Burned pit	D-shaped	Basin	48.0	25.0	5.0
39	Burned pit	Round	Basin	64.0	60.0	14.0
46	Posthole	Round	Cylindrical	14.0	13.0	36.0
Nonstr 1						
26	Posthole	Oval	Cylindrical	23.0	16.0	19.0
107	Posthole	Oval	Cylincrical	27.0	20.0	23.0
Prob square 288S/384E						
1	Fireplace	Round	Basin	36.0	30.0	14.0

* Inferred.

NOTES: See figure 8 for feature locations.

Nonstr - Nonstructure.
Prob - Probability.

Recent disturbance areas were present in Room 1. A rodent burrow interrupted the north wall and radiated into the southwest corner of the room. A large (70 by 75 cm), deep (32 cm) looter's pit was located above the southwest corner of Room 1.

Room 2

Room 2 (figs. 8 and 9 and table 3) was superimposed over Room 1 and was not discovered until the western portion had been destroyed by the excavation of Room 1. It is a shallow structure containing only the previously described Strata 1 and 2. Stratum 1 was thin and highly disturbed, but Stratum 2 was well defined within the walls of Room 2. Outside of the structure, Stratum 2 became more heterogeneous and less well defined.

The portion of Room 2 remaining after the excavation of Room 1 suggests that Room 2 was a rectangular structure. The north and south walls are defined by two parallel rows of large, unshaped sandstone blocks resting upon, and excavated slightly into, Stratum 3. Too few stones were present to represent the remains of masonry walls, and it is likely that the upper walls were constructed of jacal. A west wall may have been present, but the only evidence that could represent such a wall are a few stones and a possible wall trench that was excavated between Rooms 1 and 5. This trench (Feature 2422) was probably intrusive to Room 5.

In the eastern portion of the structure, the floor is the sterile substrate that has been leveled by excavation and compacted by use. The western portion of the structure may have had a prepared surface capping the Stratum 3 fill of Room 1. However, the characteristics of this part of Room 2 must remain conjectural.

No artifacts were encountered on the floor of Room 2, but several features are present (table 4). Feature 4 was a pit of undetermined origin and function. It originated within Stratum 1 and was excavated through Strata 1 and 2 to the floor of Room 2. Although assigned to Room 2, it appears to have been located in the fill and may have been a

looters' pit. Feature 5 is a small floor cist adjacent to the north wall. Its boundaries had been slightly disturbed by rodent activity near the rim and the base. A large cobble was found at the base of the pit, and pollen samples were collected from above and below the cobble. The sample from below the cobble contained a high percentage of beeweed (Cleome) pollen, indicating that the pit may have functioned as a storage pit for beeweed (appendix A). A single posthole (Feature 8) was situated at the northwest corner of the exposed floor surface just outside the limit of Room 1. Roof support posts in back rooms are typically located in the corners of the room, and if this feature did indeed contain a major roof support post, Feature 8 would represent the western extent of Room 2. The sides and base of the posthole are slab lined. Wood fragments and charred corn kernels were present in the fill of the feature.

Room 5

The construction style and fill sequence of Room 5 parallels that of Room 1 (figs. 8 and 9 and table 3). Stratum 1 was continuous across the fill over Room 5 except where it had been disturbed by rodents and looters pits, especially in the western portion. Stratum 2 was defined by an increase in the compaction of the sediments, a decrease in the artifact density, and by the presence of charcoal. Stratum 3 overlay the floor of Room 5 and was identical to Stratum 3 in Room 1. Room 5 appears to have been contemporaneous with Room 1.

The existing surface and walls of the structure represent a single construction event that formed a roughly rectangular pit with rounded corners and a basin-shaped profile. The pit had been excavated into culturally sterile sediments. The east wall may have been partially

destroyed by an intrusive trench (Feature 2422), and the southwest corner of the room was destroyed by a looters pit. The west boundary of the room is problematic. Room 11 is west of Room 5 and may have cut through the surface of Room 5. However, the presence of Nonstructure 3, a later disturbance, has obscured the transition zone between these structures.

The floor surface of Room 5 was identical to that of Room 1 in that it was a use-compacted level of the sterile substrate. An ash-filled pit (Feature 2) with oxidized edges is located in the western half of the room (table 4). It may have been associated with food processing activities, perhaps functioning as a small heating or warming pit. A small pit of undetermined function (Feature 109) may also be associated with Room 5, or it may be intrusive. One other feature, a possible wall trench (Feature 2242), may have been associated with Room 5, but it is more likely that the trench was associated with a later structure and was intrusive to Room 5. This north-south trench is located between Rooms 1 and 5.

Room 6

Room 6 is a use-compacted surface defined by the remnants of excavated-earth walls south of Rooms 1 and 5 and by a drop in surface elevation west of Room 7 (figs. 8 and 9 and table 3). Both Rooms 6 and 7 appear to represent some type of ramada or work area in front of possible storage rooms (Rooms 1, 5, and 11). Like all of the architectural units in Subarea 1, Room 6 has suffered heavily from vandalism.

Room 6 was overlain by three distinct stratigraphic layers. As elsewhere in Area 3, Stratum 1 immediately underlay the present disturbed ground surface. Stratum 2 consisted of an orange-brown sediment with charcoal inclusions; the upper portion of Straum 2 contained a scatter of

possible wall stones that occurred at the same level as stones forming the south wall of Room 2. Stratum 3 was the lowest fill of the surface structure and was continuous across the entire structure. It was orange and more mottled than Stratum 2, with a higher density of charcoal.

The structure was poorly preserved and has an irregular boundary (table 3). The surface of Room 6 and was excavated into the sterile substrate is delimited on the north side by remnants of an excavated-earth wall and by recent disturbances. The irregular eastern boundary is defined by a slope up to the surface of Room 7 (approximately a 15 cm elevation difference). To the south the surface slopes downward and fades into Stratum 3. There are eight features associated with this surface (table 4), five of which have been identified as postholes (Features 40, 58, 63, 72, and 83). Four of the postholes are located along the eastern and northern boundaries of the structure and probably served to support some type of ramada or roof structure. Two of the postholes (Features 72 and 83) contained uncharred rotted wood, indicating that the structure did not burn. Feature 40 was filled with clean sand and was devoid of any rotted wood. It appears that the post was removed from this feature and the posthole filled with sand before the room was abandoned. Feature 58 was oriented so that a post extending from the floor level here would slant to the west at approximately a 70° angle; it may have functioned as a brace or corner post. Feature 63 was lined with an abrading/grinding stone, a hammerstone, and a notched maul on the sides and base and contained a thick uniface in the fill.

The remaining three features located on the floor of Room 6 were pit features of indeterminate function. Features 60 and 62 are unburned. Feature 60 is figure-eight shaped in plan and may represent two features

that overlap slightly. This inference is supported by the fact that the southern half of the feature was slab lined with ground stone, while the northern portion was unlined and much deeper. The fill of the two halves was a dark, lose, sandy clay that was quite uniform, suggesting that both halves were filled by the same depositonal event. The fill contained over a dozen thumbnail-sized rocks and a number of artifacts, which included 7 gray ware sherds, 1 projectile point, 1 trough metate fragment, and 10 nonhuman bones. Feature 65 is a large burned pit feature in the west half of the structure. Burned corn cobs were recovered from this feature, as well as two slabs--one resting flat and the other on end.

Seven point-located artifacts (fig. 8) were recorded on the floor of Room 6. PL's 1 and 2 are two-hand mano fragments and PL 3 is an indeterminate fragment of a nonflaked lithic tool. PL's 4 and 5 are isolated sherds from a gray ware jar and a Chapin Gray bowl, respectively. PL's 6 and 7 are unmodified sandstone slabs. PL 7 was found resting on top of Feature 65.

Room 7

Room 7 is east of Room 6 and south of Room 2 (figs. 8 and 9 and table 3). The three fill strata encountered in this room correspond to the numbered strata described for Room 1. Lenses of looters' backdirt made Stratum 2 difficult to follow at times. Stratum 3 contained some roof fall materials and was discontinuous across Room 7. Stratum 3 was most apparent in the southeast.

Room 7 is poorly defined and partially investigated. The northern boundary of Room 7 was a masonry wall consisting of one course of unshaped, horizontal sandstone slabs; this wall was shared with Room 2. The western boundary is tentatively defined by a 15 cm dropoff into

Room 6. The eastern and southern boundaries of the structure were not defined. At the east edge of the excavations, three unshaped sandstone blocks were encountered, which were resting on end giving the appearance of an upright slab wall; however, these blocks were not set into the floor and probably represent wall fall.

The floor of Room 7 is identical to the use-compacted sterile substrate used as floor surfaces throughout Subarea 1. Shovel marks in the floor indicate that the room had been disturbed.

Five features are present on the surface of Room 7 (table 4). Only Feature 46, a posthole located within Feature 6, can be assigned a definite function. Feature 6 is a large, burned, circular pit forming a shallow basin with the posthole situated in its center. The upper fill of this feature was a compact, dark brown sandy clay flecked with charcoal, and the lower fill was orangish and more mottled. The posthole was excavated into and through the fill of the basin, contained rotted wood, and was lined with three sandstone slabs that were probably used as shims. This post may have functioned in conjunction with those in Room 6 to support a roof or ramadalike structure. This suggests that the separation of Rooms 6 and 7 is not architectural and that the rooms may represent a single outdoor activity area. Since the boundaries of Room 7 are not entirely clear, it is also possible that more extensive excavations in this area might have uncovered other postholes associated with this structure.

Feature 37 is a complex burned pit of indeterminate function and is located in the southeast corner of the exposed surface. The feature consisted of three parts with three types of fill and may represent two or three overlapping features. Some of the confusion can be attributed to

looters' activity. The outline of Feature 37 is subrectangular, and part, and possibly all, of the sides of the original feature were lined with a gray clay. Feature 38 is a vaguely defined, burned pit located along the inferred west wall of the exposed surface of Room 7. Feature 39, south of Feature 38, is also a vaguely defined burned pit. A function of heating or warming is likely for both features.

Two artifacts were point located on the floor of the structure (fig. 8). PL 1 is an unmodified stone that was found to the southwest of Feature 39. PL 2 is a fragment of an indeterminate nonflaked lithic tool located in the fill of Feature 37. The tool cannot be directly associated with the use of either the floor or the feature and probably represents postoccupational filling of Feature 37.

Room 11 and Nonstructure 1

Nonstructure 1 is an isolated surface and/or stratum located above and south of Room 11 (figs. 8 and 9 and table 3), therefore, the fill sequence of Room 11 and Nonstructure 1 are described together. Strata 1 and 2 are identical in relative thickness, color, structure, inclusions, and distribution to Strata 1 and 2 as described for Room 1. Stratum 3 is the surface of Nonstructure 1 and includes isolated overlying lenses of a mottled sandy loam. The surface of Nonstructure 1 is continuous between grid lines 285S and 287S, but south of this point, the surface and the overlying strata are cut by recent disturbance areas. Portions of the surface were identifiable west of the looters' pit in the southwest corner of Room 5, but little trace of it could be identified south of the 288S grid line. The removal of Stratum 3 exposed Stratum 4, a layer of burned roof fall overlying the surface of Room 11. Stratum 4 was a sandy loam with orange hues, some clay, and large amounts of charcoal and burned

jacal. The roof fall was present only within the confines of what has been identified as Room 11.

The surface of Nonstructure 1 is only distinct in isolated, or sometimes connected, patches. Dimension estimates tentative at best, but the surface was generally confined in a 2- by 5-m area. It was heavily disturbed by looters' pits.

Two features were associated with Nonstructure 1 (tables 4 and 5). A posthole (Feature 107) was present, and rotted coniferous wood was recovered from the fill. The fill also contained 14 small pebbles and one sandstone base slab, all indicative of support for an upright post. A second posthole (Feature 26) was also lined with small pebbles. The assignment of Feature 26 is problematic because its upper portion had been destroyed by looters' pits. This feature has been tentatively assigned to Nonstructure 1, but may have been associated with Room 5.

Table 5. Point-located artifacts, Nonstructure 1, Subarea 1, Area 3, Grass Mesa Village

PL No.	Material class	Item description
1	Ceramic	DL Early Pueblo Gray jar sherd
2	Ceramic	DL Early Pueblo Gray jar sherd
3	Ceramic	DL Moccasin Gray jar sherd
4	Flaked lithic	Thick uniface
5	Nonflaked lithic	Hammerstone
6	Nonflaked lithic	Indeterminate
7	Ceramic	DL Early Pueblo Gray jar sherd
8	Ceramic	DL Early Pueblo Gray jar sherd
9	Flaked lithic	Item misplaced

NOTE: See figure 10 for aritfact locations.
DL - Dolores Manufacturing Tract.

A total of nine artifacts were associated with the surface of Nonstructure 1 (table 5 and fig. 10). PL's 1, 2, and 3 are all gray ware sherds, possibly from the same vessel. PLs 4 and 5 are flaked and

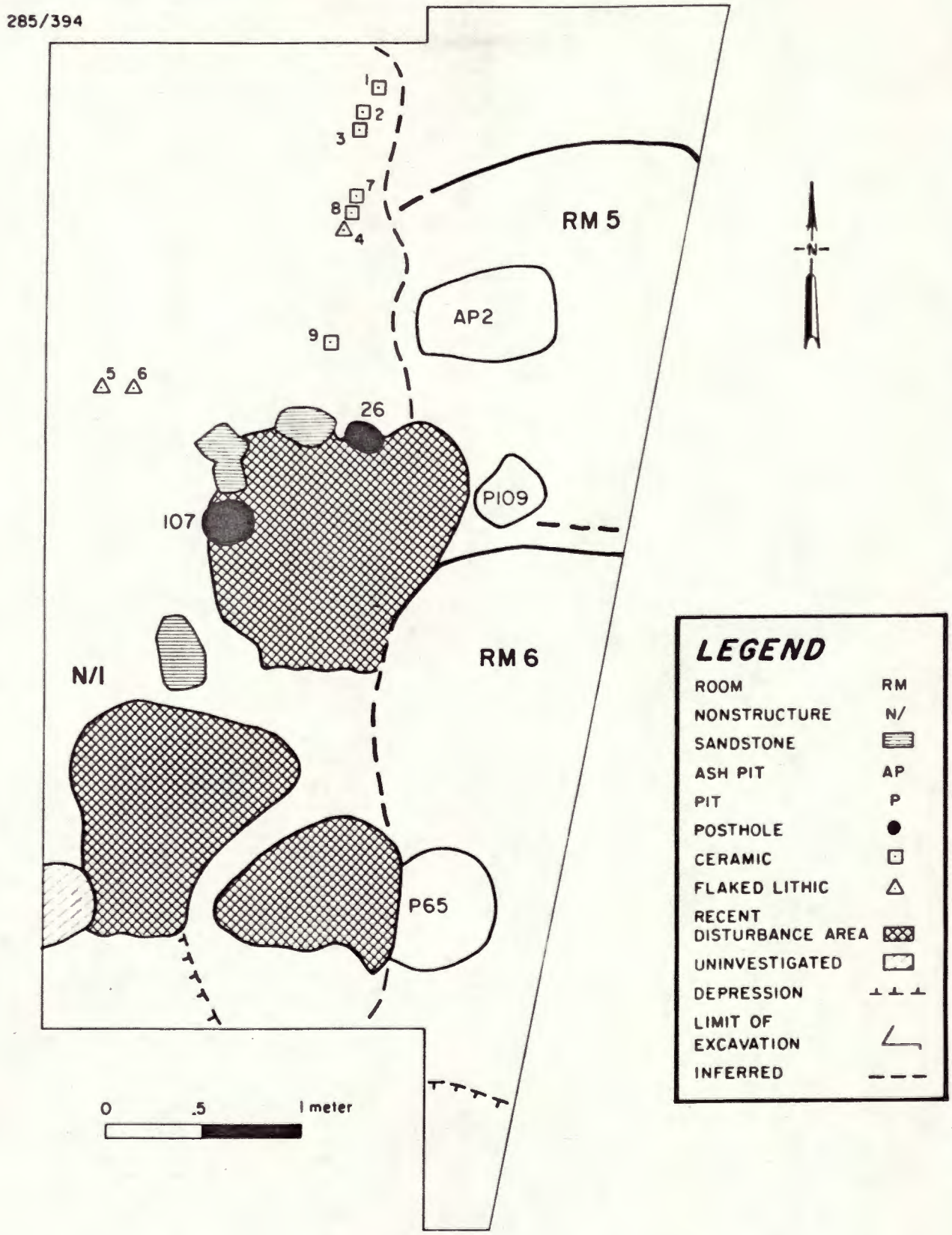

Figure 10. Plan map of Nonstructure 1, Grass Mesa Village, showing point locations.

nonflaked lithic tools (a thick uniface and a small hammerstone, respectively) that were not directly associated with each other. PL 6 is a fragment of an indeterminate nonflaked lithic tool and PL's 7 and 8 are gray ware sherds. The surface is inferred as having functioned as an outside use surface, possibly as a work area adjacent to a row of surface structures. Alternatively, The presence of the two postholes suggests that Nonstructure 1 may have been a surface structure, but with so little of the unit remaining intact it was thought that the nonstructure designation was more appropriate.

Room 11 is similar to Rooms 1 and 5 (table 3). The structure had been partially excavated into the natural substrate and may have been partially excavated into Room 5. No walls present; however, it is inferred that the surface that defines the structure is an inside surface and that the area was once roofed and enclosed in some way, based on the presence of roof fall in the stratum overlying the surface. The room was only partially excavated, which makes further interpetation difficult.

The boundaries of Room 11 are difficult to define. To the east, Room 11 may have been excavated into Room 5, but this conjecture cannot be demonstrated due to the presence of Nonstructure 3, a disturbed surface that cut into the east wall of Room 11. To the northeast, Room 11 is delimited by an absense of the roof fall stratum and by a flat featureless expanse of sterile earth. The north and west limits are the limits of excavation. To the south, the surface is defined by a slight elevation of the floor; this southern boundary is interrupted by a large looter's disturbance. The surface as presently defined does not contain any features nor does it have any associated artifacts. Also south of Room 11, but 20 cm lower, is an isolated surface (Nonstructure 6).

Nonstructure 3

The provenience designation given to a small triangular-shaped and slightly depressed surface east of Room 11 is Nonstructure 3, which also may have cut into the floor of Room 5 and into the west wall of Room 11 (figs. 8 and 9). The well-defined northeast and southeast sides of the depression make it appear as though it might have served some architectural function. The fill consisted entirely of laminated sand and rodent disturbances. The most plausible explanation offered for its function is that it represents either a recent disturbance area or an old disturbance area that was probably abandoned soon after abandonment of Rooms 5 and 11.

Nonstructure 6

Nonstructure 6 consists of a small area of isolated surface that is stratigraphically below Nonstructure 1 and situated at the southern boundary of Room 11 (fig. 8). The Nonstructure 6 floor is approximately 20 cm lower in elevation than the Room 11 floor and is the deepest surface discovered in Subarea 1. Only a small portion of the surface was exposed; the south and west boundaries are the edges of excavation. This surface is thought to be prehistoric in origin because it underlies the surface of Nonstructure 1. The function of Nonstructure 6 and its relation to the other study units in Subarea 1 are unknown.

Summary

Excavations in Subarea 1 encountered portions of six rooms, three nonstructural units, and the slab-lined hearth and borrow pit in probability square 288S/384E. Poor preservation and extensive recent disturbance limit both the quality of description and the types of inferences that can be drawn from these units. Although tree-ring and archaeomag-

netic samples were taken, none could be dated; therefore, the chronology must be based on ceramics and on stratigraphic relationships. Artifacts associated with surfaces were rare, and functional interpretations of the various rooms and nonstructures rely on architecture and feature associations. Although vegetal and bulk soil samples were taken, analysis results were not available for the writing of this report but are contained in appendix B. Similarly, only preliminary faunal analysis results were available for Area 3, and reporting and interpretation of those data are contained in appendix C.

At least two, and possibly three, building episodes are represented in the eastern portion of Subarea 1. Rooms 1, 5, and 11 and Nonstructure 6 are stratigraphically earlier than the other study units and appear to be functionally distinct as well. Room 11 may have been constructed at some later point in time, but this cannot be demonstrated due to the obscure boundary between Rooms 11 and 5. The rooms appear to have been contiguous and a single room wide. The lack of structural remains suggests jacal superstructures. These rooms do not exhibit the attributes expected of domiciles (e.g., hearths, interior postholes, grinding areas [Gillespie 1976; Breternitz 1982]) and are interpreted as storage facilities. Too few ceramics are associated with their floors to infer a date for their abandonment (appendix D), but their fill assemblages (which include Moccasin Gray and Mancos Gray ceramics) began accumulating sometime after A.D. 825, and probably after A.D. 840 (Blinman 1982).

The stratigraphically later study units (Rooms 2, 6, and 7 and Nonstructures 1 and 3) are both architecturally and functionally differentiated from the early study units. Not enough is known about the Room 2

surface to evaluate its potential as either a storage or habitation room, but it is believed to have had masonry-footed jacal walls with an interior post roof support system. Fronting Room 2 are the remains of the surfaces of Rooms 6 and 7 and of their complement of burned and unburned pit features, which are suggestive of the activities associated with a ramada covered work area. The floor ceramics from these units date between A.D. 860 and 910. Although there is no stratigraphic link between probability square 288S/384E and the defined surface structures, the ceramic assemblage from the probability square is contemporary with or slightly later than the last use of the upper rooms.

Subarea 2

Excavations in Subarea 2 focused on exposing portions of three pithouses (figs. 4 and 11). Pithouse 3 is the stratigraphically earliest as well as the largest of the three, and over 75 percent of its floor area was excavated. Pithouses 1 and 5 are smaller pithouses that were contemporaneous and were partially superimposed on the fill of Pithouse 3; these pithouses were completely excavated. All three conform to the general pattern of Anasazi pithouse construction and placement of architectural features for the Periman and Grass Mesa Subphases in the Escalante Sector.

Pithouse 3

Dimensions:

North wall (length):	6.00 m
South wall (length):	6.75 m
East wall (length):	5.25 m
West wall (length):	5.00 m
Floor area:	31.50 m^2

Pithouse 3 (figs. 4 and 11) had a relatively long occupation history as indicated by two floor surfaces and considerable remodeling of both floors

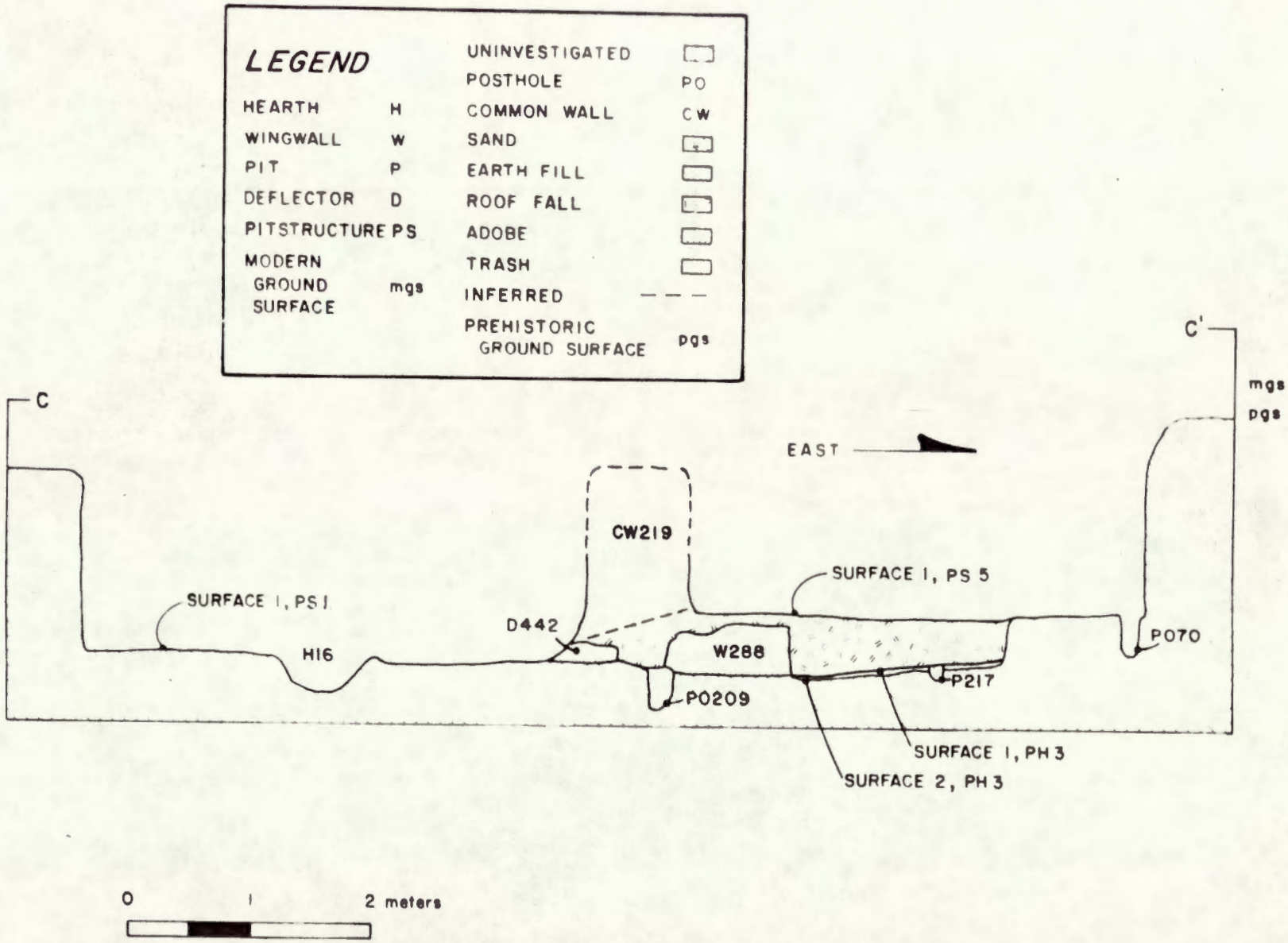

Figure 11. Architectural profile of Pithouses 1, 3, and 5, Grass Mesa Village. Location of profile is shown in figure 4.

and the structure roof. Initial construction appears to have been in the A.D. 850's, with major remodeling and abandonment occurring prior to A.D. 880. After abandonment the pithouse burned and collapsed.

The walls were formed by excavation of a deep, straight-sided pit into the sterile substrate of the mesa. The structure is rectangular with rounded corners. When the west half of the structure was exposed in the 1979 field season, it was discovered that only the walls of the northwest corner remained intact. The southwest quadrant (west of the ventilator tunnel opening) was intersected by Pithouse 1, the construction of which effectively removed all trace of the walls and disturbing portions of the floors and floor features. During the excavation of the southeastern quadrant in 1980, segments of the eastern and southern walls were defined under the floor of Pithouse 5. The tops of these walls were truncated 40 cm above Surface 1 by the floor of Pithouse 5. Some digging stick marks remain on the northern and eastern walls of Pithouse 3 and portions of the north wall had been smoothed. The floor was burned to a depth of 2 to 4 cm and the walls were burned to a height of 1.4 m along the north wall.

Details of roof construction were destroyed during its burning and collapse, but a partial record of its composition is available in the species identifications provided by the Laboratory of Tree-Ring Research for tree-ring samples taken from the roof fall of this pithouse. Of the 74 samples submitted for dating, 52 (70.3 percent) were ponderosa pine (*Pinus ponderosa*), and 10 (13.5 percent) were juniper (*Juniperus* sp.). Other identifications recorded were pinyon pine (*Pinus edulis*) in eight samples (10.8 percent), white fir (*Abies concolor*) in three samples (4.1 percent), and Douglas-fir (*Pseudotsuga menziesii*) in one sample

(1.4 percent). Ponderosa pine comprised the overwhelming majority of the structural elements recovered from roof fall, with minority elements of pinyon pine and juniper. The only species to occur in the postholes was juniper, and the ventilator shaft of Pithouse 3 contained elements from all species represented, including the only samples of Douglas-fir and white fir. However, these data are biased in that only those samples with dating potential were submitted for tree-ring dating. These included all coniferous species and any fragment for which a field identification could not be made. Therefore, most of the observable Populus sp. and other nonconiferous species were not sent to the Laboratory of Tree-Ring Research for analysis, but were collected as vegetal samples for species identification (appendix B).

Despite this bias, preferences for use of the coniferous species are evident, which mirrors the cultural selectivity for construction timber that has been demonstrated in other regions of the Northern Anasazi area (Robinson 1967; Dean 1969; Harrill and Breternitz 1976). Great strength and resistence to rot make juniper a favorable species for upright posts. Ponderosa pine is favored for roof construction because its long and straight growth form allows it to span great distances. The infrequent use of Douglas-fir and white fir, both species with long straight growth forms and a tensile strength similar to ponderosa pine, probably reflects their general scarcity (relative to ponderosa pine) in the vicinity of Grass Mesa Village. The low frequency for other species in the samples collected from the roof construction materials probably results from the inclusion of these species as small miscellaneous elements, which would not preserve well, as closing material.

Pithouse 3 is the only pitstructure in Area 3 that clearly demonstrates major remodeling episodes; there are two floor surfaces, one above the other, and corresponding feature assemblages. From the north wall the two floor surfaces of Pithouse 3 gradually sloped toward the center of the structure, with the lowest portion of both floors around the central hearth. The lower floor, Surface 2, was a use-compacted surface on a sterile layer representing the base of the original construction. This surface was severely burned north and west of the central hearth, with the burn penetrating 3 to 5 cm into the sterile substrate. Surface 1 directly overlies Surface 2; these surfaces, separated by a layer of clean sand or some trash fill, reach a maximum thickness along the exposed walls and merge together in some places. Surface 1 of Pithouse 1 is separated from Surface 1 of Pithouse 3 by a prepared earthen floor along the northeast margin of Pithouse 1. However, the distinction between these two surfaces is lost near the center and along the eastern margin of Pithouse 1. Surface 1 of Pithouse 5 (east of Pithouse 1) lies, on the average, 40 cm above the southeast quadrant of Pithouse 3 (figs. 4 and 11).

Surface 2. Surface 2 (figs. 12 and 13) is described first since it was the first in the sequence of events documented for Pithouse 3. With Surface 1 overlying Surface 2 so closely, many of the Surface 1 features cut through both Surface 2 and the Surface 2 features, making intepretation difficult. The number of features obliterated by the construction of Pithouse 1 is unknown. Pithouse 3 floor features extant beneath the floor of Pithouse 1 include the southwest main roof support postholes (Features 321 and 325). The majority of the Surface 2 features (table 6) were identified in the southeastern quadrant of the pitstructure

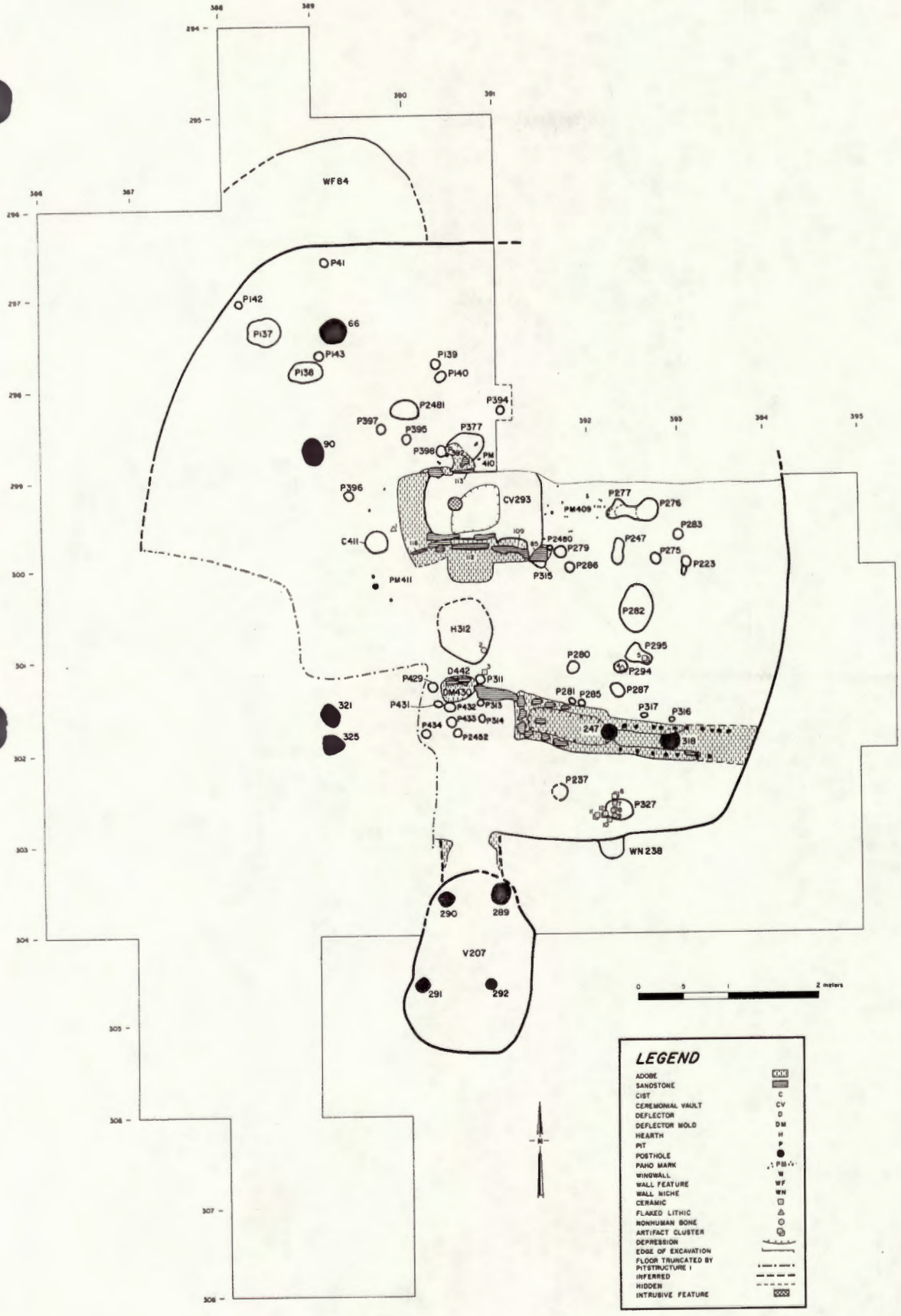

Figure 12. Plan map of Surface 2, Pithouse 3, Grass Mesa Village.

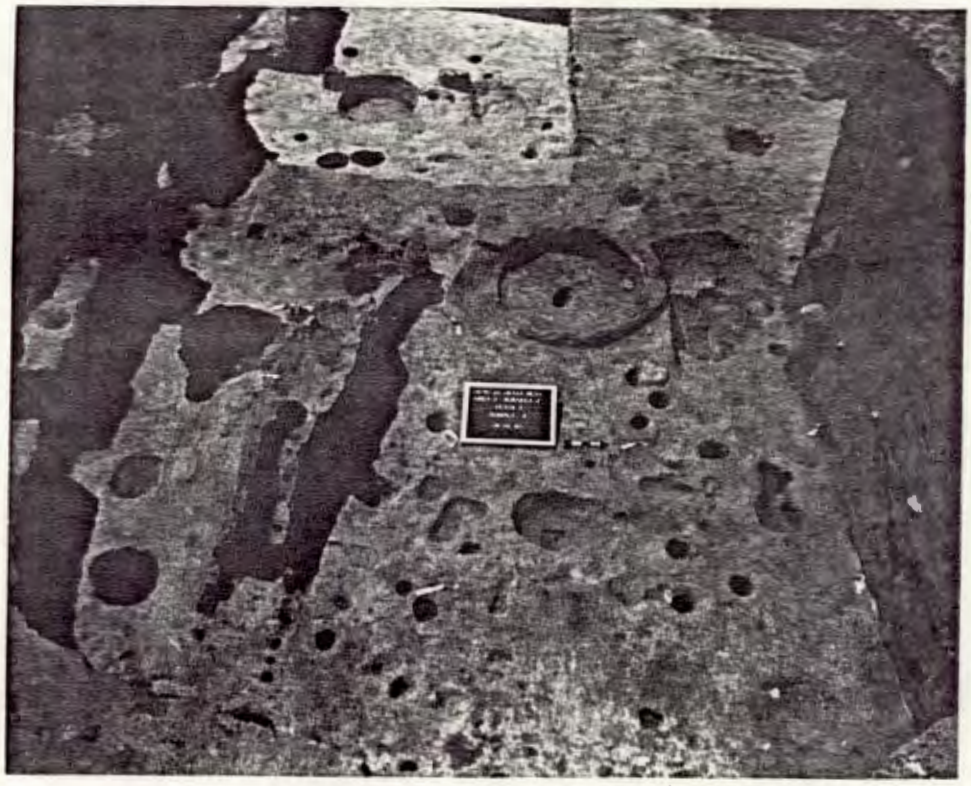

Figure 13. View of Pithouse 3, Grass Mesa Village; this is a postexcavation view of both surfaces (DAP 054420).

Table 6. Feature summary, Surface 2, Pithouse

Feature No.	Type	Plan	Profile	Length (cm)	Width (cm)	Depth/ height (cm)
137	Unburned pit	Round	Basin	34.0	32.0	5.0
138	Unburned pit	Oval	Basin	38.0	22.0	9.5
139	Unburned pit	Round	Triangular	11.0	9.5	28.0
140	Unburned pit	Round	Basin	12.5	11.5	9.0
141	Unburned pit	Round	Cylindrical	9.5	9.5	20.0
142	Unburned pit	Round	Basin	8.0	8.0	6.0
143	Unburned pit	Round	Cylindrical	9.5	11.0	13.0
144	Small floor cist	Round	Basin	25.5	21.5	20.0
223	Unburned pit	Round	Cylindrical	12.0	10.0	18.0
274	Unburned pit	Complex	Complex	32.0	12.0	4.0
275	Unburned pit	Round	Cylindrical	11.0	11.0	12.0
276	Unburned pit	Round	Basin	23.0	23.0	18.0
277	Unburned pit	Irregular	Basin	19.0	10.0	12.0
279	Burned pit	Round	Cylindrical	14.0	13.0	15.0
280	Posthole	Round	Cylindrical	13.0	13.0	20.0
281	Unburned pit	Round	Cylindrical	8.0	7.0	14.0
282	Warming pit	Oval	Basin	52.0	38.0	21.0
283	Unburned pit	Round	Cylindrical	12.0	12.0	19.0
285	Unburned pit	Round	Cylindrical	8.0	8.0	11.0
286	Unburned pit	Round	Cylindrical	10.0	10.0	13.0
287	Unburned pit	Round	Basin	15.0	14.0	13.0
293	Ceremonial vault	Rectangular	Basin	147.0	66.0	36.0
294	Unburned pit	Round	Basin	15.0	15.0	5.0
295	Unburned pit	Other	Cylindrical	34.0	17.0	7.0
311	Unburned pit	Round	Cylindrical	10.0	10.0	19.0
312	Central hearth	...	Basin	71.0	65.0	9.0
313	Unburned pit	Round	Cylindrical	7.0	7.0	16.0
314	Burned pit	Round	Cylindrical	8.0	6.0	18.0
315	Unburned pit	Oval	Cylindrical	13.0	9.0	10.0
316	Unburned pit	Oval	Bell	6.5	5.0	12.0
317	Unburned pit	Round	Cylindrical	5.5	5.0	10.0
318	Posthole	Round	Cylindrical	23.0	23.0	80.0
327	Unburned pit	Oval	Basin	30.0	23.0	9.0
328	Unburned pit	Round	Cylindrical	17.0	17.0	13.0
377	Unburned pit	Round	Bell	35.0	30.0	22.0
392	Unburned pit	Other	Other	36.0	20.0	12.0
394	Unburned pit	Round	Cylindrical	10.0	9.0	12.0
395	Unburned pit	Round	Basin	10.0	9.0	12.0
396	Unburned pit	Round	Basin	9.0	8.0	22.0
397	Unburned pit	Round	Basin	10.0	10.0	15.0
398	Unburned pit	Round	Basin	11.0	11.0	15.0
409	Cluster of pahos	Oval	Cylindrical	1.5	1.5	10.0
410	Cluster of pahos	Oval	Cylindrical	1.5	1.5	10.0
411	Cluster of pahos	Oval	Cylindrical	1.5	1.5	10.0
429	Unburned pit	Round	Basin	11.0	11.0	20.0
430	Deflector mold	Oval	Cylindrical	40.0	25.0	10.0
431	Unburned pit	Round	Basin	9.0	8.0	12.0
432	Unburned pit	Round	Basin	11.0	10.0	22.0
433	Unburned pit	Round	Basin	11.0	11.0	20.0
434	Unburned pit	Round	Basin	10.0	11.0	20.0
2452	Unburned pit	Round	...	11.0	9.0	20.0
2481	Unburned pit	Oval	...	30.0	20.0	...
2480	Unburned pit	Round	...	7.0	6.0	...

NOTES: All dimensions are inferred. See figure 12 for feature locations.

... - Information not available.

(fig. 12). The northwestern quadrant contained eight features and the northeastern quadrant was unexcavated. However, the features described in the Surface 2 discussion do not represent the total feature assemblage. Several architectural and structural features probably functioned with both floor surfaces; these will be described with Surface 1 because that is where they were first encountered and recorded.

Two postholes (Features 280 and 318) on Surface 2 were covered by Surface 1 and were not visible until Surface 2 was cleared. These postholes were abandoned when Pithouse 3 was remodeled with the addition of Surface 1. Feature 280 was a small, shallow posthole located north of the wingwall. The other posthole (Feature 318) was located in the wingwall close to the east wall of the pithouse and probably served as one of the main load bearing support posts for the roof. The post was removed and the posthole filled with trash and sealed with sand during the remodeling episode associated with Surface 1. The posthole for a second main support (Feature 247) occupies a more central position in the eastern wingwall. It is not known if these two postholes (Features 247 and 318) were in use simultaneously with Surface 2, and Feature 318 simply abandoned with the construction of Surface 1, or whether the post and its position in the wingwall were actually relocated at the time of remodeling. The postholes uncovered in Pithouse 3 will be described more fully in the Surface 1 discussion.

Feature 312, the hearth associated with Surface 2, is only partially intact due to the construction of Surface 1 and the Surface 1 hearth (Feature 100). The original shape of Feature 312 is unknown, and very little in the way of fill remained. What fill was present was the highly burned ashy sediment expected to occur in a hearth, indicating that the

hearth was not cleaned out during remodeling but was just covered over by Surface 1.

Located immediately north of the central hearth of Surface 2 was a problematical feature (Feature 293) that has been recorded as a ceremonial vault (figs. 14, 15 and 16). It was unburned and inferred to be a feature with possible ceremonial implications. The feature is alined with the long axis east-west and surrounded on the north, east, and west by groups of very small diameter holes (Features 409, 410, and 411) inferred to represent paho, or prayer stick, holes (fig. 12). Other features of this type have been found in similar "oversized" Periman Subphase pitstructures or "protokivas" in the Dolores River valley (Brisbin 1980; Kuckelman 1980).

Upright slabs and cobbles line the north and south sides of the ceremonial vault. The upright slabs are set into wide trenches excavated into the native substrate. The remainder of these trenches were filled with a redeposited native earth that included a few minute charcoal flecks. The north wall of the feature is composed of several courses of cobbles and a notched upright slab (PL 113). The south wall is constructed of a notched upright slab (PL 112) that is directly opposite the notched slab in the north wall; another unnotched upright slab (PL 114); several cobbles; and a trough metate fragment (PL 109). The tops of the metate and the cobble directly west of the notched upright slab have been deliberately broken off so as not to extend above the floor surface of Surface 1. This may have been done during the floor remodeling or when the slabs were shaped during the initial construction of the ceremonial vault. PL 85 is embedded in the floor at the southeast corner of Feature 293 and may have been associated with the construction of this feature.

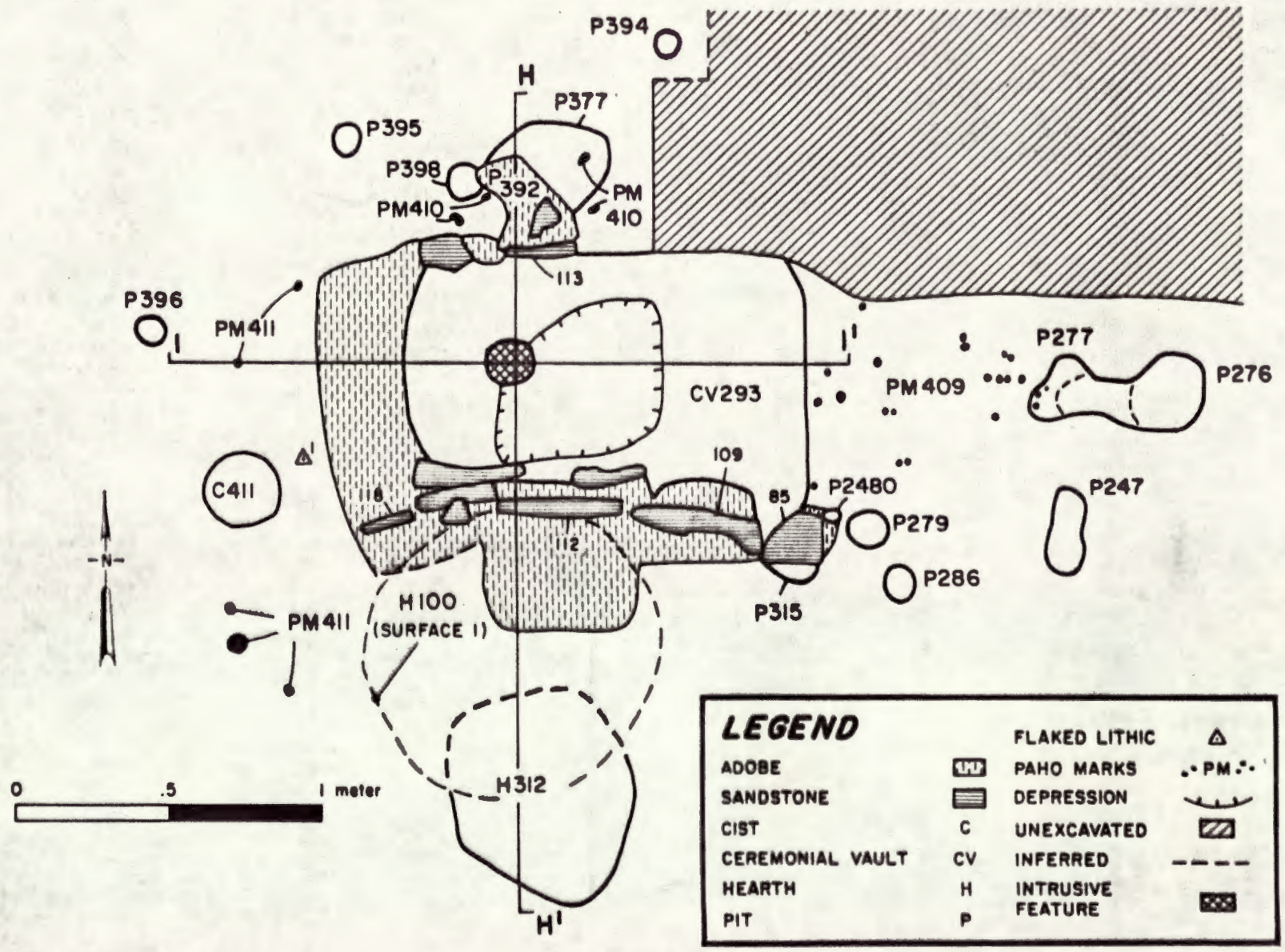

Figure 14. Plan map of Feature 293, Surface 2, Pithouse 3, Grass Mesa Village. Profiles are shown in figure 15.

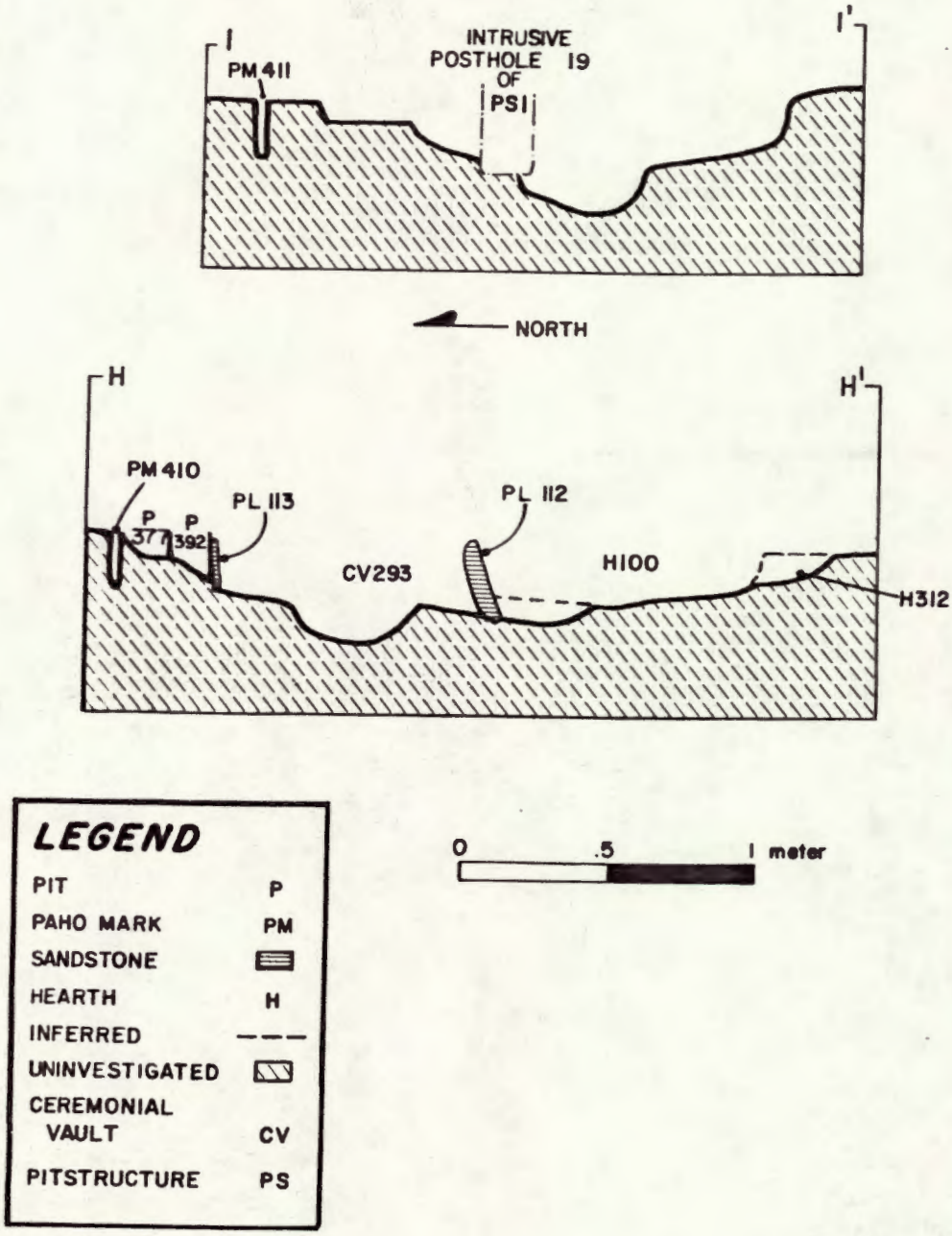

Figure 15. Profiles of Feature 293, Surface 2, Pithouse 3, Grass Mesa Village. Locations of profiles are shown in figure 14.

Figure 16. View of Feature 293, Surface 2, Pithouse 3, Grass Mesa Village. This view includes Feature 100, Surface 1 (DAP 058216).

No artifacts from the fill of the ceremonial vault were point located. The main part of the feature was filled with clean sand with a large number of small flakes, some rodent bones, and a few ceramic items. The sand was similar, if not identical, to the sand fill in other Surface 2 features, indicating a deliberate filling of these features at the time of the construction of Surface 1.

The set of notched upright slabs in the north and south walls may have functioned to support a cross-piece of some sort. A wooden beam could have been laid across the feature and could have functioned to suspend something over the ceremonial vault or possibly to serve as part of a roof covering. The base of the feature is cut by a circular pit, which may support the interpretation that a wooden cross-piece supported by the notched slabs may have suspended an item over the pit. If a cross-piece was supported by the notched slabs, it would have been aligned to magnetic north.

Clusters of small, conical-shaped holes occur in three groups on the north, east, and west side of the ceremonial vault (figs. 14 and 15), and the hearth (Feature 312) is situated on the south. It has been suggested that the small holes are associated with the ceremonial vault and possibly represent some sort of ritual feature. The small holes around the edges may be holes left by paho or prayer sticks. Another possibility is that the main "altar" feature with the notched slabs may have been a snake pit. Hodge (1924,1937) discusses what he identified as snake pit features in kivas at Hawikuh and illustrates several of these features. In Smith et al. (1966:64, plates 9c and 12c) snake pit features are discussed and several are illustrated. There is a marked similarity between these so-called snake pits at Hawikuh and the notched slab "ceremonial vault"

features that occur in large Periman Subphase pitstructures in the Dolores Valley. Puebloan rituals often include snakes as part of their religious ceremonies, so it should not be surprising that snakes may have been part of the ritual ideology of prehistoric peoples in the Dolores Valley in the ninth century.

The so-called paho, or prayer stick, holes, occur in three distinct groups on the east (Feature 409), north (Feature 410), and west side (Feature 411) of the ceremonial vault. The cluster of these features that occurs on the east side of the ceremonial vault consists of 22 small-diameter holes in the floor. A kidney-shaped pit (Feature 274) southeast of this cluster may have been associated. The majority of the features in this cluster are very small diameter (1 to 2 cm) and shallow (5 to 10 cm), although several holes are up to 20 cm deep, and are sometimes grouped into pairs with a narrow earthen dividing wall. Most of the holes are conical in cross section, and are reminiscent of a pointed stick being forced into the floor surface. All are filled with clean sand except one that has a piece of charred wood filling the diameter of the hole, further supporting the prayer stick, or paho, hypothesis. The holes are either oval, circular, or D-shaped in plan, possibly reflecting the shape of a worked stick that had been flattened on one side or shaped in some way, as many Puebloan pahos, or prayer sticks, often are.

The northern group (Feature 410) consists of only four holes slightly offset to the west of the center of the ceremonial vault, and they are generally deeper than those on the east and west side. One hole from Feature 410 is in the fill of a larger feature (Feature 377), indicating that the lower feature had been filled prior to the manufacture of Feature 410.

Five holes form Feature 411, which is on the west side of Feature 293, four of the holes are similar in size--1 to 2 cm in diameter and 10 cm deep. The fifth hole is 3 to 6 cm in diameter but similar in depth to the other four. A series of small-diameter, shallow, sand-filled pits nearly surround the ceremonial vault and prayer stick holes and may all be associated with a ritual function.

One warming pit (Feature 282) and one small floor cist (Feature 144) were identified on Surface 2. The warming pit is an oval subfloor feature located midway between the Surface 2 hearth (Feature 312) and the eastern wall of Pithouse 3. The feature was slightly fire reddened around the edges and was filled with clean sand with charcoal flecks. It was interpreted as a warming pit associated with food preparation or with warming ceramic vessels and their contents. The cist (Feature 144) was located in the northwest quadrant of the pithouse. This small, subfloor storage cist was circular in plan view and basin-shaped in cross section. The top centimeters of the pit sloped inward, gradually reducing the volume of the pit. The pit was filled with charred corn cobs.

The remaining features associated with Surface 2 are nondescript pits: two (Features 279 and 314) were burned pits and the other 41 were unburned pits (fig. 12 and table 6). Their function is unknown, and they are generally filled with clean sand and are void of any artifactual remains. It is unclear if they were all used simultaneously. Likewise, it is not known if the clean sand fill recovered from most of these pits represents the use of the pit or if the pits were all filled with the clean sand as part of the application of Surface 1. The small sand-filled pits could have supported staffs or prayer sticks of some sort, but this

must remain conjectural as there is no direct evidence for this. There are also a large number (29) of unburned pits on Surface 1.

This completes the feature assemblage for Surface 2. In contrast to the feature assemblage, the point-located artifacts recovered from Surface 2 were very sparse (table 7). A total of 25 artifacts were assigned three dimensional coordinates, or point locations, on Surface 2 and in features associated with Surface 2. This number is very low in comparison to that for the floor surfaces of Pithouses 1, 5, and 8 and Surface 1 of Pithouse 3. One possible explanation for the low number of point-located artifacts is that very few items were deliberately or accidently left on Surface 2 when that floor was modified into Surface 1. The point-located artifact count is also biased by the fact that many of the large nonflaked lithic fragments assigned point-location numbers with Surface 1 may have been associated with Surface 2. Some artifacts assigned to Surface 1 were actually incorporated into features shared by both surfaces. In most of these cases, the artifacts were assigned point-location numbers in the Surface 1 point-location series before the complex stratigraphic and remodeling situation could be worked out.

The majority of the artifacts identified as belonging to Surface 2 were Dolores Early Pueblo Gray jar sherds (21). These occurred as isolated sherds scattered across the surface and appear to represent a number of different vessels. The remaining artifacts were a Polished White bowl sherd, a single piece of flaked lithic debitage, a small unidentified projectile point, and a nonhuman bone. Point-located items from features associated with Surface 2 consisted entirely of nonflaked lithics (table 7) most of which have been previously discussed in relation to the construction elements of the ceremonial vault.

Table 7. Point-located artifacts, Surface 2, Pitstructure 3, Area 3, Grass Mesa Village

PL No.	Material Class	Item Description
1	Flaked lithic	Projectile point
2	Nonhuman bone	Unidentifiable fragment
3	Ceramic	DL Early Pueblo Gray jar sherd
4	Flaked lithic	Debitage
5	Ceramic	DL Early Pueblo Gray jar sherds (7)
6	Ceramic	DL Early Pueblo Gray jar sherds (3)
7	Ceramic	DL Early Pueblo Gray jar sherd
8	Ceramic	DL Early Pueblo Gray jar sherds (2)
9	Ceramic	DL Early Pueblo Gray jar sherd
10	Ceramic	DL Early Pueblo Gray jar sherd
11	Ceramic	DL Early Pueblo Gray jar sherds (2)
12	Ceramic	DL Early Pueblo Gray jar sherds (3)
		DL Polished White bowl sherd
85	Nonflaked lithic	Trough metate
109	Nonflaked lithic	Trough metate
112	Nonflaked lithic	Shaped stone slab
113	Nonflaked lithic	Shaped stone slab
114	Nonflaked lithic	Not culturally modified
124	Nonflaked lithic	Two-hand mano

NOTES: See figure 12 for artifact locations. PL's 85, 109, and 112-114 are associated with Feature 2. PL 124 is associated with Feature 430.

DL - Dolores Manufacturing Tract.
(N) - Number of items.

Unfortunately, evidence for the majority of activity areas was destroyed with the application of Surface 1. However, two activity areas can be inferred from the remains. The first of these, and the most obvious, is the main hearth (Feature 312, Activity Area 48). This cooking/heating domestic activity area functioned as the main heat source and probably as the main light source. There were no point-located artifacts associated with this feature and the feature itself was incomplete due to alteration resulting from the addition of Surface 1. The area around the central hearth would have been the area of most intensive and varied utilization.

The second activity area is defined as a ritual activity area (Activity Area 49) and includes the ceremonial vault (Feature 293) and the three groups of small-diameter prayer stick holes surrounding the main feature on the north, east, and west (Features 409, 410, and 411). The arguments for the inferred ritual nature of these features have been presented under the discussion of the features themselves and will not be repeated in detail. The ritual nature of these four features is suggested by (1) their central placement in the pitstructure, north of the hearth; an area traditionally involved with ritual significance, as indicated by the placement of sipapus in earlier pitstructures (i.e., during Basketmaker III) and in later kivas; (2) the consistent placement of similar features in other large, or oversized, pitstructures in the Dolores Valley dated to the late Periman Subphase; (3) the symmetry in the placement of the paho or prayer stick holes on three sides of the ceremonial vault in cardinal directions--north, east, and west; (4) the resemblance in shape of the small diameter holes to documented oval and D-shaped pahos, or prayer sticks (Vivian et al. 1978); (5) the notched upright slabs that may have functioned either to suspend something over the ceremonial vault or as a roof support for covering the feature; and (6) the suggestion that similar features in the historic Zuni Pueblo of Hawikuh functioned as snake pits or pens for the storage of the reptiles, and the traditional association of reptiles with ritual among historic Puebloan peoples (i.e., Hopi and Zuni).

Undoubtedly, additional activity areas existed in Pithouse 3 and probably would have been recognized if Surface 2 had not undergone such extensive remodeling. With the addition of Surface 1 and the subsequent construction of Pithouse 1 and Pithouse 5, many of the features and floor

artifacts were impacted and the integrity of both Surfaces 1 and 2 was affected. It is interesting to note that when Surface 1 was added, the ceremonial vault was simply abandoned and sealed over, whereas all of the other major features (i.e., hearth, wingwall, deflector, and postholes) were either duplicated or remodeled on Surface 1. Perhaps the ritual function of the feature was relegated to another pitstructure or "protokiva."

Surface 1. It has been indicated in the discussion of Surface 2 that the addition of Surface 1 resulted in a reorganization of the small features in Pithouse 3. The major features on Surface 2 were either completely replaced or remodeled, with the exception of the ceremonial vault. A large (1 m in diameter) and deep basin-shaped hearth with a raised adobe collar was constructed on Surface 1 (Feature 100). Likewise, the wingwall underwent modification, as well as the deflector. The features on Surface 1 (table 8 and fig. 17) are similar to those on Surface 2 and many features probably functioned in association with both surfaces (table 9).

The posthole pattern of Pithouse 3 includes more than the standard four main support posts. Sixteen postholes have been found in the excavated portion of the pithouse.

Features 247 and 318 are located in the eastern wingwall segment in the southeast corner; these features may have functioned together on Surface 2 (refer to the description of Surface 2 for a more thorough discussion). Feature 318 was removed when the structure was remodeled. A burned post was in Feature 247, confirming its association with Surface 1.

Feature 209 is located at the west end of the east wingwall and is associated with Surface 1. This posthole is lined with rock shims and has a slab base. The fill contained rotten wood and charcoal flecks.

Table 8. Feature summary, Surface 1, Pithouse 3, Area 3, Grass Mesa Village

Feature No.	Type	Plan	Profile	Length (cm)	Width (cm)	Depth/ height (cm)
84	Wall feature	Rectangular	Rectangular	150.0	100.0	80.0
91	Posthole	Round	Cylindrical	17.0	17.0	22.0
92	Unburned pit	Oval	Cylindrical	43.0	29.0	20.0
93	Unburned pit	Round	Cylindrical	11.0	10.0	25.0
94	Unburned pit	Round	Cylindircal	12.0	12.0	17.0
95	Unburned pit	Round	Cylindrical	9.7	9.5	17.0
97	Unburned pit	Round	Cylindrical	13.0	13.0	26.0
98	Unburned pit	Round	Cylindrical	9.0	8.0	14.5
99	Unburned pit	Round	Cylindrical	10.0	10.0	21.0
100	Hearth	Round	Basin	95.0	94.0	30.0
108	Unburned pit	Round	Cylindrical	9.5	9.0	9.0
209	Posthole	Round	Cylindrical	22.0	23.0	32.0
211	Unburned pit	Round	Basin	5.0	5.0	5.0
212	Unburned pit	Round	Basin	5.0	5.0	5.0
214	Posthole	Round	Cylindrical	30.0	30.0	70.0
215	Unburned pit	Round	Basin	5.0	5.0	5.0
216	Unburned pit	D-shaped	Cylindrical	9.0	6.0	9.0
217	Unburned pit	Round	Cylindrical	9.0	9.0	11.0
218	Unburned pit	Complex	Complex	53.0	18.0	8.0
220	Unburned pit	Round	Cylindrical	11.0	11.0	6.5
221	Unburned pit	Oval	Cylindrical	10.0	8.5	10.0
222	Posthole	Oval	Cylindrical	13.0	10.5	12.5
224	Unburned pit	Round	Basin	38.0	34.0	5.8
225	Unburned pit	Round	Cylindrical	8.5	8.5	6.0
226	Unburned pit	Round	Cylindrical	8.0	7.0	9.0
227	Unburned pit	Round	Basin	5.0	5.0	5.0
232	Burned pit	Round	Cylindrical	8.0	8.0	11.0
236	Unburned pit	Round	Cylindrical	21.0	21.0	22.0
237	Small floor cist	Round	Basin	66.0	65.0	39.0
238	Wall niche	D-shaped	Rectangular	32.0	20.0	50.0
247	Posthole	Round	Cylindrical	16.0	16.0	85.0
248	Unburned pit	Round	Cylindrical	10.0	10.0	9.0
249	Unburned pit	Round	Cylindrical	9.0	9.0	8.0
251	Posthole	Round	Cylindrical	12.0	12.0	16.0
278	Unburned pit	Oval	Cylindrical	13.0	8.0	12.0
319	Unburned pit	Round	Cylindrical	10.0	9.0	16.0
320	Unburned pit	Round	Cylindrical	10.0	10.0	18.0
322	Burned pit	Round	Cylindrical	8.0	8.0	20.0
323	Unburned pit	Round	Cylindrical	11.0	10.0	25.0
324	Unburned pit	Round	Cylindrical	40.0	24.0	12.0
2479	Unburned pit	Oval	...	54.0	19.0	...

NOTE: See figure 17 for feature locations.

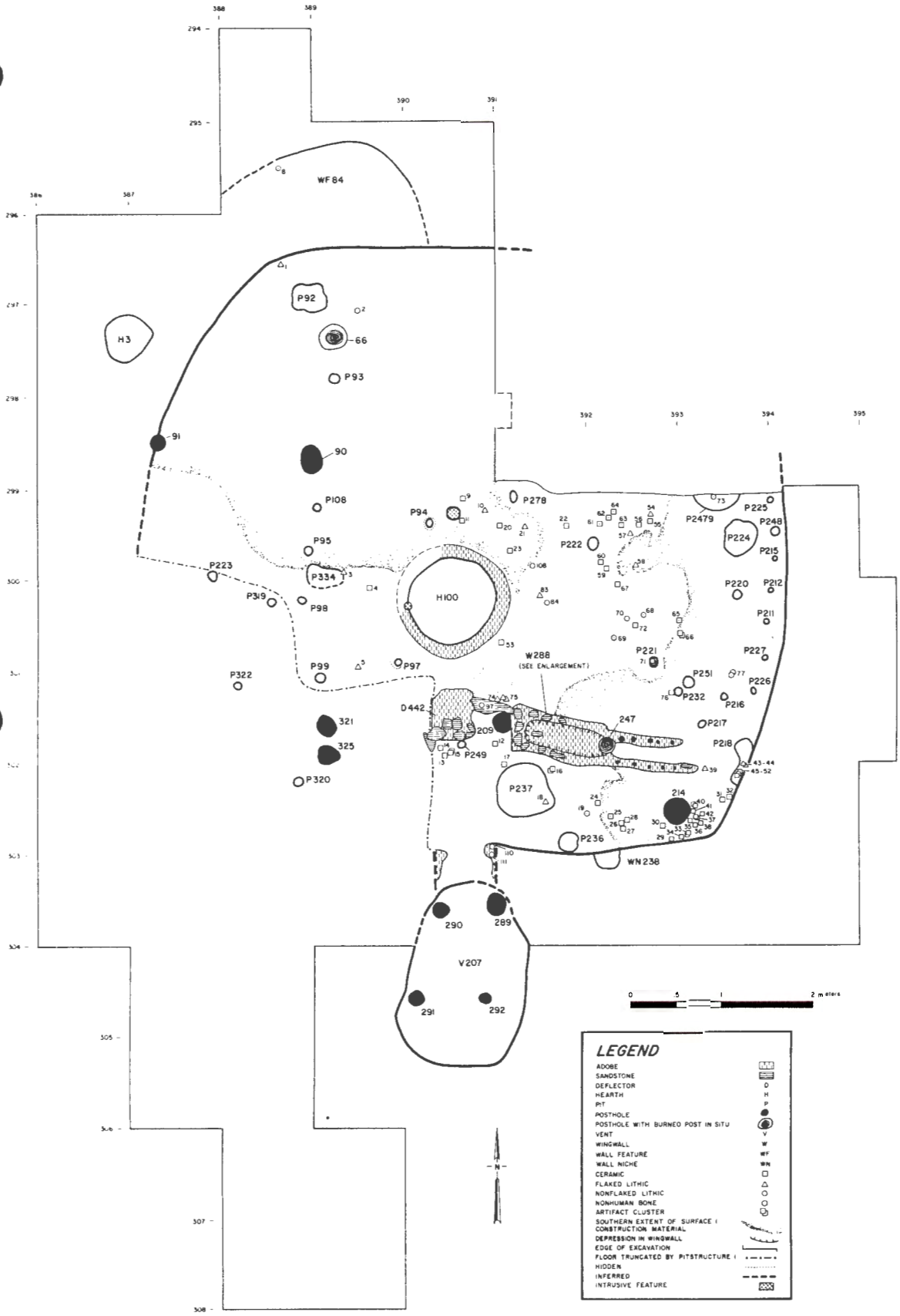

Figure 17. Plan map of Surface 1, Pithouse 3, Grass Mesa Village.

Table 9. Features associated with Surfaces 1 and 2, Pithouse 3, Grass Mesa Village

Feature No.	Type	Plan	Profile	Surface 1			Surface 2		
				Length (cm)	Width (cm)	Depth/ height (cm)	Length (cm)	Width (cm)	Depth/ height (cm)
66	Posthole	Round	Cylindrical	30.0	26.0	46.0	30.0	26.0	46.0
90	Posthole	Round	Cylindrical	32.0	24.0	30.0	32.0	24.0	30.0
207	Ventilator system	Complex	Complex	240.0	138.0	180.0	240.0	138.0	180.0
247	Posthole	Round	Cylindrical	16.0	16.0	85.0	16.0	16.0	85.0
288	Wingwall	Complex	Rectangular	*410.0	47.0	39.0	*534.0	47.0	39.0
289	Posthole	Round	Cylindrical	25.0	20.0	47.0	25.0	20.0	47.0
290	Posthole	Round	Cylindrical	18.0	17.0	38.0	18.0	17.0	38.0
291	Posthole	Round	Cylindrical	18.0	17.0	54.0	18.0	17.0	54.0
292	Posthole	Round	Cylindrical	13.0	11.0	20.0	13.0	11.0	20.0
321	Posthole	Round	Cylindrical	27.0	25.0	56.0	27.0	25.0	56.0
325	Posthole	Oval	Cylindrical	25.0	22.0	54.0	25.0	22.0	54.0
442	Deflector	Rectangular	Cylindrical	*54.0	*58.0	*40.0	*30.0	*15.0	*40.0

*Inferred dimension.
NOTE: The postholes are inferred to be associated with both surfaces. See figures 12 and 17 for feature locations.

Feature 280 is located north of the wingwall. The small size and the location of this posthole indicate that it did not function as a main roof support. This feature functioned with Surface 2 and was then abandoned and covered by the application of Surface 1.

Feature 251 is located north of the wingwall and is associated with Surface 1. The small size and the location of this posthole suggest that it did not function as a main roof support.

Feature 222 is a small posthole located along the northern edge of excavation in the east half of Pitstructure 3. This featuare is associated with Surface 1, but what it served to support is unknown.

Feature 214 was a main southeast corner post associated with Surface 1. The post it once contained may have been removed during the construction of Pithouse 5. The base of the feature contained rocks and cobbles and the fill was loose sandy clay with pieces of jacal.

Features 321 and 325 may have functioned together in the southwest corner as the main roof support and may have been associated with both surfaces. Although the west wingwall is no longer present, it is inferred that one or two posts were implanted in it as well.

Feature 66 acted as the northwest corner post; it contained the remains of a large juniper beam that extended 60 cm above the floor surface. The beam was wedged into the posthole with numerous small pebbles and rock shims to hold the vertical post in place. Many of the pebble shims were nonflaked lithic artifacts (these weighed a total of 3.4 kg.). A total of 23 kg of rock shims and cobbles were removed from this posthole. The base slab alone weighed 7.2 kg.

Feature 90 is located south of Feature 66 and may also have been associated with both surfaces. However, this feature did not contain

remnants of a post, as did Feature 66, and probably was nonfunctional at the time the structure burned.

Feature 91 is a small posthole located at the base of the west wall and is inferred to have functioned with Surface 1.

The most common features on Surface 1, like Surface 2, were the small-diameter (5 to 55 cm), shallow, sand-filled pits (fig. 17). Twenty-nine of these features were identified on Surface 1; all were unburned. They were similar in every respect to the 41 unburned pits already described for Surface 2, and it is hypothesized that they all functioned in a similar capacity; however, that function is unknown. The large number and distribution of these features suggest that they were probably not all in use simultaneously. Only one obvious pattern could be observed in their placement across the floor surfaces; this consisted of a series of these small, shallow pits (Features 211, 212, 215, 225, 226, 227, and 248) located along the east wall of the structure. These features appear to be analogous to those in Pitstructures 7 and 13 at Grass Mesa Village; however, the features in Pitstructures 7 and 13 are clearly postholes. The features described for Pitstructure 3 are too shallow to have been postholes, and their function remains unknown. While these unburned pits are the most common features on both Surface 1 and Surface 2, they remain problematical.

The remaining features identified on Surface 1 occur as single entities. The large central hearth (Feature 100) is the dominant feature on Surface 1. The hearth was nearly 100 cm in diameter and 30 cm deep, basin shaped in profile, and surrounded by a well-formed adobe collar that was truncated on the western side by the construction of Pithouse 1. The fill was stratified and contained three distinct layers: Stratum 1 (top)

was a loose matrix of sand and earth with charcoal and jacal inclusions (probably roof fall); Stratum 2 was a compacted gray ash layer; and Stratum 3 was a layer of clean yellow sand. A single mano was recovered from Stratum 3. This sequence of clean sand and ash is repeated in both the central hearths of Pithouse 1 (Feature 16) and Pithouse 5 (Feature 79). The clean sand layer may have functioned to extinguish the smouldering fire or to act as insulation so that the hearth could have been used as a warming pit. In all cases, the clean sand is a well-rounded quartzite sand that was probably carried up from Beaver Creek or the Dolores River.

Only the east half of the wingwall (Feature 288) remains intact (figs. 18 and 19); the west half of the wingwall and a portion of the deflector were destroyed by the construction of Pithouse 1. The extent portion of the wingwall exhibits two styles of construction. West of Feature 247 (a roof support post incorporated into the wingwall) the wingwall was a hairpin-shaped, puddled adobe structure with small irregular pieces of sandstone and river cobbles incorporated into the adobe walls. The top of the hairpin-shaped segment was basin-shaped and may have been used as a shelf (PL's 117-123 were resting in this basin). East of Feature 247, the wingwall was hollow and consisted of two parallel adobe and stick (jacal) walls. The hollow may have been used for tool storage (PL's 86-91, 96, and 98-107 rested on a portion of Surface 1 that extended into the hollow).

Between the wingwall and the east wall of the pithouse was a 60 cm wide space or gap. Within the gap associated with Surface 2 are parallel lines of postholes that suggest that the jacal portion of the wingwall originally extended to the east wall of the pithouse. The original

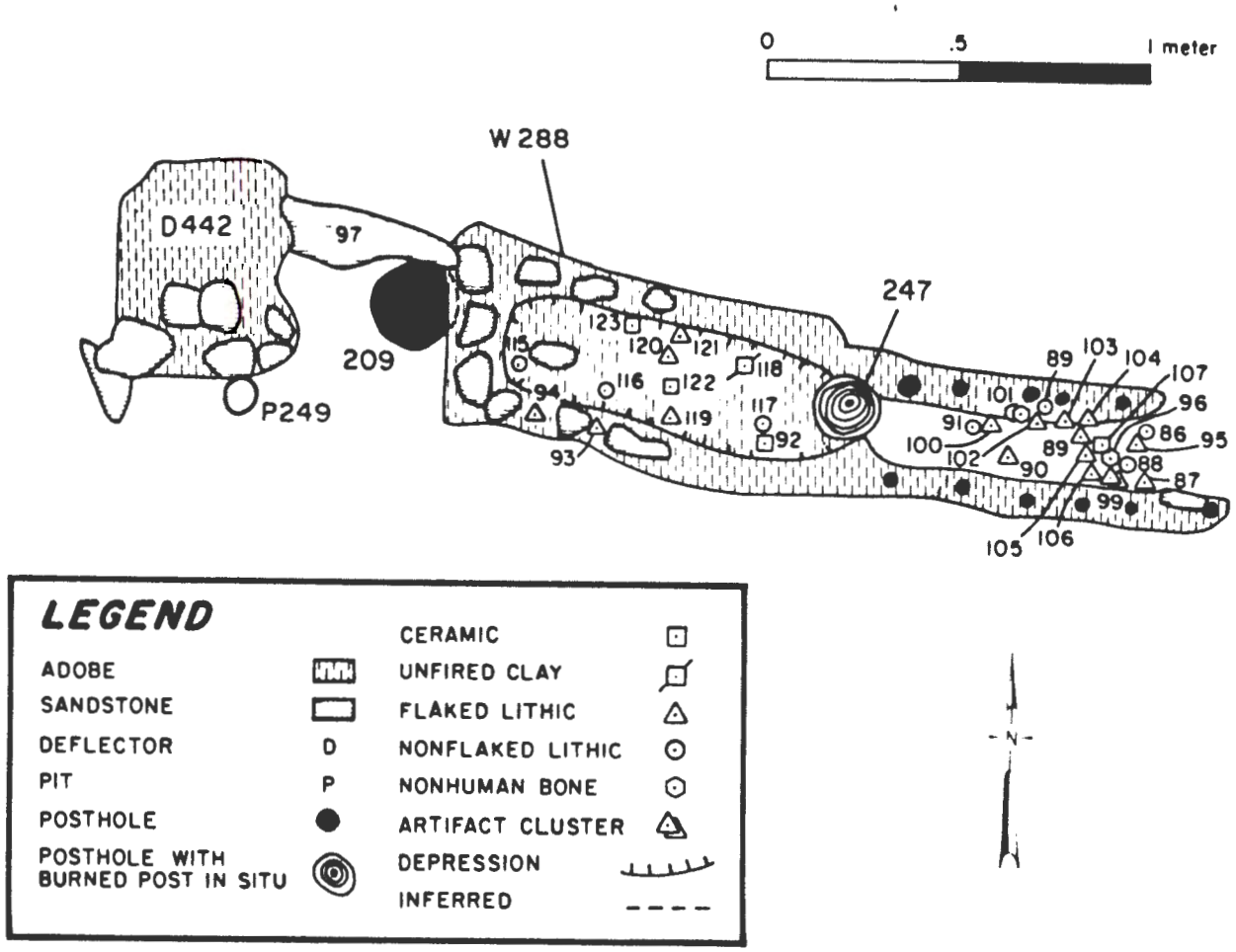

Figure 18. Plan map of Feature 288, Surface 1, Pithouse 3, Grass Mesa Village, showing point locations.

Figure 19. View of Feature 288, Surface 1, Pithouse 3, Grass Mesa Village (DAP 054405).

wingwall was probably not hollow. It probably contained at least one roof support post (Feature 318); it is possible that a second post (Feature 247) was part of the original wingwall construction.

The deflector (Feature 442) was partially destroyed by the construction of Pithouse 1, but the existing portion of the feature shows evidence of having been remodeled. The original deflector was narrow, was formed by two upright slabs, and had an earthen support on the south side. The deflector appears to have been set into a bench, or deflector mold (Feature 430; table 6 and fig. 12), to support the upright slabs. Feature 442 was later enlarged by the addition of several rocks to its southern perimeter, and adobe was applied to the feature. Several small holes of unknown function were apparent in the feature and several small diameter pits are located at its southern edge; the function and association of these pits is unknown.

The ventilator for Pithouse 3 (Feature 207) is a problematical feature. The size of the vertical shaft is large would be considered an adequate ventilator for the size of the pithouse. At McPhee Pueblo (Site 5MT4475) (Brisbin 1980), the ventilator for Pithouse 3 (a similar-sized, Periman Subphase pitstructure with a ceremonial vault north of the main hearth) is similar to the ventilator of Pithouse 3 in Area 3. Construction features of the ventilator include an adobe collar that covered the opening of the horizontal ventilator shaft where it intersects the floor surface. The base of the ventilator shaft contained four large postholes (Features 289 through 292) that appear to have functioned to support some sort of roof structure. It has been suggested that these beams may have functioned to support a wooden covered horizontal ventilator shaft, or that they formed the sides of the vertical

shaft. Although the feature may have been an antechamber, it is more likely that it was a ventilation system.

The ventilator exhibits an unusual fill sequence that is difficult to interpret. Although the surface of the pithouse main chamber is covered by a layer of burned roof fall, the surface of the ventilator is covered by a 30-cm layer of mixed refuse, with the rotted remains of the ventilator posts extending through the fill. Above the refuse, the posts and the walls of the ventilator were highly burned. The refuse may have resulted from use of the ventilator as a midden by the inhabitants of Pithouses 1 and 5. When these late structures burned, their proximity to Feature 207 may have caused it to burn. However, why the ventilator apparently did not burn when Pithouse 3 burned cannot be explained. An archaeomagnetic sample was collected from the burned walls but unfortunately did not yield a date.

A deep (39 cm), circular, basin-shaped floor cist (Feature 237) was located south of the wingwall near the ventilator tunnel opening. The fill consisted of burned roof fall that probably accumulated at the time the structure burned and collapsed. Several lithic artifacts were recovered from the fill and base of the feature. The size of the pit suggests that it may have been used for some sort of storage, although none of the materials recovered from the pit shed light on what might have been stored there.

Additional features associated with Surface 1 are two small burned pits (Features 322 and 232) and a wall niche (Feature 238) in the southeastern corner of the pithouse. Feature 322 is located 1.75 m southwest of the main hearth (Feature 100) for Surface 1. Only a small amount of burned fill remained, as approximately the top half of

Feature 322 had been truncated by the excavation of Pithouse 1. The burned fill in the feature could have resulted from activities associated with Pithouse 1, since it is one of only four small-diameter, sand-filled pits on either Surface 1 or 2 of Pithouse 3 that exhibits burning. Feature 232 is generally similar to Feature 322 and is located 2 m southeast of the central hearth (Feature 100).

The niche (Feature 238) is unusual as it is the only such feature to be encountered in any of the Subarea 2 structures. It consisted of a semicircular excavation into the wall in the southeastern corner of the pithouse. It may have been originally intended to serve as a posthole, but was never used, or it may have had a storage function. It was not technically a niche since it did not have a ceiling. The feature was not excavated back into the wall, but was a vertical cut. The base of the feature was level with Surface 1 of Pithouse 3. The fill was culturally sterile except for some small fragments of charcoal identified as Juniperus sp., Pinus ponderosa, and Populus sp. and several pieces of split Yucca sp. leaf (appendix E). The feature appears to have been intentionally filled or plugged aboriginally; perhaps it was associated with Surface 2 and was filled during the remodeling of Surface 1.

The final feature that may have been associated with Surface 1 is a benchlike feature (Feature 84), although it does not resemble a pithouse bench as they have been defined elsewhere in the project area. Similar features have not been found associated with the other large, late Periman Subphase pitstructures in the Dolores River valley. The feature was described as a flat area in the north wall and one artifact, a two-hand mano (PL 8), associated with the feature. The direct association of Feature 84 with Pithouse 3 is only inferred due to its articulation with

the north wall. Feature 84 may have served as an entryway, although this seems unlikely because most of the entryways to pitstructures were through the hatchway in the roof, through the antechamber, or in the eastern side of the structure. Another possibility is that Feature 84 represents the remains of a borrow pit or pithouse that was truncated by the construction of Pithouse 3; however, this interpretation would not explain why Feature 84 and Pithouse 3 are both overlain by Stratum 6 (fig. 5). The stratigraphic profile suggests the possibility that Feature 84 postdates Pithouse 3, and that it might be an exterior occupation surface associated with Pithouses 1 and 5.

At approximately the same elevation as Feature 84 is a hearth (Feature 3), which is located on an excavated-earth surface immediately northeast of Pithouse 3. The hearth is an irregular oval, is basin-shaped, and measures 53 by 42 by 22 cm. Features 84 and 3 are possibly associated with each other, but this possibility was apparently not investigated in the field. Archaeomagnetic sample 1 was collected from Feature 3 but did not produce a date.

A total of 115 artifacts or groups of artifacts were recovered on Surface 1 of Pithouse 3 (table 10). The large number of point-located artifacts (in contrast to Surface 2) is partially due to the fact that in many cases artifacts associated with Surface 2 features were assigned to the Surface 1 point location number series before the complex stratigraphic and remodeling situation in Pithouse 3 could be worked out. Therefore, not all of the 115 items identified in the Surface 1 point location number series were associated with only that floor surface.

The most common items recovered on the floor surface were ceramics, with 58 point locations accounting for 79 sherds and 3 pieces of

Table 10. Point-located artifacts, Surface 1, Pithouse 3, Grass Mesa Village

PL No.	Material class	Item description
1	Flaked lithic	Debitage
2	Nonhuman bone	Mammalia, medium--gaming piece
3	Flaked lithic	Utilized flake
4	Ceramic	DL Early Pueblo Gray jar sherd
5	Flaked lithic	Projectile point, stemmed
8	Nonflaked lithic	Two-hand mano
9	Ceramic	DL Early Pueblo Gray jar sherd
10	Flaked lithic	Debitage
11	Ceramic	DL Early Pueblo Gray jar sherd
12	Ceramic	DL Early Pueblo Gray jar sherd
13	Ceramic	DL Cortez Black-on-white jar sherd
14	Ceramic	DL Early Pueblo Gray jar sherd
15	Ceramic	DL Polished White bowl sherds (2)
16	Ceramic	BL Abajo Red-on-orange bowl sherds (2)
17	Ceramic	Item misplaced
18	Flaked lithic	Used core
19	Nonhuman bone	*Erethizon dorsatum*--femur
20	Ceramic	DL Early Pueblo Gray jar sherd
21	Flaked lithic	Angular debris
22	Ceramic	DL Early Pueblo Gray jar sherd
23	Ceramic	DL Early Pueblo Gray jar sherd
24	Ceramic	DL Early Pueblo Gray jar sherd
25	Ceramic	DL Early Pueblo Gray jar sherd
26	Ceramic	DL Early Pueblo Gray jar sherd
27	Ceramic	BL Abajo Red-on-orange jar sherd
28	Ceramic	DL Moccasin Gray jar sherd
29	Ceramic	Item misplaced
30	Ceramic	SJ Piedra Black-on-white bowl sherd
31	Ceramic	DL Early Pueblo Gray jar sherd
32	Ceramic	DL Early Pueblo Gray jar sherd
33	Ceramic	DL Piedra Black-on-white bowl sherds (2)

NOTES: PL numbers not listed represent items later determined not to be associated with the floor. See figure 17 for artifact locations. PL 8 is associated with Feature 84. PL's 78-82 were recovered from the fill of Feature 237. PL's 92, 93, 94, 95, and 97 were incorporated into Feature 288 as construction materials and PL's 86-91, 96, 98-107 and 117-123 were within that feature and are mapped on figure 18; PL's 115 and 116 were in the postoccupational fill overlying Feature 288. PL's 110 and 111 were used in the construction of the ventilator (Feature 207) tunnel opening.

DL - Dolores Manufacturing Tract.
BL - Blanding Manufacturing Tract.
SJ - San Juan Manufacturing Tract.
CH - Chuska Culture Category.
(N) - Number of items.
(g) - Weight of items.

Table 10. Point-located artifacts, Surface 1, Pithouse 3, Grass Mesa Village--Continued

PL No.	Material class	Item description
34	Ceramic	DL Early Pueblo Gray jar sherd
35	Ceramic	BL Abajo Red-on-orange bowl sherd
36	Ceramic	DL Slipped White bowl sherd
37	Ceramic	DL Slipped White bowl sherds (2)
38	Ceramic	DL Polished White bowl sherd
39	Flaked lithic	Used core
40	Ceramic	BL Abajo Red-on-orange bowl sherds (3)
41	Ceramic	DL Polished White bowl sherd
42	Ceramic	DL Early Pueblo Gray jar sherd
43	Flaked lithic	Utilized flake
44	Flaked lithic	Thick uniface
45	Ceramic	BL Early Pueblo Red bowl sherd
46	Ceramic	SJ Early Pueblo Red bowl sherd
47	Ceramic	DL Early Pueblo Gray jar sherd
48	Ceramic	DL Moccasin Gray jar sherd
49	Ceramic	DL Early Pueblo Gray jar sherd
50	Ceramic	DL Early Pueblo Gray jar sherd
51	Ceramic	DL Early Pueblo Gray jar sherd
52	Ceramic	Item misplaced
53	Ceramic	DL Early Pueblo Gray jar sherd
54	Flaked lithic	Used core
55	Ceramic	DL Early Pueblo Gray jar sherd
56	Ceramic	DL Early Pueblo Gray indeterminate sherd
57	Flaked lithic	Thick uniface
58	Flaked lithic	Debitage
59	Ceramic	DL Early Pueblo Gray jar sherd
60	Ceramic	DL Moccasin Gray jar sherd
61	Ceramic	DL Early Pueblo Gray jar sherd
62	Ceramic	DL Early Pueblo Gray jar sherd
63	Ceramic	DL Early Pueblo Gray jar sherd
64	Ceramic	BL Early Pueblo Red jar sherd
65	Ceramic	DL Early Pueblo Gray jar sherd
66	Ceramic	DL Early Pueblo Gray jar sherds (7)
		SJ Polished White bowl sherds (3)
67	Ceramic	DL Early Pueblo Gray jar sherd
68	Nonflaked lithic	Two-hand mano
69	Nonflaked lithic	Trough metate
70	Nonflaked lithic	Hammerstone
71	Ceramic	DL Early Pueblo Gray jar sherds (7)
		DL Mancos Gray jar sherd
72	Ceramic	Item misplaced
73	Nonflaked lithic	Two-hand mano
74	Flaked lithic	Debitage
75	Flaked lithic	Debitage (2)
76	Ceramic	DL Polished White jar sherd
77	Nonhuman bone	Unidentifiable fragments (2)
		Aves (29)*

*Remains of a partially articulated Aves skeleton.

Table 10. Point-located artifacts, Surface 1, Pithouse 3, Grass Mesa Village--Continued

PL No.	Material class	Item description
78	Nonflaked lithic	Trough metate
79	Flaked lithic	Unused core
80	Nonflaked lithic	Trough metate
81	Nonflaked lithic	Hammerstone
82	Nonflaked lithic	Minimally altered
83	Flaked lithic	Debitage
84	Nonflaked lithic	Trough metate
86	Nonflaked lithic	Notched axe
87	Flaked lithic	Unused core
88	Nonflaked lithic	Two-hand mano
89	Nonflaked lithic	Not culturally modified
90	Flaked lithic	Debitage
91	Nonflaked lithic	Mano
92	Ceramic	DL Early Pueblo Gray jar sherd
93	Flaked lithic	Utilized flake
94	Flaked lithic	Angular debris
95	Flaked lithic	Debitage
96	Nonhuman bone	Aves, medium
97	Nonflaked lithic	Trough metate
98	Flaked lithic	Used core
99	Flaked lithic	Utilized flake
		Used core
100	Flaked lithic	Debitage
101	Nonhuman bone	Mammalia or Aves--long bones (2)
102	Flaked lithic	Debitage
103	Flaked lithic	Debitage
104	Flaked lithic	Debitage
105	Flaked lithic	Debitage
106	Flaked lithic	Utilized flake
107	Ceramic	CH Early Pueblo Mineral Paint Black-on-white jar sherd
108	Nonflaked lithic	Trough metate
110	Nonflaked lithic	Trough metate
111	Nonflaked lithic	Trough metate
115	Nonflaked lithic	Minimally altered
116	Nonflaked lithic	Not culurally modified
117	Nonflaked lithic	Polishing stone
118	Ceramic	Unfired clay (3) (352g)
119	Flaked lithic	Debitage
120	Flaked lithic	Debitage
121	Flaked lithic	Debitage
122	Ceramic	Item misplaced
123	Ceramic	DL Early Pueblo Gray jar sherd

unfired clay. By far the most common ceramic type is Early Pueblo Gray body sherds from Chapin Gray, Moccasin Gray, or Mancos Gray vessels. On the basis of their temper types these sherds are believed to have been manufactured in the Dolores River valley. In addition to the locally made gray wares, Moccasin Gray jar sherds, and Abajo Red-on-orange, Piedra Black-on-white, and Cortez Black-on-white bowl sherds were also recovered from the floor surface. No apparent clustering or patterning was observed in the distribution of the ceramics; however, a great many of them were found in the area south of the eastern wingwall segment around the southeastern posthole (Feature 214).

Nonflaked lithic tools were the second most common (20) artifact type recovered from Surface 1. These were mainly represented by manos, hammerstones, and trough metate fragments. The manos and hammerstones generally were recovered as whole artifacts. The trough metates were always fragmented, and most of the fragments that were recovered were incorporated into features. No mealing areas were associated with either Surface 1 or Surface 2 of Pithouse 3.

Flaked lithic debitage accounts for 18 PL's (17 debitage items and 2 angular debris items), and 15 flaked lithic tools account for 14 PL's. Flaked lithic tools and debitage occurred in nearly the same frequency. Like the ceramics, the flaked lithic items were distributed across the entire floor surface and did not form any concentrations that might indicate an activity area. The flaked lithic tools were mainly represented by utilized flakes and cores.

A number of nonhuman bones were recovered from Surface 1 and assigned point location numbers. Among these were the remains of a partially articulated bird skeleton (PL 77). The remainder of the nonhuman bone was

represented by isolated occurrences of unarticulated bones, making it impossible to determine if any of them represented subsistence activities. A number of faunal remains from the fill of Pithouse 3 have been identified and appendix C summarizes results of analysis of faunal data from Pithouses 1, 3, 5, and 8.

Due to the lack of clustering of artifacts and features, activity areas could not be identified. However, two activity areas were defined on the basis of features alone. A heating/cooking activity area (Activity Area 46) was defined around the central hearth for Surface 1 (Feature 100). This probably served as the central place in the structure for heat, light, and food preparation. A second activity area (Activity Area 47) was defined in the eastern wingwall (Feature 288) and was characterized as a tool storage area for both flaked and nonflaked lithic tools because numerous such tools were recovered there (table 10 and fig. 18). It is inferred that the western wingwall segment would have mirrored the eastern segment and probably served as an area of tool storage as well. Unfortunately, the entire western wingwall segment was destroyed by the construction of Pithouse 1 sometime in the late A.D. 800's or early 900's.

Remodeling in Pithouse 3. The evidence for remodeling in Pithouse 3 is substantial and can be summarized as follows:

1. The deflector was expanded at the time of remodeling represented by the addition of Surface 1. Originally, the deflector was a structure of narrow upright slabs and adobe. It was modified to a square, adobe-covered structure.
2. The wingwall underwent modification, at least in the east segment that remains. A posthole (Feature 318) in the wingwall was removed

and sealed over. The other posthole (Feature 247), in the wingwall was constructed closer to the deflector, occupying a more central position in the eastern wingwall segment. A charred and rotted juniper beam remained in place in this second posthole; whether Features 247 and 318 functioned together on Surface 2 is unknown (refer to the discussion of these features in the Surface 2 description). Parallel, narrow jacal walls were abutted to the main wingwall structure at the location of the southeast corner posthole, and these walls originally extended to the eastern wall of the pithouse.

3. The most dramatic evidence for remodeling was the filling of the Surface 2 features with clean sand and the actual raising of the floor surface. In this process most of the major Surface 2 features were either drastically remodeled or filled and sealed over by Surface 1. The center portion of the pitstructure contained the least fill between Surface 1 and Surface 2.

4. The final evidence for remodeling in Pithouse 3 is the noticeable lack of point-located artifacts recovered from Surface 2 as compared to Surface 1. This indicates that Surface 2 was deliberately cleaned to accomodate the construction of Surface 1.

Dating. Results of several absolute dating techniques have been disappointing. Four archaeomagnetic samples were collected from Pithouse 3: one in the 1979 season and three in the 1980 season. Sample 17 was collected from the burned wall of the ventilator shaft (Feature 207) but did not produce a date. Sample 11 was collected from the burned north wall of the structure and provided a date of A.D. 785-805. However, structure walls are subjecte to slumpage, which diminishes

the accuracy of the dates obtained. Samples 13 and 14 were collected from the central hearths (Features 100 and 312) of Surfaces 1 and 2; these samples were used to recalibrate the Dolores curve (Hathaway et al. 1983) and the data results are not reported here to avoid circularity of reasoning.

Two tree-ring dates were obtained from the 74 samples submitted for dating (table 11). Both of the tree-ring dates were obtained from fragments of charred juniper construction beams. A noncutting date of A.D. 802vv (sample 248) was obtained from one of the main southeast posts (Feature 247). The single cutting date of A.D. 852r (sample 266; see table 11 for explanation of symbol) was obtained from a beam in the fill of the ventilator shaft and can be employed in two possible interpretations of the construction and remodeling of Pithouse 3.

The A.D. 852r date may possibly represent the remodeling of the structure. If this were the case, a maximum estimate for the construction of the pithouse would be 20 years earlier, or A.D. 832. This estimate is based on preliminary projections of structure longevity (Schlanger 1983). Similarly, the structure may have been inhabited an additional 20 years after the remodeling, which would date abandonment of Pithouse 3 at A.D. 872.

Alternatively, the A.D. 852r date may represent the initial construction of Pithouse 3. Evidence uncovered through excavation elsewhere in the DAP study area supports this hypothesis. Other structures of a similar size and with a similar feature complement tend to date as late as the A.D. 870's (i.e., construction of Pithouse 3 at Site 5MT4475 has been tree-ring dated to the A.D. 870's), and there is no evidence of this type of structure in the DAP study area prior to A.D. 850. If Pithouse 3 was

Table 11. Tree-ring sample results,
Area 3, Grass Mesa Village

Sample No.	Provenience	Taxon	Inside date (A.D.)	Outside date (A.D.)
22 (DAR-68)	Pithouse 1	Ponderosa pine	668fp	780vv
103 (DAR-79)	Pithouse 5	Ponderosa pine	579p	650+vv
248 (DAR-278)	Pithouse 3	Juniper	694fp	802vv
266 (DAR-288)	Pithouse 3	Juniper	619+p	852r

NOTE: DAR numbers, taxa, dates, and the following tree-ring symbols were provided by the Laboratory of Tree-Ring Research, University of Arizona, Tucson:

fp - The curvature of the inside ring indicates that it is far from the pith.
vv - There is no way of estimating how far the last ring is from the true outside.
\+ - One or mor rings may be missing near the end of the ring series whose presence or absence cannot be determined because the specimen does not extend far enough to provide an adequate check.
p - Pith ring present.
r - Less than a full section is present, but the outermost ring is continuous around available circumference.

constructed on the A.D. 850's, it was probably abandoned by A.D. 890. This would be a maximum life span and assumes, based on structural longevity studies (Schlanger 1983), that the structure could have been used for 40 years with structural remodeling occurring after the first 15 to 20 years of use.

Abandonment in the A.D. 880's or 890's is supported by the superposition of Pithouses 1 and 5. Pithouses 1 and 5 are associated with the terminal occupation at Grass Mesa Village, which probable dates from A.D. 880 to 910. One of the terminal occupation pithouses, Pitstructure 17 in Area 5, has an associated tree-ring date of A.D. 882++vv (DAR 304) which indicates a construction date sometime after A.D. 882.

These dating results are augmented by the ceramic dates for Pithouse 3. The ceramic assemblages include Chapin Gray, Moccasin Gray, and Mancos Gray, with a few instances of Chapin Black-on-white, Piedra Black-on-white, and Cortez Black-on-white (appendix D). The Surface 2 assemblage is small and could date anywhere between A.D. 825 and A.D. 910 (Blinman 1982). If the absence of Mancos Gray from Surface 2 is not just a function of the sample size, the date range would be reduced to between A.D. 825 and 860. Surface 1 includes Mancos Gray and Cortez Black-on-white and may date between A.D. 875 and 910. The stratigraphic unit that is richest in cultural materials in Pithouse 3 is the roof fall. The ceramic assemblage from the roof fall stratum is similar to those from the two floor surfaces, but includes both Mancos Gray and Cortez Black-on-white. This would date the roof fall and early fill to between A.D. 875 and 910.

Pithouse 1

Dimensions:

North wall (length):	4.15 m
South wall (length):	4.00 m
East wall (length):	4.30 m
West wall (length):	4.05 m
Floor area:	17.60 m^2

Pithouses 1 and 5 are contemporaneous, share a common wall, and are superimposed over the south half of Pithouse 3. They extend outside the earlier structure to the east and south (Pithouse 5) and to the west and south (Pithouse 1) (figs. 4 and 11).

In plan view, Pithouse 1 is rectangular, with straight walls and rounded corners (fig. 20). The north wall (fig. 21) was cut into the postoccupational fill of Pithouse 3. In the area of the north wall, sandstone rubble was scattered across the floor of Pithouse 1. This rubble is inferred to be the collapsed remains of a retaining wall that

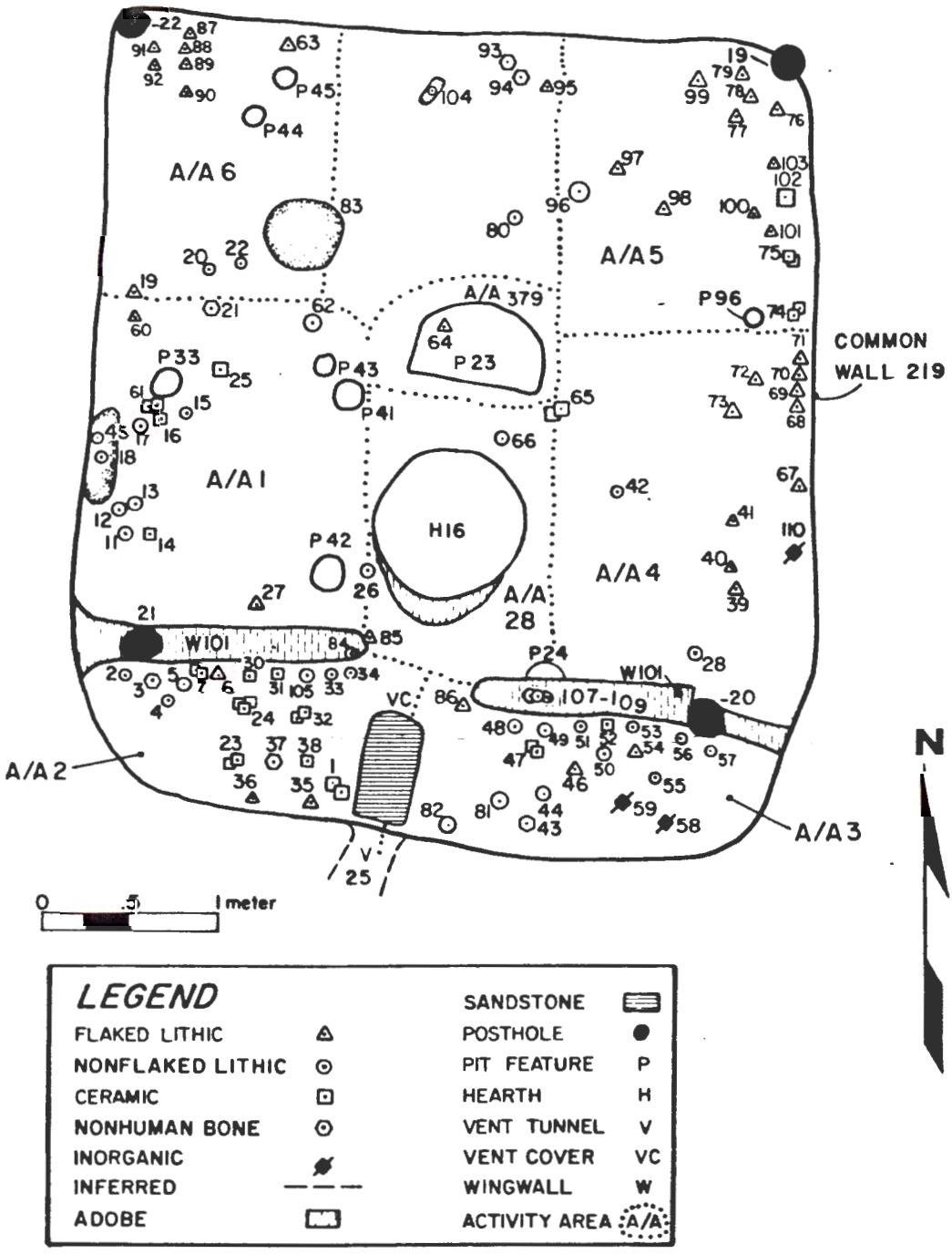

Figure 20. Plan map of Pithouse 1, Grass Mesa Village.

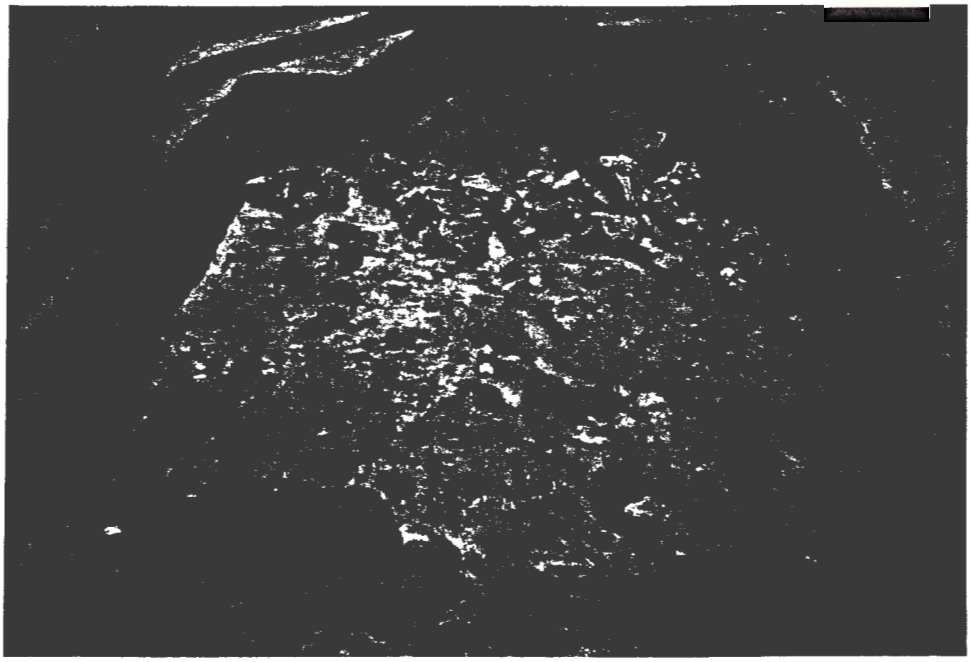

Figure 21. View of retaining wall rubble, Pithouse 1, Grass Mesa Village (DAP 010235).

was apparently constructed to hold back the unconsolidated fill of Pithouse 3.

The eastern wall is a common wall (Feature 219) with Pithouse 5 and was constructed using an adobe and rock core faced on both sides by closely spaced (15 to 20 cm), small diameter (8 to 10 cm) upright posts. These posts support two similar-sized horizontal stringers, forming a lattice work retaining wall. The core of this wall included several pieces of ground stone. A thin wash of mud, preserved by burning, covered several portions of both sides of the wall. Individual fingerprints and, in some cases, entire handprints were preserved in the plaster.

The south and west walls are formed of exposed native earth at the edge of the prehistoric pit excavation. The walls are burned to the top of roof fall. The two fill walls abutt the main structure wall, indicating that they were added after the main pitstructure outline had been excavated. The ventilator was unlined and was excavated through the sterile substrate.

Data on roof construction are provided, in part, by taxonomic identification of the tree-ring samples collected from Pithouse 1. These 14 samples represent a variety of arboreal species: 9 ponderosa pine, 2 juniper, 2 pinyon pine, and 1 cottonwood or aspen. Additionally, vegetal materials without dating potential were submitted for species identification (appendix B).

The floor of Pithouse 1 had been excavated approximately to the depth of Surface 1 in Pithouse 3, but the two floors did not precisely coincide. In the south half of Pithouse 1, the Pithouse 1 floor was excavated into native earth, effectively destroying the Pithouse 3 floor. In the northern half of Pithouse 1, a 0.5- to 2.0-cm-thick clay/adobe

floor was constructed, which directly overlies the Pithouse 3 floor. The edges of both the natural use-compacted native earth and the prepared surface slope up to the walls on all sides. The prepared floor in the north half of the structure slopes up to the base of the dry-laid masonry of the north wall.

Surface 1 of Pithouse 1 contained a variety of features (table 12), including four main roof supports represented by postholes; a central hearth; subterranean ventilation system; low, narrow wingwalls; and a series of small-diameter, circular, sand-filled pits distributed across the floor. In addition to 17 architectural and subfloor features, 106 artifacts were point located on the floor surface or in the various features.

The roof was supported by four main support posts, one each in the northwest and northeast corners of the structure, and one set into each wingwall segment in the south end. The posts set into the wingwalls are not flush with the east and west walls like their northern counterparts but are approximately 30 cm from the walls. These posts were not completely surrounded by the wingwall but were exposed on both sides of the wall. All four main upright posts were of coniferous species, but only the two south posts were recovered for tree-ring dating samples. The posts were positively identified as ponderosa pine. The majority of the burned stringer poles resting on the floor in the roof fall stratum (Stratum 10) were Populus sp. The series of small-diameter post molds remaining as the structural portion of the east wall shared with Pithouse 5 were unidentified coniferous species that were most likely pinyon pine or ponderosa pine branches, but none of them produced tree-ring dates. Entrance to the structure was most likely through a central hatchway/smokehole in the roof.

Table 12. Feature summary, Pithouse 1, Area 3, Grass Mesa Village

Feature No.	Type	Plan	Profile	Length (cm)	Width (cm)	Depth/ height (cm)
16	Hearth	Round	Basin	76.0	71.0	26.0
19	Posthole	Round	Cylindrical	14.0	14.0	147.0
20	Posthole	Round	Cylindrical	14.0	14.0	108.0
21	Posthole	Round	Cylindrical	10.0	9.0	105.0
22	Posthole	Round	Cylindrical	12.7	11.5	46.0
23	Unburned pit	D-shaped	Basin	61.5	40.2	18.3
24	Burned pit	Round†	Basin	26.0	11.0	8.0
*25	Ventilation system	Round	Cylindrical	78.0	72.0	142.0
33	Unburned pit	Round	Cylindrical	9.0	7.0	22.0
41	Unburned pit	Round	Cylindrical	12.7	12.5	20.4
42	Unburned pit	Round	Cylindrical	10.0	9.0	18.0
43	Unburned pit	Round	Basin	8.7	8.0	6.2
44	Unburned pit	Round	Basin	9.0	8.6	6.1
45	Unburned pit	Round	Basin	8.0	8.0	5.0
96	Unburned pit	Round	Cylindrical	8.5	8.0	9.5
101	Wingwall	Complex	Rectangular	330.0	15.0	80.0
219	Surface feature wall	Rectangular	Rectangular	330.0	75.0	90.0

* Located in Stratum 3.
† Inferred.

NOTE: See figure 20 for feature locations. Feature 219 appears on figure 4.

A large, circular, basin-shaped central hearth (Feature 16) was excavated into sterile earth beneath the surface of Pithouse 1. The sides and base were composed of smoothed native earth with a collar extending approximately 3 to 4 cm high along the southern periphery. The feature contained five distinct strata, with the floor fill/roof fall as the uppermost stratum, which capped four alternating strata of clean yellow sand and burned sand fill. All the strata were sampled for flotation and pollen analysis (appendix A).

The alternating clean sand and burned sand fill is unusual and may be interpreted several different ways. The alternating strata may represent short-term uses. Clean sand may have been placed in the feature to

extinguish the fire and to avoid the smokiness associated with a naturally diminishing fire. The lack of heavy ash build up and the lack of large-diameter charcoal fragments may, however, indicate use as a warming pit. In any case, these sand layers have been intentionally placed in the feature and do not represent natural accumulations. The presence of the adobe collar on only the south side of the feature is functionally unexplainable at the present time.

North of the hearth was an unburned, D-shaped pit (Feature 23) filled with clean sand and capped with a layer of adobe. Although it is possible that Feature 23 is a capped Pithouse 3 feature, its central location within Pithouse 5 is probably not fortuitous and leaves little doubt that it is actually associated with the occupation of Pithouse 5. Feature 23 may have functioned in association with the hearth, perhaps as a warming pit, or it may have been associated with ritual activities in Pithouse 5. It may be analogous to the ritual features (i.e., central vaults and central basins) that have been documented in numerous Periman Subphase pithouses within the project area.

The ventilation system (Feature 25) for Pithouse 1 consisted of an unlined tunnel dug through sterile earth. The tunnel entered through the south wall of the structure at floor level. The horizontal tunnel exits the structure upward at an incline of 30°; 95 cm from the south wall, the tunnel intersects a circular, vertical shaft averaging 65 cm in diameter at the base. The vertical shaft flares to a maximum of 78 cm where it opens on the aboriginal ground surface south of the pitstructure. Extensive rodent activity and the unlined, unburned nature of the shaft have undoubtedly altered its original configuration. A sandstone slab (62 by 34 by 4 cm) was lying flat on the floor of Pithouse 1 in front of the

ventilator opening and probably functioned as a ventilator cover for the tunnel opening.

The east and west wingwall segments are designated Feature 101. As an architectural feature, the wingwall has no fill or strata and is described in terms of construction, composition, and articulation with the walls and floor of Pithouse 1. The wingwall segments abut the sides of the pitstructure, and each extends approximately 180 cm into the center of the room. Both are slightly curved and terminate near the center of the room, 40 to 50 cm south of the central hearth. Both wingwall segments reach a maximum height of 80 cm where they meet the main pitstructure walls. The tops of the walls are uneven and gradually slope to 20 to 30 cm above the central floor surface. Much of the deterioration of the walls was natural; originally, both wall segments probably were close to 80 cm high for their entire length. The wingwall is constructed from a redeposited native earth made into adobe, which was either packed around intermittently stacked rocks or made into adobe turtle-backs. Several of the stones used in the construction of both wall segments were mano fragments.

The eastern wingwall segment appears to have been constructed in two separate stages, each about 40 cm high. It is not clear whether or not this represents remodeling or two stages of a single construction event. The lower half of the eastern segment resembles the western wingwall segment in appearance and construction techniques. However, the upper half contained 12 mud bricks made of a silty clay that appeared to be coursed in a matrix of brown adobe. The amorphous bricks of silty clay were loosely-compacted soft sediment set into a dark, burned loamy matrix with many charcoal flecks. The bricks exhibited a platy structure similar

to weathered exposures of the sterile substrate. There were only two small rocks set into the upper portion of this wingwall segment. The upper and lower portions are clearly separated by a burn line, ranging in thickness from 1 to 2 cm, that capped the lower portion of the wingwall. This burned contact line has a series of corn husk impressions indicating that this vegetal material was used as a binder when the upper half of the wingwall was placed on top of the lower portion.

Two postholes (Features 20 and 21) are associated with the wingwall; both are part of the four post main support system for the roof. These postholes are located approximately 20 to 35 cm from the east and west walls and nearly 50 to 60 cm from the southeast and southwest corners of the structure. Both features contained the remains of burned ponderosa pine posts remaining intact to the height of the wingwalls. These posts were collected for tree-ring samples and were submitted to the Laboratory of Tree-Ring Research, but failed to produce any dates.

The two northern postholes (Features 19 and 22) had the rotted and slightly charred remains of unidentified coniferous posts in the fill; two angular slabs had been placed in the fill around the posts to act as shims or wedges. At the base of all the main support postholes, river cobbles or sandstone slabs formed a solid base to help maintain the stability of the posts by distributing the weight they carried and transmitting it to the underlying sediments. One of these slabs had fractured due to the weight exerted by the post.

Completing the feature assemblage for Surface 1 in Pithouse 1 are eight small subfloor features of an unknown function. One of these (Feature 24) is a shallow, slightly burned pit. The excavated portion of this feature is flush with the north side of the east wingwall segment;

however, this feature continues beneath the wingwall. The pit was filled with a brown, claylike sediment; it is possible that this feature was associated with Pithouse 3 and that it was filled to allow the construction of Feature 101 in Pithouse 1. Feature 96 is a small unburned pit that was intrusive to the west half of Feature 100, the latest of the two hearths in Pithouse 3. The remaining six features are all small-diameter, circular pits similar to those described for Surfaces 1 and 2 of Pithouse 3. Their association with Surface 1 in Pithouse 1 rather than with Surface 1 in Pithouse 3 is indicated by the fact that they were all open on the floor surface of Pithouse 1 rather than being capped with adobe.

Three of the remaining six features (Feature 33, 41, and 42) are of a similar diameter and depth. They are all unburned, filled with clean sand, and situated west of the hearth. The depth of these features suggests that they may have functioned as small postholes, perhaps as sockets for loom anchors. They may have held supports for a screen or an impermanent dividing wall. The remaining three features (Features 43, 44, and 45) are similar to the previously mentioned features in diameter except that they are very shallow. Their exact function is unknown. These six features may be associated, or they may have functioned independently. They were all open at the time of abandonment of Pithouse 1.

The ceramic data summary in appendix D shows the relationship between the roof fall and surface contact (point locations and feature fill) ceramic assemblages. The low number of ceramics in Pithouse 1, with few that are identifiable to type, does not allow for extensive intepretation. Generally, the assemblages can be characterized as representing the A.D. 860-910 period.

All artifacts resting directly on the floor of Pithouse 1 or in obvious association with the use of the floor surface were assigned point-location numbers (table 13). In all, 106 point-located artifacts or artifact clusters were recovered from Surface 1 of Pithouse 1. The number, type, and arrangement of the artifacts, together with their association with various architectural features, were used to derive inferences about the presence or absence of particular activity areas on the floor.

The great number of in situ artifacts and the "stored" appearance of some of them may indicate that the structure was intentionally abandoned, perhaps temporarily or seasonally, and that the artifacts remaining on the floor of Pithouse 1 probably represent de facto refuse preserved by an accidental or intentional burning of the structure during a period of temporary abandonment. This scenario can account for (1) the presence of a number of complete artifacts such as axes, metate, and manos; (2) the presence of well-represented lithic artifact assemblages, including cores, hammerstones, flaked lithic debitage, and the identification of a grinding area; (3) and the absence of the more portable possessions, such as ceramic vessels, basketry, and other perishable items associated with day-to-day living. The lack of perishable items in Pithouse 1 is in contrast with remains found in Pithouses 8 and 10, Area 5, Grass Mesa Village. Charred remains of numerous perishable items such as basketry, twine, and economic food resources such as corn in several stages of preparation were recovered at Area 5 (Emerson et al. 1982).

The most common artifact classes removed from Pithouse 1 are flaked lithics, nonflaked lithics, and ceramics (table 13). Less abundant artifact classes include nonhuman bone and small lumps of jacal. Three

Table 13. Point-located artifacts, Pithouse 1, Area 3, Grass Mesa Village

PL No.	Material class	Item description
1	Ceramic	DL Moccasin Gray jar sherds (9)
2	Nonflaked lithic	Two-hand mano
3	Nonhuman bone	*Lynx rufus*--innominate
		Mammalia, medium
4	Nonflaked lithic	Notched axe
5	Nonflaked lithic	Polishing stone
6	Flaked lithic	Used core
7	Ceramic	DL Early Pueblo Gray jar sherds (3)
11	Nonflaked lithic	Two-hand mano
12	Nonflaked lithic	Two-hand mano
13	Nonflaked lithic	Two-hand mano
14	Ceramic	DL Polished White jar sherd
15	Nonflaked lithic	Two-hand mano
16	Ceramic	BL Early Pueblo Red bowl sherd
17	Nonflaked lithic	One-hand mano
18	Nonflaked lithic	Trough metate
19	Flaked lithic	Debitage
20	Nonflaked lithic	Indeterminate
21	Nonhuman bone	Item misplaced
22	Nonflaked lithic	Hammerstone
23	Ceramic	DL Early Pueblo Gray jar sherds (2)
24	Ceramic	DL Early Pueblo Gray jar sherds (3)
		DL Moccasin Gray jar sherd
25	Ceramic	DL Piedra Black-on-white bowl sherd
26	Nonflaked lithic	Two-hand mano
27	Flaked lithic	Used core
28	Nonflaked lithic	Two-hand mano
30	Ceramic	DL Mancos Gray jar sherd
31	Ceramic	DL Mancos Gray jar sherd
32	Ceramic	DL Early Pueblo Gray jar sherds (7)
		DL Moccasin Gray jar sherds (2)
33	Nonflaked lithic	One-hand mano
34	Nonflaked lithic	Hammerstone
35	Flaked lithic	Used core
36	Flaked lithic	Thick biface
37	Nonhuman bone	*Sylvilagus* sp.--mandible
38	Ceramic	DL Polished White bowl sherd
39	Flaked lithic	Used core
40	Flaked lithic	Utilized flake

NOTES: PL numbers not listed represent items later determined not to be associated with the floor. See figure 20 for artifact locations. PL's 84 and 107-109 were used in the construction of Feature 101.

DL - Dolores Manufacturing Tract.
BL - Blanding Manufacturing Tract.
SJ - San Juan Manufacturing Tract.
(N) - Number of items.
(g) - Weight of items.

Table 13. Point-located artifacts, Pithouse 1, Area 3, Grass Mesa Village--Continued

PL No.	Material class	Item description
41	Flaked lithic	Thin uniface
42	Nonflaked lithic	Polishing stone
43	Nonhuman bone	Mammalia, large--longbone
44	Nonflaked lithic	Hammerstone
45	Nonflaked lithic	Hammerstone
46	Flaked lithic	Utilized flake
47	Ceramic	DL Early Pueblo Gray jar sherds (2)
48	Nonflaked lithic	Indeterminate
49	Nonflaked lithic	Minimally altered item
50	Nonflaked lithic	Two-hand mano
51	Nonflaked lithic	Hammerstone
52	Ceramic	SJ Polished White seed jar sherd
53	Nonflaked lithic	One-hand mano
54	Flaked lithic	Flaked axe
55	Nonflaked lithic	Hammerstone
56	Nonflaked lithic	Hammerstone
57	Nonflaked lithic	Hammerstone
58	Inorganic	Item misplaced
59	Inorganic	Item misplaced
60	Flaked lithic	Debitage
61	Ceramic	DL Piedra Black-on-white bowl sherds (2)
62	Nonflaked lithic	Indeterminate
63	Flaked lithic	Debitage
64	Flaked lithic	Debitage
65	Ceramic	SJ Cortez Black-on-white bowl sherds (4)
66	Nonflaked lithic	Hammerstone
67	Flaked lithic	Utilized flake
68	Flaked lithic	Debitage
69	Flaked lithic	Debitage
70	Flaked lithic	Debitage
71	Flaked lithic	Utilized flake
72	Flaked lithic	Debitage
73	Flaked lithic	Used core
74	Ceramic	DL Moccasin Gray jar sherds (7)
75	Ceramic	DL Early Pueblo Gray jar sherds (8)
76	Flaked lithic	Debitage
77	Flaked lithic	Debitage
78	Flaked lithic	Debitage
79	Flaked lithic	Debitage
80	Nonflaked lithic	Two-hand mano
81	Nonflaked lithic	Two-hand mano
82	Nonflaked lithic	Hammerstone
83	Nonflaked lithic	Indeterminate
84	Nonflaked lithic	Notched axe
85	Flaked lithic	Debitage
86	Flaked lithic	Debitage
87	Flaked lithic	Debitage

Table 13. Point-located artifacts, Pithouse 1, Area 3, Grass Mesa Village--Continued

PL No.	Material class	Item description
88	Flaked lithic	Debitage
89	Flaked lithic	Debitage
90	Flaked lithic	Debitage
91	Flaked lithic	Debitage
92	Flaked lithic	Debitage
93	Nonhuman bone	Mammalia, medium; long bone
94	Nonhuman bone	Mammalia, medium; long bone
95	Flaked lithic	Debitage
96	Nonflaked lithic	Shaped stone slab
97	Flaked lithic	Debitage
98	Flaked lithic	Utilized flake
99	Flaked lithic	Utilized flake
100	Flaked lithic	Debitage
101	Flaked lithic	Debitage
102	Ceramic	DL Early Pueblo Gray jar sherd
103	Flaked lithic	Debitage
104	Nonflaked lithic	Two-hand mano
105	Nonflaked lithic	Two-hand mano
106	Nonflaked lithic	Indeterminate
107	Nonflaked lithic	Metate, fragmentary
108	Nonflaked lithic	Two-hand mano
109	Nonflaked lithic	Two-hand mano
110	Inorganic	Jacal (3) (6.5g)

nonflaked lithic artifacts (PL's 107-109) included in the total were used as construction materials and incorporated into the eastern wingwall segment (Feature 101); a notched axe (PL 84) was incorporated into the western wingwall segment. The remainder of the artifacts were distributed across the floor surface with concentrations occurring south of each wingwall segment and along the walls of the pitstructure. Artifacts are rare in the center of the structure around the central hearth (Features 16).

On the basis of the spatial arrangement and clustering of the point-located artifacts, seven activity areas were defined. These designations have been further refined and explained in more detail in reports that deal specifically with identifying activity areas in Dolores Area pithouses (Breternitz and Lipe 1981; Breternitz 1982). A more detailed analysis of the assemblages and features themselves was undertaken (Breternitz 1982) to determine whether selected activites could be identified by artifact arrangment.

Activity Area 1 is defined as a mealing/grinding area near the west wall, north of the western wingwall segment. The criterion for defining the activity area was a large metate (PL 18) set on its side with the trough portion resting against the west wall. South of the metate were several uniformly sized manos (PL's 11, 12, and 13), which may have served as the active abrading portion of the grinding complex or to prop up one end of the metate when it was in use on the floor. In the area surrounding the metate itself were a number of ceramics (PL's 14, 16, and 61) and nonflaked lithics (PL's 15, 17, 45, and 62). These were included in Activity Area 1 on the basis of their presence in the same general area although they may not be associated with the complex of grinding tools.

Three pit features were present in the area as well (Features 33, 41 and 42). Forming a right angle with sides parallel to the west wall of

Pithouse 1 and the western wingwall segment, these features may have been postholes that functioned to support a divider or screen to isolate the complex of grinding equipment from the remainder of the structure. However, the small-diameter features were filled with clean sand and had no evidence of rotted or charred wood within them. This would indicate that if such a divider ever existed, it was no longer present when the structure was abandoned.

Activity Area 2 is defined as a domestic area in the space between the western wingwall segment and the south wall of Pithouse 1. The associated artifacts include a wide range of material types and functional classes, suggesting a variety of potential domestic activities. The majority of the associated artifacts, specifically the manos, axes, and cores, were lined up along the southern edge of the western wingwall segment. The 20 point locations include ceramics, flaked lithics, nonflaked lithics, and nonhuman bone. It is possible that the area represents an area of storage for tools used in a number of distinct activities.

Activity Area 3 occupies a position similar to Activity Area 2 but is located between the eastern wingwall segment and the south wall of Pithouse 1. It differs from Activity Area 2 by having fewer artifacts and a less diverse assemblage of functional types and artifact classes. Hammerstones are the most numerous artifact type, possibly associated with the manufacture or processing of flaked lithic artifacts. Most of these artifacts were lined up along the southern edge of the eastern wingwall segment, as if they were intentionally placed there for storage. Other artifacts, including two manos, two indeterminate nonflaked lithics, ome nonhuman bone, several flaked lithic items, and a few ceramics, were

associated with the hammerstones. This mixing of material types may be fortuitous or it may represent a storage facility similar to Activity Area 2. The artifact assemblage found in Activity Area 3 is much more internally consistent than any other activity area in Pithouse 1. Of all the activity areas suggested for Area 3 at Grass Mesa, Activity Area 3 seems most likely to represent a flaked lithic tool manufacture and processing area.

Activity Areas 2 and 3 are separated by an avenue devoid of cultural material, extending from the ventilator (Feature 25) to the central hearth (Feature 16). The only item in this narrow corridor was the ventilator cover slab.

Activity Area 4 is defined to cover an area of the floor in Pithouse 1 that had point locations but lacked an assemblage of artifacts suggestive of a specific activity. The area is located near the east wall, north of the eastern wingwall segment, and occupies a position similar to that of Activity Area 1, but on the opposite side of the central hearth. The scarcity of artifacts and the lack of clustering of specific artifact types, makes interpretation difficult. It may be that the relative absence of artifacts itself is an indication that this area was kept relatively clean to permit certain activities that did not leave tangible remains. Seven point locations occur here: one mano (PL 28), two flakes (PL's 40 and 67), one thin uniface (PL 41), one core (PL 39), one lump of jacal (PL 110), and one polishing stone (PL 42).

Activity Area 5, located in the northeast quadrnat of the structure, is interpreted as a generalized work area. The area contains a dispersed array of artifacts, including small flakes and a few flaked lithic cores. The abundance of small flakes may be indicative of some lithic

manufacturing. A broken bone needle and the fragments of two partially reconstructible vessels were present. It is not clear from the present state of analysis whether or not the assemblage represents a single or multiple activity area or whether it can be called an activity area at all.

Activity Area 6 is a cluster of flaked lithic debitage concentrated in the northwest corner of Pithouse 1. The tight clustering of flakes made from similar materials argues for a storage position rather than a "last-use" distribution or manufacturing location. A mano (PL 104), two indeterminate tools (PL's 20 and 83), and a small hammerstone (PL 22) are located in the general area of the debitage cluster. These are tentatively included in Activity Area 6 due to their location in the northwest quadrant of the pitstructure. The indeterminate tools and the hammerstone were on the southern periphery of Activity Area 6 and may actually be associated with Activity Area 1.

Activity Area 28 is regarded as a food preparation area surrounding the central hearth (Feature 16). There are few point-located artifacts on the periphery of this feature. The area around the hearth in the center of the structure would be the area of most intensive and varied utilization and therefore would be the area with the lowest artifact concentration. Matthews (1981) analyzed numerous bulk soil samples from transect away from the hearth. Although a number of burned and unburned botanical remains were recovered, the information gained was minimal in terms of inferences about economic and domestic activities in Pithouse 1. The preservation in all but catastrophically abandoned pitstructures is poor and does not warrant as detailed collection procedures for bulk soil samples as do highly burned pitstructures. Pitstructures that are

leisurely abandoned tend to have been "cleaned up" or "cleaned out" as part of the abandonment process, thereby affecting the presence of botanical materials.

Activity Area 379 includes only Feature 23 and may have been an area of ritual activity. This inference is based on the location of Feature 23 in a central position north of the hearth.

Dating. Fourteen samples were collected for tree-ring dating. These represent a variety of arboreal species; nine ponderosa pine, two juniper, two pinyon pine, and one *Populus* sp. One of the ponderosa pine samples (DAR 68) produced a date of A.D. 780vv (see table 11 for explanation of symbol); the other samples did not produce dates. The 780vv date indicates only that Pithouse 1 was built sometime after A.D. 780.

Ceramic types on the floor of Pithouse 1 are characteristic of assemblages dating between A.D. 880-910 (Blinman 1984). Four sherds of Cortez Black-on-white are associated with the floor and are unlikely to occur in proveniences dating prior to A.D. 880. The presence of Moccasin Gray and Mancos Gray in the absence of corrugated gray wares is characteristic of all pre-A.D. 930 assemblages and most pre-A.D. 910 assemblages, and given the scaricity of corrugated sherds on the site as a whole, the abandonment of Pithouse 1 probably occurred prior to A.D. 910.

Stratigraphic evidence suggests that the most likely interval for abandonment of Pithouse 1 is between A.D. 880 and 910. This date range is indicated by the superposition of Pithouse 1 to Pithouse 3 (a structure that was abandoned between A.D. 870 and 880) and by the terminal date assigned to the occupation of the site (A.D. 910).

Two archaeomagnetic samples were taken from Pithouse 1. Sample 2, which was taken from the hearth (Feature 16), produced a date of A.D. 935

to 1005. The lower end of this range (A.D. 935) approaches the date indicated by ceramics and stratigraphy, but it is probably too late even to be considered as an abandonment date. The results from Sample 3, which was taken from west wall of the pithouse, were used to recalibrate the Dolores Curve and the results cannot be reported here.

Pithouse 5

Dimensions:

North wall	
length:	3.82 m
height:	0.58 m
South wall	
length:	3.74 m
height:	0.77 m
East wall	
length:	3.98 m
height:	0.82 m
West wall	
length:	4.05 m
height:	0.74 m

Pithouse 5 (figs. 4, 11, and 22) is unmistakeably associated with Pithouse 1. Pithouse 5 is located immediately to the east of Pithouse 1, and they share a common wall. This structure is similar to Pithouse 1 but is slightly smaller and lacks a wingwall. Unlike Pithouse 1, Pithouse 5 is somewhat irregular in outline. The four walls are slightly different lengths and their present heights differ due to their deteriorated condition. All four walls are burned.

The south wall and part of the east wall of Pithouse 5 were so badly burned that in places they crumbled when touched. The southern two-thirds of the west wall (Feature 219) was plastered. Where the plaster was missing on the north side of the west wall, a series of small-diameter

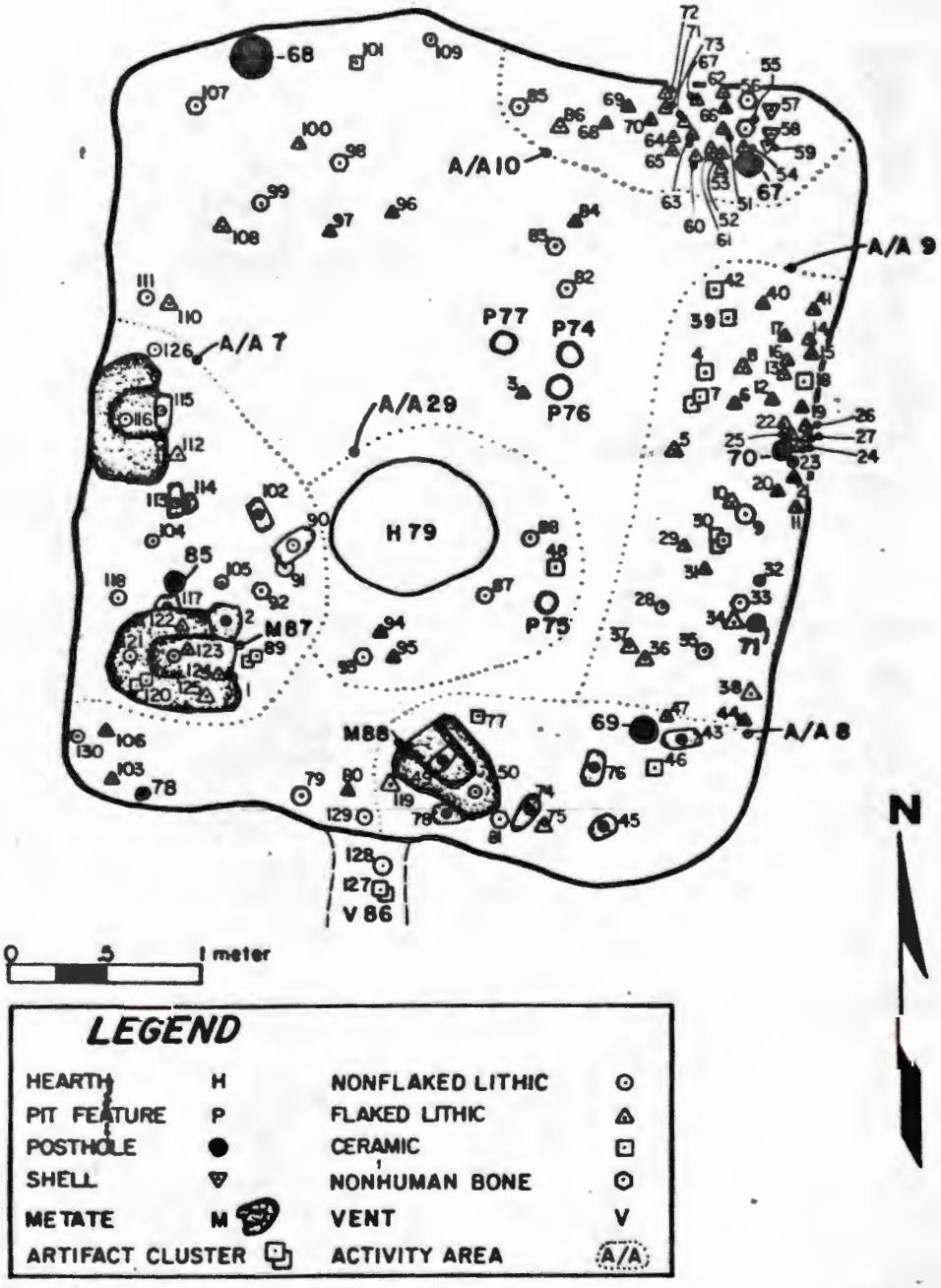

Figure 22. Plan map of Pithouse 5, Grass Mesa Village.

coniferous (probably ponderosa pine or pinyon pine) posts were present. These are the companions to the posts along the east wall of Pithouse 1. Together, they held the bulk of earth separating the two pitstructures. The eastern half of the north wall and the northern half of the east wall were also plastered. The floor slopes up to the walls dug into sterile earth, but where the walls were dug into the fill of Pithouse 3 the floor met the walls at a relatively sharp angle. This may be because the floor located on the fill of Pithouse 3 settled.

Data on roof construaction are provided by identification of material collected from postholes and from the burned roof fall stratum. Material collected for tree-ring samples was identified by the Laboratory of Tree-Ring Research. All charred or rotted wood speciments unsuitable for tree-ring dating were collected as vegetal samples for species identification. A final report on the analysis of the vegetal material is contained in appendix B.

Of the 14 tree-ring samples collected from Pithouse 5, 2 (14.3 percent) were identified as Douglas-fir. The remaining 12 samples were identified as 3 (21.4 percent) ponderosa pine, 2 (14.3 percent) pinyon pine, 6 (42.8 percent) juniper, and 1 (7.1 percent) nonconiferous species. Use of these percentage figures in any intepretations as to wood use and possible selective species depletion must be approached with caution due to the small sample size and the selective bias which is inherent in the sampling procedures. (Refer to the discussion of the tree-ring sampling procedure for Pithouse 3.)

The floor surface was burned in the western three-quarters of the structure. In many of the 1-m^2 grid units, burned roof fall was resting directly on the floor. In the part of the pitstructure where the floor

was composed of the compacted fill of Pithouse 3, the floor was often difficult to define and tended to be more uneven. Where the floor was dug into the sterile earth it was smooth and very easily defined. In some areas, especially along the east wall and in the southeast corner, the floor was overlain by a layer of sand. Underneath this layer of sand the floor had a light gray, shiny appearance.

Wingwalls are conspicuously absent from this structure, providing th most striking contrast with Pithouse 1. The ventilation system (Feature 86) is similar to that of Pithouse 1. Feature 86 was formed by excavation of an unlined earthen tunnel that entered the structure in the middle of the south wall at floor level. As in Pithouse 1, there was a sandstone slab that functioned as a ventilator cover (PL 129). The slab was found resting flush with the floor directly in front of the ventilator opening.

Of the 15 floor features (table 14), 7 are postholes. The roof support post pattern consists of four large (13-20 cm diameter by 60-65 cm deep) and three smaller (8-10 cm diameter by 20-35 cm deep) postholes arranged around the perimeter of the pitstructure. The four larger postholes (Features 67, 68, 69, and 85) are located between 30 and 50 cm out from each of the four corners of the structure and functioned as seats for the major upright support posts. The two southern postholes (Features 85 and 69) were located where a wingwall would have typically been positioned. Charred wood samples collected from Features 68 and 85 did not yield dates but were identified as juniper and ponderosa pine. The three smaller postholes (Features 70, 71, and 78) were located nearly flush with the wall on the east and in the southwest corner (fig. 22).

Table 14. Feature summary, Pithouse 5, Area 3, Grass Mesa Village

Feature No.	Type	Plan	Profile	Length (cm)	Width (cm)	Depth/ height (cm)
67	Posthole	Round	Cylindrical	13.0	11.5	62.0
68	Posthole	Round	Cylindrical	14.0	14.0	60.0
69	Posthole	Round	Cylindrical	21.0	20.0	63.0
70	Posthole	Round	Cylindrical	9.5	9.0	35.5
71	Posthole	Round	Cylindrical	8.0	7.0	26.5
74	Unburned pit	Round	Cylindrical	12.0	12.0	25.5
75	Unburned pit	Round	Cylindrical	11.0	11.0	19.0
76	Unburned pit	Round	Cylindrical	11.0	10.0	21.5
77	Unburned pit	Round	Cylindrical	10.0	10.0	18.0
78	Posthole	Round	Cylindrical	10.5	10.0	20.0
79	Hearth	Round	Basin	80.0	78.0	14.0
85	Posthole	Round	Cylindrical	14.0	14.0	62.0
87	Metate	n.a.	n.a.	58.0	48.0	10.0
88	Metate	n.a.	n.a.	51.0	35.0	7.0
86	Ventilator system	Complex	Complex	176.0	86.0	112.0
219	Surface feature: wall	Rectangular	Rectangular	330.0	75.0	70.0

NOTE: See figure 22 for feature locations.

n.a. - Not applicable.

Pithouse 5 contained four sand-filled pits (Features 74, 75, 76, and 77) that were morphologically similar to features found in Pithouses 1 and 3.

The central hearth (Feature 79) contained five distinct strata. Only Stratum 1 was screened; the remaining strata were collected for flotation analysis. Stratum 2, ranging from 2 to 4 cm in thickness, was a rich brown sediment that was flecked with charcoal and contained a projectile point, as well as abundant flakes and bone. Stratum 3 was 2 to 4 cm thick and was grayish-brown to brown (10YR 5/2 dry to 7.5YR 5/4 dry) ashy, mottled deposit flecked with charcoal. Flaked lithic items and nonhuman bone were recovered from Stratum 3. Stratum 4 filled the body of the hearth and was 4 to 6 cm thick; this stratum was a gray (10YR 6/1 dry) dense ash layerwith flecks of charcoal and some dark brown earth. Stratum

5 was a white (7.5YR 8/4 dry) sand that was not continuous but was mounded in thickness that ranges from 0.5 to 2.0 cm on the north and south sides of the hearth. The fill and the stratigraphy of the hearth were very similar to those in the central hearths in Pithouses 1 and 3 (Features 16 and 100). The hearth (Feature 79) was dug into the part of the Pithouse 5 floor that rests on the fill of Pithouse 3. The hearth did not seem to have been intensely burned.

The ventilator (Feature 86) was composed of a horizontal tunnel that entered the south wall of the pithouse at floor level. The south end of the horizontal tunnel was connected to a vertical shaft. Several items associated with the ventilator were recovered: a mano (PL 128), half of a San Juan Chapin Gray bowl (PL 127), probably representing postabandonment deposition, and the ventilator cover slab (PL 129).

Two in situ metates (Feature 87 [PL 1] and Feature 88 [PL 50]) were found in the south half of Pithouse 5 . Feature 87 is a rectangular trough metate with a mano (PL 2) resting on its northeast corner, and four supporting stones, one of which is a mano (PL117). Feature 87 is located in the southwest corner of the pitstructure, 10 cm south of the southwest posthole (Feature 85) (fig. 17). The metate was severely burned and was badly cracked as a result of conflagration.

Feature 88 is a triangular-shaped trough metate that has a mano (PL 49) resting in the shallow trough and a second mano (PL 78) acting as a support for the metate. The metate is made of dense, fine-grained sandstone and is located along the south wall of the pitstructure.

Many of the point locations recovred from the Pithouse 5 floor were flaked lithic tools or debitage ranging in size from 0.5 to 5.0 cm in length. The floor artifacts include a number of complete items: 3

metates, 11 manos, several worked sherds, 1 partially reconstructible vessel, 1 miniature jar, 1 pendant, 3 projectile points, 1 bone needle, and 1 notable exotic--3 fragments of a Glycymeris sp. shell bracelet.

Pithouse 5 had more point locations (table 15) within a smaller floor area than did Pithouse 1. The artifact clusters were generally better defined in the southwest, southeast, and northeast corners of the structure and were scattered along the eastern wall. Five activity areas were defined in Pithouse 5 (fig. 22). Four of the activity areas were defined on the basis of point-located artifacts. The fifth activity area (Activity Area 29) encompasses the central hearth, in the same manner that Activity Area 28 did in Pithouse 1, and includes very few point locations.

Activity Area 7, situated along the west wall of Pithouse 5 near the southwestern corner, is a mealing area containing 2 metates and 7 associated manos as well as 13 other point locations consisting of ceramics and flaked and nonflaked lithic items. One metate (PL 116) is badly fire cracked, presumably a result of the burning and collapse of the roof, and is leaning vertically against the west wall of the pitstructure, as does PL 18 of Activity Area 1 in Pithouse 1. Two manos (PL's 113 and 115) and an indeterminate nonflaked lithic (PL 114) surround the metate.

A second, larger metate (Feature 87 [PL 1]) remains intact and in situ on the floor surface, with the base of the trough opening toward the center of the pitstructure. The metate was still in a position that would facilitate use, with several rocks set under the upper end to produce a slight incline. One of the rocks used to prop up the metate was a mano (PL 117). The floor surface of Pithouse 5 had a slight incline at this point as well, thereby accentuating the slope of the metate's grinding surface toward the center of the structure. A mano (PL 2), which neatly

Table 15. Point-located artifacts, Pithouse 5, Area 3, Grass Mesa Village

PL No.	Material class	Item description
1	Nonflaked lithic	Trough metate
2	Nonflaked lithic	Two-hand mano
3	Flaked lithic	Debitage
4	Ceramic	BL Bluff Black-on-red bowl sherd*
5	Flaked lithic	Projectile point, triangular
6	Flaked lithic	Debitage
7	Ceramic	BL Bluff Black-on-red bowl sherds (4)*
8	Flaked lithic	Debitage
9	Nonflaked lithic	Notched maul
10	Flaked lithic	Debitage
11	Flaked lithic	Debitage
12	Flaked lithic	Projectile point, unidentified
13	Flaked lithic	Debitage
14	Flaked lithic	Debitage
15	Flaked lithic	Uniface
16	Flaked lithic	Debitage
17	Flaked lithic	Debitage
18	Ceramic	DL Moccasin Gray jar sherd
19	Flaked lithic	Debitage
20	Flaked lithic	Debitage
21	Flaked lithic	Debitage
22	Flaked lithic	Projectile point, triangular
23	Nonflaked lithic	Polishing stone
24	Flaked lithic	Debitage
25	Flaked lithic	Debitage
26	Flaked lithic	Debitage
27	Flaked lithic	Debitage
28	Nonflaked lithic	Polishing stone
29	Flaked lithic	Debitage
30	Ceramic	DL Early Pueblo Gray jar sherd
		DL Cortez Black-on-white bowl sherd
31	Flaked lithic	Debitage
32	Nonflaked lithic	Polishing stone
33	Nonhuman bone	Mammalia, medium--long bone
34	Flaked lithic	Debitage
35	Nonflaked lithic	Not culturally modified
36	Flaked lithic	Used core
37	Flaked lithic	Used core
38	Flaked lithic	Debitage
39	Ceramic	DL Polished White seed jar sherd
40	Flaked lithic	Debitage

NOTES: See figure 22 for artifact locations.

DL - Dolores Manufacturing Tract.
BL - Blanding Manufacturing Tract.
SJ - San Juan Manufacturing Tract.
(N) - Number of items.

Table 15. Point-located artifacts, Pithouse 5, Area 3, Grass Mesa Village--Continued

PL No.	Material class	Item description
41	Flaked lithic	Debitage
42	Ceramic	DL Polished White jar sherd*
43	Nonflaked lithic	Two-hand mano
44	Flaked lithic	Debitage
45	Nonflaked lithic	Hammerstone
46	Ceramic	DL Early Pueblo Gray jar sherd
47	Flaked lithic	Debitage
48	Ceramic	DL Early Pueblo Gray jar sherd
49	Nonflaked lithic	Two-hand mano
50	Nonflaked lithic	Trough metate
51	Flaked lithic	Debitage
52	Flaked lithic	Debitage
53	Flaked lithic	Debitage
54	Flaked lithic	Debitage
55	Nonhuman bone	*Ovis canadensis*--radius
56	Nonhuman bone	*Mammalia*, medium (3)--unidentified fragment
		Odocoileus hemionus--maxilla
57	Organic	*Glycymeris* sp.--shell bracelet fragment
58	Organic	*Glycymeris* sp.--shell bracelet fragment
59	Organic	*Glycymeris* sp.--shell bracelet fragment
60	Flaked lithic	Debitage
61	Flaked lithic	Debitage
62	Flaked lithic	Debitage
63	Flaked lithic	Debitage
64	Flaked lithic	Debitage
65	Flaked lithic	Debitage
66	Flaked lithic	Debitage
67	Flaked lithic	Debitage
68	Flaked lithic	Debitage
69	Flaked lithic	Debitage
70	Flaked lithic	Debitage
71	Flaked lithic	Debitage
72	Flaked lithic	Debitage
73	Flaked lithic	Debitage
74	Nonflaked lithic	Notched maul
75	Flaked lithic	Uniface
76	Nonflaked lithic	Tool--indeterminate
77	Ceramic	DL Early Pueblo Gray jar sherd
78	Nonflaked lithic	Two-hand mano
79	Nonflaked lithic	Tool--indeterminate
80	Flaked lithic	Debitage
81	Nonhuman bone	*Mammalia*, medium--unidentified fragment
82	Nonhuman bone	*Artiodactyla* (9)--teeth
83	Nonhuman bone	*Mammalia*, medium--long bone
84	Flaked lithic	Debitage
85	Nonhuman bone	*Mammalia*, medium--unidentified fragment
86	Flaked lithic	Debitage
87	Nonflaked lithic	Tool--indeterminate

Table 15. Point-located artifacts, Pithouse 5, Area 3, Grass Mesa Village--Continued

PL No.	Material class	Item description
88	Nonflaked lithic	Tool--indeterminate
89	Ceramic	DL Early Pueblo Gray jar sherds (2)
90	Nonflaked lithic	Polishing stone
91	Nonflaked lithic	Two-hand mano
92	Nonhuman bone	Mammalia, large--long bone
93	Nonhuman bone	Mammalia, medium--unidentified fragment
94	Flaked lithic	Debitage
95	Flaked lithic	Uniface
96	Flaked lithic	Debitage
97	Flaked lithic	Debitage
98	Nonhuman bone	Mammalia, small
99	Nonflaked lithic	Polishing stone
100	Flaked lithic	Debitage
101	Ceramic	DL Moccasin Gray jar sherd
102	Nonflaked lithic	Two-hand mano
103	Flaked lithic	Debitage
104	Nonflaked lithic	Two-hand mano
105	Nonflaked lithic	Item misplaced
106	Flaked lithic	Debitage
107	Nonhuman bone	Mammalia, medium--needle
108	Flaked lithic	Uniface
109	Nonflaked lithic	Polishing stone
110	Flaked lithic	Used core
111	Nonflaked lithic	Hammerstone
112	Flaked lithic	Used core
113	Nonflaked lithic	Two-hand mano
114	Nonflaked lithic	Tool--indeterminate
115	Nonflaked lithic	Two-hand mano
116	Nonflaked lithic	Trough metate
117	Nonflaked lithic	Two-hand mano
118	Nonflaked lithic	Hammerstone
119	Flaked lithic	Used core
120	Ceramic	DL Chapin Gray jar sherds (8)
		DL Chapin Gray jar sherds (2) possible kill hole
121	Nonflaked lithic	Pendant
122	Flaked lithic	Debitage
123	Flaked lithic	Debitage
124	Flaked lithic	Debitage
125	Flaked lithic	Utilized flake
126	Nonflaked lithic	Hammerstone
127	Ceramic	SJ Chapin Gray bowl sherds (2)
128	Nonflaked lithic	Two-hand mano
129	Nonflaked lithic	Ventilator cover (left in field)
130	Nonflaked lithic	Abrading stone

* Scraper.

fit the metate's trough, was resting on the metate to one side of the trough. Three other manos (PL's 91, 102, and 104) were situated in this activity area. PL's 91 and 102 were close to the central hearth (Feature 79) but were included within the arbitrary boundaries defining Activity Area 7.

Two pollen samples collected from Feature 87 were analyzed by Scott (1980). The first sample (sample 77), a pollen wash from the trough, did not yield sufficient pollen for analysis. A sample collected from the matrix fill of the trough (sample 78) yielded a relatively small amount of arboreal pollen (13 percent) and an extremely high frequency of Ambrosia-type pollen. The pollen referred to as Ambrosia-type may include members of the following genera: Ambrosia, Franseria, Iva, and Xanthium. Ambrosia-type pollen occurs in abundance in the matrix surrounding the metate (more than is in any other analyzed samples) and is absent from the pollen wash collected from the grinding surface of the metate. Ambrosia-type and Franseria-type are common plants in disturbed areas and frequently invade recently abandoned areas. Scott believes that the large frequency of Ambrosia pollen within this sample may be attributed to the growth of these weedy plants in the area after abandonment (Scott 1980) and that the pollen was probably carried in and deposited in the matrix surrounding the metate as the structure filled.

Activity Area 8 is also a mealing area but has only one metate (Feature 88 [PL 50]), which is situated along the south wall of the pitstructure near the southeast corner. The activity area contained fewer point-located artifacts than did Activity Area 7, but seven of the artifacts form a more discrete assemblage of grinding tools. As in Activity Area 7, the metate was propped up and was resting on a mano

(PL 78) to form an inclined grinding surface slanting towards the center of the structure. The primary mano (PL 49) associated with this metate was resting directly in the trough in a position possibly representing the last use. Alkso included in this activity area are a mano (Pl 43), a notched maul (Pl 74), a hammerstone (PL 45), and an indeterminate nonflaked lithic tool (PL 76).

A series of pollen samples (samples 74, 75, and 76) from Activity Area 8 were collected and submitted for analysis. These samples were also primarily composed of ambient Ambrosia-type pollen, supporting the supposition that the Ambrosia-type pollen within the general fill samples of these metates is probably attributable to the growth of Ambrosia within the area and to the accumulation of its pollen within the post abandonment sediment. The pollen sample from between the mano and metate (sample 75) and the sample from the general trough fill (sample 76) both contained slightly more arboreal pollen than the fill from the metate in Activity Area 7. The nonarboreal pollen from the metate in Activity Area 8 is composed of 29 percent Ambrosia-type pollen, roughly half that observed in the metate from Activity Area 7. The sample collected from between the mano and metate (sample 75) and the sample collected from the grinding surface of the metate (the pollen wash--sample 74) contained less Ambrosia-type pollen then did the general fill sample from this metate. The pollen wash sample shows a higher frequency of cheno-am (Chenopodiaceae-Amaranthus) pollen, and the only occurrence of Zea mays pollen from any of the pitstructures in Area 3. The pollen evidence from this metate does not overwhelmingly suggest that any particular type of food or plant was processed on it. It is possible, however, that cheno-am, Cleome, and/or Zea mays were ground on this metate (Scott 1980).

Activity Area 9 is located along the eastern wall and is similar to the amorphous clusters of artifacts in Pithouse 1 (Activity Areas 4 and 5). Activity Area 9 contains many individual items forming a diverse assemblage of artifact classes and functional types. It is postulated to be an area of tool manufacture or tool storage, but probably represents several different activity sets. Approximately half of the point locations are complete artifacts, e.g., three projectile points, one maul, one polishing stone, and one scraper. The other point locations are typical fragmented cultural remains, e.g., sherds, flaked lithic debitage. Also in this activity area are two small diameter postholes (Features 70 and 71) interpreted as ancillary roof supports.

Activity Area 10 has been provisionally designated a lithic tool manufacturing or refurbishing area. The 23 point locations tightly grouped in the northeast corner are mainly flakes (debitage). Three fragments (PL's 57, 58, and 59) of a Glycymeris sp. shell bracelet were found close to the northeast corner posthole (Feature 67).

Like Activity Area 28 in Pithouse 1, Activity Area 29 in Pithouse 5 is defined as a food preparation area. It includes the area immediately surrounding the central hearth (Feature 79). There were no associated feature or point locations that could be accurately associated with the hearth, although several artifacts are contained within the boundaries of the activity area. Activity Areas 7 and 8, the grinding complexes, could be associated with the hearth as ancillary food production/preparation areas. An analysis of macrofossil remains from bulk soil samples collected in transects radiating from the hearth are reported in appendix B.

On the basis of the available evidence, the abandonment of Pithouse 5 is inferred to have been deliberate and noncatastrophic, similar to the abandonment of Pithouse 1, and probably occurred at the same time. This latter inference seems likely because they shared a wall (Feature 219) and because they were apparently contemporaneous.

Due to the proximity of Pithouses 1 and 5, as indicated by shared construction elements, it seems likely that the conflagration of Pithouses 1 and 5 must also have been a contemporaneous event. Assuming a temporary or possibly seasonal abandonment as explanation for the lack of the more movable and perishable items in the two structures it follows that the burning of the two structures represents a single event during a period of temporary abandonment.

Dating. Due to the common wall between Pithouses 1 and 5 and to their similarities in size, morphology, and artifact assemblages, the two pithouses are interpreted as having been occupied contemporaneously. Again, the available absolute dating methods were disappointing. Only one of the 14 tree-ring samples collected was datable. The fragment of charcoal identified as pondersoa pine dating to 650+vv (table 11) does not allow interpretation. The dated fragment is inferred to be a structural element from the burned roof fall stratum. One archaeomagnetic sample (sample 10) was collected from the burned east wall of Pithouse 5. The sample results indicate a pre-A.D. 700 date, which is inconsistent with the dates inferred from ceramics and stratigraphy.

The floor associated ceramics (appendix D) include Moccasin Gray, Mancos Gray, and Cortez Black-on-white. The presence of these types suggests that the pithouse was abandoned sometime between A.D. 875 and 910 (Blinman 1982). Based on these ceramic dates and stratigraphic

relationships (refer to the Pithouse 1 dating discussion) an abanondment date of A.D. 880 to 910 is inferred for Pithouse 5.

Summary

The three pithouses excavated in Subarea 2 represent the most extensive architectural remains uncovered in Area 3. Pithouses 3, 1, and 5 represent a clear-cut construction sequence and have been assigned to three elements in DAP temporal/spatial systematics (Kane 1983). The initial construction of Pithouse 3 is assigned to the Periman Subphase and is designated Element 71. The remodeled Pithouse 3 is also assigned to the Periman Subphase and is designated Element 72. Pithouses 1 and 5 are assigned to the Grass Mesa Subphase and are designated Element 7.

Subarea 3

Pithouse 8

The portion of Pithouse 8 (figs. 3 and 23) actually present in probability square 318S/392E was 0.65^2 m. A 1- by 2-m trench (east one-half of square 320S/392E) was extended from the southeastern quadrant of the probability square to facilitate excavation to the floor surface of that portion of Pithouse 8 exposed in the probability square. A portion of the probability square and the 1- by 2-m trench were cleared down to the surface of Pithouse 8.

The northwest wall of Pithouse 8, exposed in probability square 318S/392E, consists of undisturbed native earth and appears to be partially burned. No floor features were noted with the exception of a metate protruding less than 5 cm from the southern balk of the trench.

The floor of Pithouse 8 had 41 point-located artifacts or clusters of artifacts resting on approximately 2.5 m^2 of exposed floor area (table 16

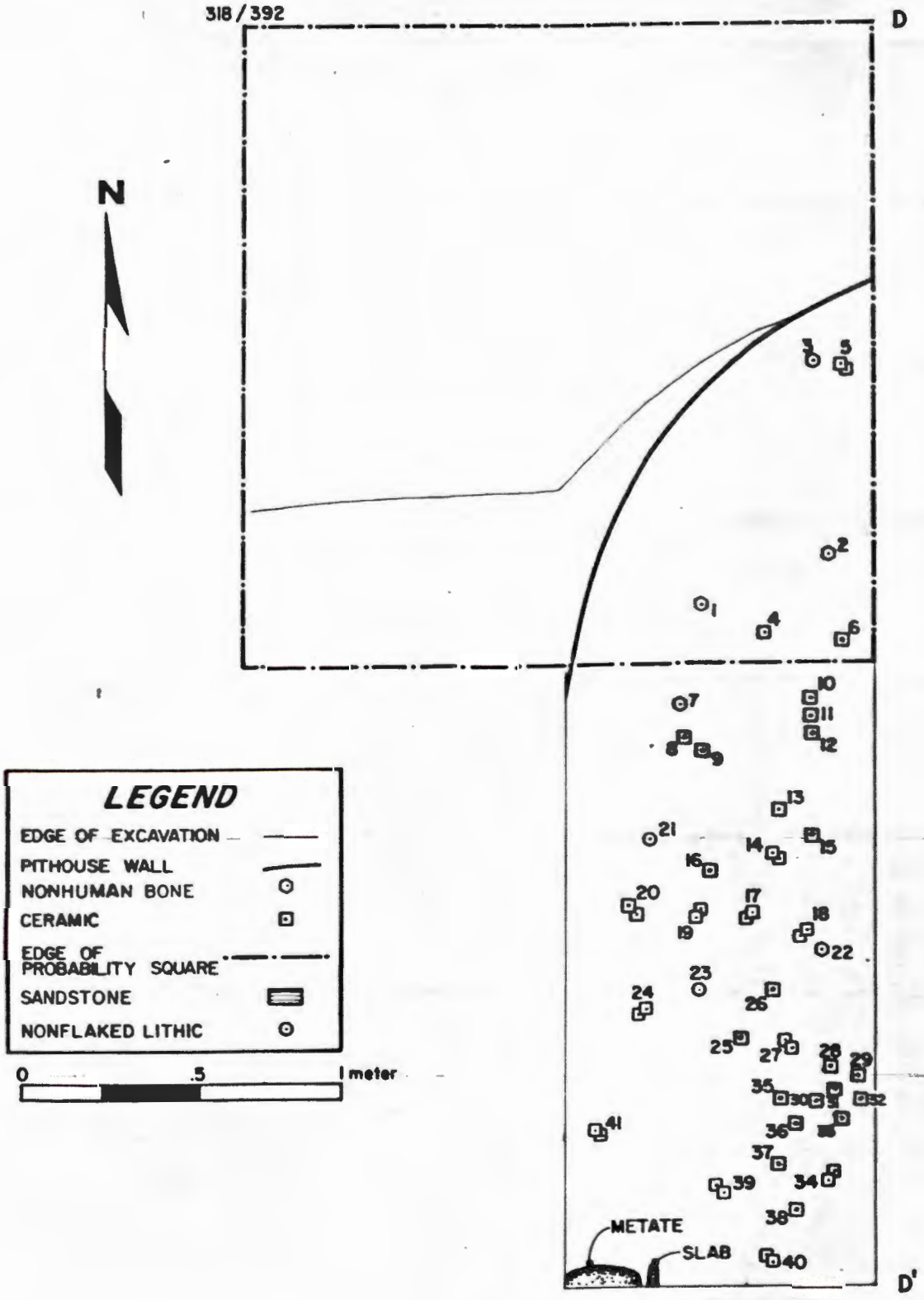

Figure 23. Plan map of Pithouse 8, Grass Mesa Village. Stratigraphic profile is shown in figure 7.

Table 16. Point-located artifacts,
Floor 1, Pithouse 8, Grass Mesa Village

PL No.	Material class	Item description
1	Nonhuman bone	Odocoileus hemionus--metacarpal
2	Nonhuman bone	Castor canadensis--innominate
3	Nonhuman bone	Mammalia, large--tool fragmentary
4	Ceramic	DL Early Pueblo Gray jar sherd
5	Ceramic	DL Early Pueblo Gray jar sherds (2)
6	Ceramic	DL Early Pueblo Gray jar sherd
7	Nonhuman bone	Mammalia, large--long bone
8	Ceramic	DL Early Pueblo Gray jar sherd
9	Ceramic	DL Early Pueblo Red bowl sherd
10	Ceramic	DL Early Pueblo Gray jar sherd
11	Ceramic	DL Early Pueblo Gray jar sherd
12	Ceramic	DL Early Pueblo Gray jar sherd
13	Ceramic	DL Early Pueblo Gray bowl sherd: vessel 12
14	Ceramic	DL Chapin Gray bowl sherds (3): vessel 12
15	Ceramic	DL Polished White jar sherd
16	Ceramic	DL Early Pueblo Gray jar sherd
17	Ceramic	DL Manocs Gray jar sherds (3): vessel 15
18	Ceramic	DL Early Pueblo Gray jar sherds (5): vessel 13
19	Ceramic	BL Bluff Black-on-red bowl sherds (6): vessel 11
20	Ceramic	BL Bluff Black-on-red bowl sherds (3): vessel 11
21	Nonflaked lithic	Questionable--minimally altered
22	Nonhuman bone	Odocoileus hemionus--antler pressure flaker
23	Nonflaked lithic	Not culurally modified
24	Ceramic	DL Early Pueblo Gray jar sherds (4): vessel 13
		DL Chapin Gray jar sherd
25	Ceramic	DL Moccasin Gray jar sherd
26	Ceramic	DL Early Pueblo Gray jar sherd
27	Ceramic	DL Early Pueblo Gray jar sherds (6)
28	Ceramic	DL Early Pueblo Gray jar sherd: vessel 10
29	Ceramic	DL Early Pueblo Gray jar sherd
30	Ceramic	DL Early Pueblo Gray jar sherd: vessel 10
31	Ceramic	DL Early Pueblo Gray jar sherd: vessel 10
32	Ceramic	DL Early Pueblo Gray jar sherd: vessel 10
33	Ceramic	DL Early Pueblo Gray jar sherd: vessel 10
34	Ceramic	DL Early Pueblo Gray jar sherds (3): vessel 10
35	Ceramic	DL Early Pueblo Gray jar sherd: vessel 10
36	Ceramic	DL Early Pueblo Gray jar sherd: vessel 10
37	Ceramic	DL Early Pueblo Gray jar sherd
38	Ceramic	DL Moccasin Gray jar sherd: vessel 10
39	Ceramic	DL Early Pueblo Gray jar sherds (2): vessel 10
40	Ceramic	DL Early Pueblo Gray jar sherds (8): vessel 10
41	Ceramic	DL Early Pueblo Gray jar sherds (8)

NOTES: See figure 23 for artifact locations.
DL - Dolores Manufacturing Tract.
BL - Blanding Manufacturing Tract.
(N) - Number of items.

and fig. 23). Most of these were fragments of crushed gray ware jars. These clusters of ceramics represent at least five distinct pottery vessels that would have been complete at the time of conflagration and that were crushed in place by the collapse of the burning roof fall. At least one of these ceramic vessels was a Mancos Gray jar. Two clusters of ceramics (PL's 19 and 20) were fragments of a Bluff Black-on-red bowl.

Five nonhuman bone artifacts or fragments were recovered from the floor of Pithouse 8. One of these was a complete deer metapodial (PL 1) resting near the northwest corner of the structure. A second nonhuman bone artifact (PL 22) was an antler tine pressure flaker. This use is inferred from the presence of a smooth flat surface ground down on the end of the tine at an angle transverse to the main shaft. The remaining three point locations were fragments of large and medium mammal bone.

Two nonflaked lithic items were present in the small portion of Pithouse 8 that was exposed. It is interesting to note that not a single flaked lithic tool or piece of debitage was recovered in this portion of Pithouse 8. Most of the activity areas from Pithouses 1, 3, and 5 had some type of flaked lithic item present.

The abandonment mode of Pithouse 8 is tentatively classified as catastrophic due to the number of reconstructible ceramic jars that were smashed into the floor when the roof burned and collapsed. It is possible that the area represents a ceramic storage area that is relatively uncontaminated by intrusive artifact classes. In contrast, the diversity of artifacts in activity areas in Pithouses 1 and 5 may not reflect activity assemblages as accurately as had been believed. Artifact distributions may have become mixed due to processes acting upon them between the period of last use and the filling of the structures by the

deposition of roof fall and other postoccupational deposits. This would explain the diversity and mixing of artifact classes and material types and account for the diffuse boundaries and lack of definition between activity areas in Pithouses 1, 3 and 5.

Further examination of Pithouse 8 and further comparison of activity areas from the site are necessary to check this inference. For the present time, one storage activity area (Activitiy Area 30) is assigned to the entire area of exposed floor in Pithouse 8.

Dating

No absolute dates were obtained for Pithouse 8. Only one charcoal fragment encountered in roof fall was collected for tree-ring dating. It did not produce a date, but was identified by the Laboratory of Tree-Ring Research as juniper. No archaeomagnetic dates were collected nor was the exposed floor surface extensively sampled for bulk soil or pollen analysis. The ceramic assemblage (appendix D) is suggestive of an A.D. 860-910 date range and is again dominated by nonspecific types such as Early Pueblo Gray, Early Pueblo White, and Early Pueblo Red. The percentages of the ceramic types represented in the fill and on the floor surface are comparatively equal. Red ware types seem to be slightly more aburdant from the floor of Pithouse 8 than in any other pitstructure in Area 3.

The rhythmic bedding of the postoccupational sediments suggests that Pithouse 8 filled through natural processes after it burned. The absence of trash in this fill sequence suggests that the abandonment of Pithouse 8 and the final abandonment of the village were events that were relatively close together in time.

Conclusions

No further work in Subarea 3 of Area 3 was conducted in either the 1979 or 1980 field seasons. Several probability squares were excavated during the 1980 field season in Area 7, immediately south of Area 3. Most of these probability squares encountered sterile deposits approximately 50 cm below the present ground surface. The steep, south-facing slope beginning in Subarea 3 of Area 3 and continuing through Area 7 appears to contain mainly sheet trash. The occurrence of Pithouse 8 in this area is inconsistent with typical Pueblo I space utilization and suggests an intensive occupation of Area 3.

SUMMARY AND CONCLUSIONS

A total of six rooms and three nonstructural units were excavated and defined in Subarea 1. The rooms represent two stratigraphic levels, the lower rooms being Rooms 1, 5, and 11, and the upper rooms being Rooms 2, 6, and 7. Nonstructures 1 and 3 are associated with the upper rooms and Nonstructure 6 is may be associated with the lower rooms. More exact chronological relationships are impossible in Subarea 1 because of the lack of adequate tree-ring and archaeomagnetic dates. The disturbed nature of the deposits did not allow for a sample of ceramics for the neck band dating project. The stratigraphic position of the surface structures provides the most reliable indication of relative chronology. Unfortunately, the surface structures excavated in Areas 2, 4, and 5 on Grass Mesa are also in very bad condition and cannot contribute to a resolution of the dating problem.

There appear to be two major building episodes represented by the structural remains in Subarea 1. The two events are interpreted as being fairly closely related; however, this interpretation is based on conjecture, not solid dating evidence. The two building events have been equated with the use of Surface 1 and Surface 2 in Pithouse 3 in Subarea 2. The correlation between construction and remodeling episodes in Pithouse 3 and two periods of construction in Subarea 1 is the best relative dating tool for characterizing the surface rooms. Originally, the two building periods had been equated with Pithouse 3, and Pithouses 1 and 5; however, none of the excavated surface structures at Grass Mesa have been adequately dated to the Grass Mesa Subphase. It appears that during the Grass Mesa Subphase, people returned to the pithouses as areas

of permanent domiciliary activities. Perhaps the surface structures were only used for storage, even during the late Periman Subphase.

The function of the surface structures must remain in question. It is postulated that the stratigraphically lower, semisubterranean rooms (Rooms 1, 5, and 11) were used as storage rooms. None of them possess obvious storage features, nor do they exhibit any obvious habitation features (i.e., hearths, bins, and grinding areas). The absence of hearths and other domestic architectural features suggests that the rooms never functioned as domiciles, although they may have served as daily work areas or seasonal habitation units.

The early rooms appear to have been contiguous structures a single room wide. The later rooms (Rooms 2, 6, and 7) appear to form a double row of rooms or perhaps represent a single row of rooms to which ramadalike structures are attached. Room 2 exhibits a more rigorous construction with some masonry footings or foundations. These later rooms tend to have interior postholes, burned pits, and features that indicate domestic activities. An unbounded work area (Nonstructure 1) that may have been roofed was west of the later surface structures and stratigraphically above Room 11. Nonstructure 3 is an isolated area of disturbance on the east boundary of Room 11. The relationship of this nonstructure to the other study units in Subarea 1 is unknown.

The greatest excavation effort was invested in Subarea 2, Area 3. Three pithouses were excavated here, revealing a complex sequence of construction, remodeling, abandonment, and reoccupation. Pithouse 3 is the earliest structure to be excavated in Area 3. Most of the surface

structures in Subarea 2 are probably associated with this pithouse. Pithouse 3 is an oversized late Periman Subphase structure that exhibits several features in its lowest floor surface (Surface 2) that are interpreted as integrative ritual features (Features 293 and 409, 410, and 411). These ceremonial vault and prayer stick features have been found in other oversized late Periman Subphase pithouses in the Dolores River valley such as Pitstructure 3 at McPhee Pueblo (Site 5MT4475). A clear cut remodeling sequence in Pithouse 3 is documented by major feature remodeling and the addition of a second floor surface. The feature and artifact assemblages of the later floor surface (Surface 1) appear to resemble more of a domiciliary function, and fewer features are present that might be interpreted to have ritual significance.

Unfortunately, Pithouses 1 and 5 (late Grass Mesa Subphase structures) were constructed on top of Pithouse 3, which destroyed major portions of that earlier structure; therefore, the complete architectural and artifactual assemblage of Pithouse 3 did not survive. Pithouse 3 was constructed and utilized between A.D. 825 and 875. The period between the use of Surface 2 and Surface 1 was probably very short.

Shortly after A.D. 875, Pithouse 3 burned and was partially filled with roof fall (Stratum 10). After the collapse of Pithouse 3, a small amount of trash and slope wash (Strata 8 and 9) accumulated in the pithouse depression prior to the construction of Pithouses 1 and 5, which occurred sometime between A.D. 880 and 900. These two structures were partially cut through the fill of Pithouse 3 and partially excavated into the sterile substrate of the mesa. Where the structures cut through Pithouse 3, measures were taken to shore up or retain the loose fill. In Pithouse 1, a masonry wall was constructed across the north end to hold

back the unconsolidated fill of Pithouse 3. In Pithouse 5, the loose fill was plastered over to hold it in place. Between Pithouses 1 and 5 an earthen wall was constructed and reinforced with a wooden lattice work.

The two later pithouses probably served as domiciles during the Grass Mesa Subphase. It appears that Pithouses 1 and 5 were occupied contemporaneously, as suggested by dating techniques, their proximity to one another, and the complementary artifact and feature assemblages in the two structures. Pithouse 5 contained two permanent grinding facilities but lacked wingwalls. Pithouse 5 may have been utilized as the locus for food preparation activities and Pithouse 1 for slightly different domestic activities. The two structures are inferred to have been occupied by two households that form one interhousehold.

The fact that these two pithouses contain such a high number of point-located artifacts and diverse assemblages but lack any perishable items may indicate that the structures were temporarily abandoned at the time of burning. This postulated temporary abandonment may have been a seasonal phenomenon, with the majority of the perishable materials removed to another structure. The larger, more immobile artifacts such as metates, manos, axes, and large cores, and the smaller incomplete artifacts such as flaked lithic debitage and ceramic sherds would be left behind by those intending to return to the structures. This inference is supported by the lack of any perishable artifacts in either Pithouse 1 or 5 and by the fact that there are virtually no reconstructible ceramic vessels from either structure. However, at some point during their temporary abandonment, the structures burned and collapsed.

This inference is supported by the presense of Stratum 15 in Pithouse 1 and Stratum 19 in Pithouse 5. These strata contained a similar matrix of fine-grained sediments devoid of cultural material except minute charcoal flecks. Both strata, located in corresponding areas of the two structures, are mounded up on the floor in the northeast corner and underlie the primary roof fall stratum that rests directly on the remaining floor surface of both pithouses. These strata have no apparent structure and have been interpreted as eolian sands deposited by way of the roof hatch, or entryway, as a result of the prevailing southwesterly winds. These deposits accumulated after abandonment of the structures but prior to the burning and collapse of the roofs.

An alternative to the temporary abandonment theory would be that the two pithouses represent the final abandonment of Area 3 and possibly Grass Mesa Village. Transportable items would have been removed by the retreating peoples and only broken or larger immobile items left behind. The pithouses would have remained open to the elements for some time after abandonment before the burning and collapse of their roofs. This scenario would probably better account for the large accumulation of wind-blown deposits (Strata 15 and 19) in the two pithouses.

The least understood relationship in Area 3 is between the pitstructures and the surface structures. Initially it was believed that the earliest (lower) surface structures were associated with Pithouse 3 and the later (upper) surface structures were associated with Pithouses 1, 5, and 8. However, with the definition of the Grass Mesa Subphase in 1980, and based on more current data from Areas 4 and 5 at Grass Mesa Village, it is now suggested that perhaps the Grass Mesa Subphase lacks surface structures as major loci for domiciliary activities. The Grass Mesa

Subphase was developed to characterize the local adaptation to stress during the late Pueblo I period in the Grass Mesa Locality. Sites assigned to this subphase are characterized by very small "pocket pithouses," a lack of surface structures, and a return to the pithouse as the major locus of permanent domestic activities. If this is the case, and it is the scenario that is argued for in this report, then the two levels of surface structures of Subarea 1 are perhaps more likely associated with the two floor surfaces of Pithouse 3, a late Periman Subphase structure. The larger size of Pithouse 3 and the suggested integrative ritual function, especially of the lower floor (Surface 2), may support the notion that the surface structures were being utilized as domiciles, though perhaps only seasonally, during the late Periman Subphase.

Pithouse 8 could have been occupied contemporaneously with Pithouses 1 and 5 or with Surface 1 of Pithouse 3. A number of reconstructible vessels were discovered on its floor, and their presence suggests that Pithouse 8 was catastrophically abandoned. Since little of the structure was excavated and no absolute dates were obtained, it is difficult to offer any additional interpretations.

APPENDIX A

POLLEN REPORT FOR AREA 3, GRASS MESA VILLAGE

by

Linda J. Scott

Fourteen pollen samples from Pithouse 3 in Area 3 at Grass Mesa Village (Site 5MT23) were selected for analysis. In addition, one sample from the excavation of Pithouse 1 is included in this discussion. The samples from Pithouse 3 reflect a variety of proveniences: the floor of the pitstructure, stratified fills of the hearth, and both fill and bottom scrape samples from several cists (table A.1).

Table A.1. Pollen samples, Area 3, Grass Mesa Village

Provenience	Comments	Sample No.	Pollen count
Pithouse 3:			
Surface 1	Near wall	85	100
Surface 1	Floor sample	86	200
Surface 1	Beneath metate (PL 69)	87	100
Feature 237 (small cist)	Fill	103	100
Feature 237	Bottom scrape	104	I
Feature 100 (hearth)	Stratum 1 in east half of hearth	114	I
Feature 100	Stratum 2 in east half of hearth	115	100
Feature 100	Stratum 3 in east half of hearth	116	I
Feature 100	Bottom scrape in east half of hearth	117	I
Feature 282 (warming pit)	Fill	151	200
Feature 282	Bottom scrape	153	200
Feature 207 (ventilator system)	Trash fill	154	200
Feature 293 (rectangular central pit)	Fill	176	200
Feature 293	Bottom scrape	178	100
Pithouse 1:			
Surface 1	Beneath mano (PL 11)	28	200

NOTE: I - Insufficient pollen for analysis.

The pollen record from Area 3 contains pollen indicative of the surrounding environment and of the possible utilization of specific plants

(fig. A.1 and tables A.2 and A.3). The arboreal pollen appears to represent normal distribution of pollen from the environment. The Ulmus pollen present in sample 178 may reflect the presence of Ulmus in the environment, or may be a redeposited pollen grain from the degradation of Tertiary rocks. Cheno-am and Cleome pollen are abundant in the samples taken from the floor of the pithouse, and may result from the utilization of portions of these plants as food or from hanging plants from the roof to dry. The single Opuntia pollen grain present in one floor sample (sample 86) may be from the utilization of Opuntia as a food.

Fill and bottom scrape samples were taken from a cist (Feature 237), a warming pit (Feature 282), and the rectangular central pit (Feature 293) in Pithouse 3. The fill of all of the features yielded sufficient pollen for analysis, as did the bottom scrape samples from two of the features (Features 282 and 293). The fill of Feature 237 is very similar in pollen content to the floor samples, with the exception that it contained a single grain of Zea pollen. The bottom scrape sample from this cist did not yield sufficient pollen for analysis. The fill sample from Feature 282, a warming pit, contains a relatively high frequency of high-spine Compositae, a single Liliaceae pollen grain, Solanaceae, cf. Lycium, Sphaeralcea, a relatively large quantity of cf. Typha pollen (11 percent), and 2 percent Zea pollen. The bottom scrape sample from this feature yielded a smaller quantity of high-spine Compositae pollen, no Liliaceae pollen, similar frequencies of Solanaceae, Lycium, and Sphaeralcea pollen, less cf. Typha pollen (6 percent), and slightly more Zea pollen (3 percent). The quantity of pollen in the fill of this cist from plants that may be interpreted as economically important makes identification of probable contents of this cist impossible. Feature 293, recorded as a

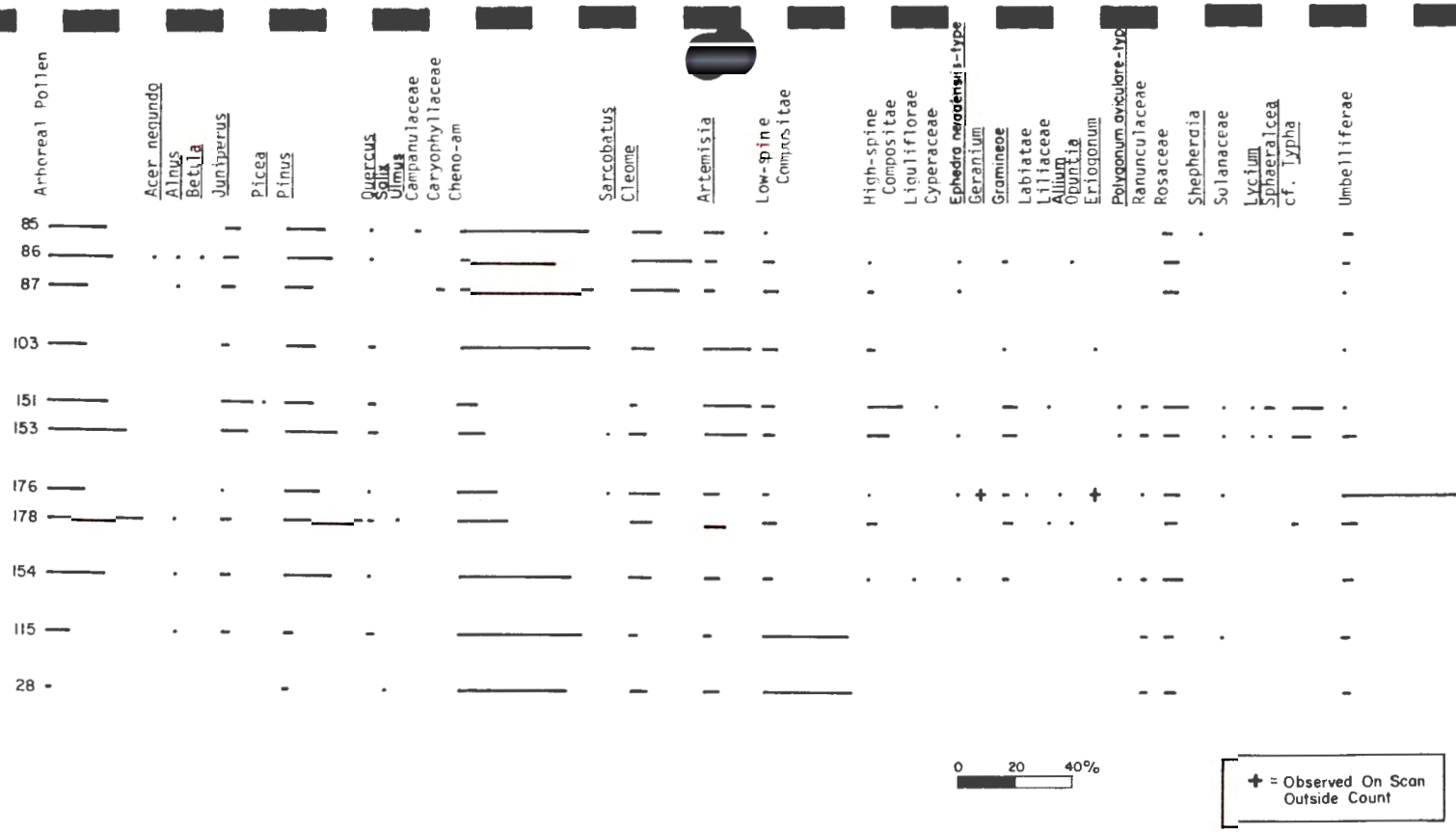

Figure A.1 Pollen diagram from Area 3, Grass Mesa Village.

Table A.2 Pollen taxa observed at Area 3, Grass Mesa Village

Scientific name	Common name
Arboreal pollen:	
Acer negundo	Inland boxelder
Alnus	Alder
Betula	Birch
Juniperus	Juniper
Picea	Spruce
Pinus	Pine
Quercus	Oak
Salix	Willow
Ulmus	Elm
Nonarboreal pollen:	
Campanulaceae	Bellflower family
Caryophyllaceae	Pink family
Chenopodiaceae	Cheno-am; pigweed and members of the goosefoot family
Sarcobatus	Greasewood
Artemisia	Sagebrush
Low-spine Compositae	Members of the sunflower family including ragweed, bur-weed etc.
High-spine Compositae	Members of the sunflower family including rabbitbrush, sunflower, etc.
Liguliflorae	Members of the sunflower family, including dandelion and cichory
Cyperaceae	Sedge family
Ephedra nevadensis-type	Members of the Mormon tea family that include Nevada ephedra, green ephedra, etc.
Geranium	Mountain geranium
Gramineae	Grass family
Labiatae	Mint family
Liliaceae	Lily family
Allium	Onion
Opuntia	Pricklypear
Eriogonum	Buckwheat
Polygonum aviculare-type	Prostrate knotweed
Ranunculaceae	Buttercup family
Rosaceae	Rose family
Shepherdia	Buffaloberry
Solanaceae	Nightshade family
Lycium	Wolfberry
Sphaeralcea	Globemallow
cf. *Typha*	Cattail
Umbelliferae	Parsley or carrot family
Zea	Maize, corn
Pre-Pleistocene pollen:	
Devonian spore	
cf. Calyptosporites	
Paleocene pollen	
cf. Momipites	

Table A.3 Results of analysis of selected pollen samples, Area 3, Grass Mesa

Taxon	Sample number									
	85		86		87		103		152	
Arboreal pollen:										
Acer negundo			1	0.5						
Alnus			1	0.5	1	1.0				
Betula			1	0.5						
Juniperus	6	6.0	10	5.0	4	4.0	2	2.0	21	10.5
Picea									1	0.5
Pinus	14	14.0	32	16.0	9	9.0	10	10.0	19	9.5
Quercus	1	1.0	1	0.5			2	2.0	4	2.0
Salix										
Ulmus										
Nonarboreal pollen:										
Campanulaceae	2	2.0								
Caryophyllaceae					2	2.0				
Chenopodiaceae	45	45.0	67	33.5	47	47.0	46	46.0	32	16.0
Amaranthus										
Sarcobatus										
Cleome	11	11.0	43	21.5	17	17.0	15	15.0	4	2.0
Artemisia	6	6.0	8	4.0	3	3.0	15	15.0	32	16.0
Low-spine Compositae	1	1.0	7	3.5	5	5.0	5	5.0	7	3.5
High-spine Compositae			1	0.5	2	2.0	2	2.0	23	11.5
Liguliflorae										
Cyperaceae									1	0.5
Ephedra nevadensis - type			2	1.0	1	1.0			1	0.5
Geranium										
Gramineae			3	1.5			1	1.0	10	5.0
Labiatae										
Liliaceae									1	0.5
Allium										
Opuntia			1	0.5						
Eriogonum							1	1.0		
Polygonum aviculare - type									1	0.5
Ranunculaceae	1	1.0	4	2.0	4	4.0			16	8.0
Rosaceae										
cf. Amelanchier	1	1.0	4	2.0	4	4.0			16	8.0
cf. Cercocarpus	1	1.0	3	1.5					1	0.5
cf. Physalis			1	0.5						
cf. Prunus	1	1								
Shepherdia	1	1								
Solanaceae									1	0.5
cf. *Lycium*									1	0.5
Sphaeralcea									*	*
cf. *Typha*									22	11.0
Umbelliferae	3	3.0	3	1.5	1	1.0	1	1.0	2	1.0
Zea							1	1.0	5	2.5
Indeterminate:										
Poorly preserved	8	8.0	10	5.0	3	3.0	6	6.0	15	7.5
Total pollen	100	100.0	200	100.0	100	100.0	100	100.0	200	100.0

NOTE: Only those samples that yielded adequate pollen counts are reported here.

Table A.3 Results of analysis of selected pollen samples, Area 3, Grass Mesa Village--Continued

Taxon	Sample number											
	153		176		178		154		115		28	
Arboreal pollen:												
Acer negundo												
Alnus					1	1.0	1	.5	1	1.0		
Betula												
Juniperus	17	8.5	2	1.0	3	3.0	3	3.0	3	3.0		
Picea												
Pinus	37	18.5	25	12.5	28	28.0	34	17.0	3	3.0	3	1.5
Quercus	5	2.5	1	.5	2	2.0	2	1.0	2	2.0		
Salix												
Ulmus					1	1.0						
Nonarboreal pollen:												
Campanulaceae												
Caryophyllaceae												
Chenopodiaceae	19	9.5	27	13.5	17	17.0	81	40.5	43	43.0	77	38.5
Amaranthus												
Sarcobatus	1	.5	1	.5								
Cleome	11	5.5	21	10.5	8	8.0	16	8.0	3	3.0	13	6.5
Artemisia	29	14.5	11	5.5	7	7.0	11	5.5	2	2.0	10	5.0
Low-spine Compositae	8	4.0	4	2.0	5	5.0	6	3.0	30	30.0	62	31.0
High-spine Compositae	15	7.5	1	.5	3	3.0	1	.5			4	2.0
Liguliflorae							1	.5				
Cyperaceae												
Ephedra nevadensis - type	2	1.0	1	.5			1	.5				
Geranium			+	+								
Gramineae	9	4.5	3	1.5	3	3.0	3	1.5			2	1.0
Labiatae			1	.5								
Liliaceae			*	*	1	1.0						
Allium			2	1.0								
Opuntia					1	1.0						
Eriogonum			*	*	2	2.0						
Polygonum aviculare - type	1	.5					1	.5				
Ranunculaceae	5	2.5	1	.5			3	1.5	2	2.0	4	2.0
Rosaceae	9	4.5	6	3.0	3	3.0	8	4.0	3	3.0	7	3.5
cf. Amelanchier							2	1.0				
cf. Cercocarpus			3	1.5			1	.5				
cf. Physalis							2	1.0				
cf. Prunus			1	.5	1	1.0	1	.5				
Shepherdia	1	.5			1	1.0	1	.5				
Solanaceae	1	.5	1	.5					1	1.0		
c.f. *Lycium*	2	1.0										
Sphaeralcea	1	.5										
cf. *Typha*	11	5.5			2	2.0						
Umbelliferae	8	4.0	84	42.0	5	5.0	7	3.5	2	2.0	4	2.0
Zea	6	3.0	1	.5								
Indeterminate:												
Poorly preserved	5	2.5	4	2.0	6	6.0	13	6.5	5	5.0	13	6.5
Total pollen	200	100.0	200	100.0	100	100.0	200	100.0	100	100.0	200	100.0

* Scan (pollen observed outside the counting traverses; not included in total).

rectangular central pit and located near the hearth, yielded sufficient pollen for analysis from both the fill and bottom scrape samples. The fill sample contains a large quantity of Umbelliferae pollen (42 percent), as well as one Geranium pollen grain, a single grain of cf. Allium, Solanaceae, and Zea pollen. The large quantity of Umbelliferae pollen in this intentionally filled feature may represent local vegetation in the area where the fill was obtained. The bottom scrape from this feature did not contain unusually high frequencies of any pollen, with the exception that it yielded the highest Pinus pollen frequency in the pitstructure.

The sample from the trash fill in the ventilator (sample 154) contained pollen similar to that obtained from the floor samples, which all display large frequencies of cheno-am (Chenopodiaceae-Amaranthus) pollen.

Samples were taken from the stratified fill in the hearth of this pitstructure a bottom scrape sample was also taken. Only the sample from Stratum 2 yielded sufficient pollen for analysis. This sample contained very little arboreal pollen but large quantities of Cheno-am pollen (43 percent), similar to that noted in the floor samples, and low-spine Compositae pollen (30 percent). Large frequencies of low-spine Compositae pollen have been noted in structures that have been leisurely abandoned and allowed to stand open to the elements following abandonment. It may be that the large quantity of low-spine Compositae pollen in this sample is indicative of a period of temporary abandonment of the structure, or introduction of fill material into the hearth that had been collected from a weedy area.

Pollen sample 28, from Pithouse 1, was taken on the floor under a mano. This sample also contains a large quantity (31 percent) of low-spine Compositae pollen, which may result from the leisurely

abandonment of the structure. There were no large frequencies of pollen in this sample to indicate what foods may have been ground with the mano, with the possible exception of cheno-am. Although cheno-am was noted in 38 percent of this sample, the absence of other samples for comparison from the floor of the same pitstructure make interpretation of this sample impossible.

APPENDIX B

MACROBOTANICAL ASSEMBLAGE FROM AREA 3, GRASS MESA VILLAGE

by

Meredith H. Matthews

INTRODUCTION

The macrobotanial assemblage from Area 3 of Grass Mesa Village (5MT23) consists of remains retrieved from bulk soil flotation samples and vegetal material collected during excavation procedures. Twenty families and 28 genera of plants were recognized during analysis, some of which have been identified to the species level. Table B.1 lists the taxa identified within the major study units excavated in Area 3. The category "other" refers to nonstructural units such as middens and probability squares. The purpose of macrobotanical analysis is to provide data concerning subsistence items exploited by the prehistoric inhabitants. It also provides information concerning plants extant at the time of occupation, aiding in environmental reconstruction. Macrobotanical information from Area 3, when combined with similar information from other habitation areas of Grass Mesa Village or from other sites in the Grass Mesa Locality, will aid in hypothesizing resource mix and exploitation patterns of the prehistoric occupants in this locality.

Most of the bulk soil samples from Area 3 were collected according to the project standardized biotic sampling design (Litzinger 1979). In addition, some of the samples from Pithouses 1 and 5 were collected according to a modified sampling design as part of a special sampling project (Matthews 1981). Approximately 20 percent of the total number of bulk soil samples collected during the 1979/1980 field seasons were analyzed. Samples selected for analysis were collected from structure and nonstructure fills, surfaces, and features. Vegetal remains were collected by excavators in the field and tend to include the larger materials from feature fills and surfaces, and from construction material

Table B.1 Taxa represented in the macrobotanical assemblage, by study unit type, Area 3, Grass Mesa Village

Family Genus species	Pitstructures	Surface Structures	Other
Anacardiaceae			
Rhus aromatica	X		
Amaranthaceae			
Amaranthus sp.	X		
Cactaceae	X		
Chenopodiaceae			
Chenopodium sp.	X	X	
"Cheno-am"	X		
Compositae	X		X
Artemisia sp.	X		
Chrysothamnus sp.	X		
Iva sp.			X
Cruciferae	X		
Descurainia sp.	X		
Cupressaceae			
Juniperus sp.	X	X	X
Juniperus osteosperma	X		X
Fagaceae			
Quercus gambelii	X	X	X
Gramineae	X	X	X
Zea mays	X	X	X
Leguminosae	X		
Phaseolus	X		X
Liliaceae			
Yucca sp.			X
Loasaceae			
Mentzelia sp.	X		
Malvaceae	X	X	
Pinaceae			
Pinus sp.	X	X	X
Pinus edulis	X	X	
Pinus ponderosa	X	X	
Pseudotsuga menziesii	X		
Polygonaceae	X		
Polygonum sp.	X		
Portulacaceae			
Portulaca sp.	X		X
Salicaceae	X		
Populus sp.	X	X	X
Salix sp.	X		
Solanaceae	X		
Nicotiana sp.	X		
Nicotiana attenuata	X		
Physalis sp.	X		
Rosaceae	X		
Cercocarpus sp.	X		X
Peraphyllum ramosissimum	X		
Prunus virginiana	X		
Purshia tridentata	X		
Dicotyledoneae	X	X	X
Gymnospermae	X		X

NOTE: X - Present.

that were not needed for dating purposes. Macrobotanical analysis proceeded according to standard methods of the Botanical Studies Section of the DAP (Matthews and Benz 1981).

The disparity in taxa identified from pithouses as compared to surface structures and other proveniences (table B.1) is probably caused by sample selection and preservation. As tables B.2 and B.3 illustrate, 98 percent of the bulk soil samples selected for analysis are associated with Pithouses 1, 3, and 5, which biases the representation of small scale remains towards pithouses over other excavation units. However, the analytical emphasis on samples from pithouses was due to the extensive looting and rodent disturbance and generally poor preservation of the surface rooms, which was assumed to have decreased the information potential of the associated samples. In view of this, it should be kept in mind that the taxa from bulk soil samples are not necessarily indicative of differential association of remains between structure types, but may only reflect sample bias.

Table B.2 Bulk soil sample results from pitstructures, Area 3, Grass Mesa Village

Taxon	Provenience and sample number																					
	Pithouse 1																					
lly enus species plant part	73 Surf 1 upper control	75 Surf 1	76 Surf 1	78 Surf 1	79 Surf 1	80 Surf 1	81 Surf 1	84 Surf 1	119 Surf 1	120 Surf 1	121 Surf 1	122 Surf 1	124 Surf 1	125 Surf 1	126 Surf 1	127 Surf 1	128 Surf 1	129 Surf 1 Lower control	100 F23 (pit, nfs)	101 F16 (hearth) Strat 2	102 F16 (hearth) Strat 3	103 F16 (hearth) Strat 4	104 F16 (hearth) Strat 5
cardiaceae hus aromatica wood																							
Amaranthaceae Amaranthus sp. seed			1/C																				
taceae spines																						1/C	
Chenopodiaceae Chenopodium sp. fruit			1/N																	7/C			
eno-am" fruit		3/C																				1/C, 1/N	1/C
Compositae fruit Artemisia sp. wood hrysothamnus wood			<1g/C	<1g/C																2/C <1g/C		<1g/C	
Cruciferae seed Descurainia sp. seed																						7/C	
ressaceae Juniperus sp. scale bark d rus perma s												1/N								6/C		1/C	
Fagaceae Quercus gambelli wood			<1g/C																	<1g/C		<1g/C	
mineae fruit inflorescence Zea mays kernel cupule inflorescence stem	1/C	1/C	1/C								1/N	1/N								.1g/C			
eguminosae cotyledon seed																		2/C					

T: /C - Charred.
/P - Partly charred.
/N - Noncharred.

Surf - Surface.
nfs - Not further specified.
F - Feature.

Strat - Stratum.
#/ - Number present.
g/ - Weight in grams.

frg - Fragment.

Table B.2 Bulk soil sample results from pitstructures, Area 3, Grass Mesa Village--Continued

Taxon	Provenience and sample number																						
	Pithouse 1																						
Family Genus species plant part	73 Surf 1 upper control	75 Surf 1	76 Surf 1	78 Surf 1	79 Surf 1	80 Surf 1	81 Surf 1	84 Surf 1	119 Surf 1	120 Surf 1	121 Surf 1	122 Surf 1	124 Surf 1	125 Surf 1	126 Surf 1	127 Surf 1	128 Surf 1	129 Surf 1 Lower control	100 F23 (pit, nfs)	101 F16 (hearth) Strat 2	102 F16 (hearth) Strat 3	103 F16 (hearth) Strat 4	104 F16 (hearth) Strat 5
Loasaceae																							
Mentzelia sp.																							
seed																							
Malvaceae																							
seed																							
fruit																							1/C
Pinaceae																							
Pinus sp.																							
cone																			<1g/C				
bark																			<1g/C	<1g/C	<1g/C	<1g/C	
wood			<1g/C					<1g/C		<1g/C													
Pinus edulis																							
fasicle																							
needle	1/C		2frg/C	1/C	1/C	1/C							2frg/C										
wood																							
Pinus ponderosa																							
peduncle																							
needle						1/C																	
wood																							
Polygonaceae																							
fruit																							
Polygonum sp.																							
fruit																							
Portulacaceae																							
Portulaca sp.																							
seed																							
Rosaceae																							
wood																							
Cercocarpus sp.																							
wood							<1g/C																
Peraphyllum ramosissimum																							
wood																							
Prunus virginiana																							
seed																							
Purshia tridentata																							
wood																							
Salicaceae																							
wood	<1g/N																						
Populus sp.																							
wood			<1g/C					<1g/C							<1g/C					<1g/C	<1g/C	<1g/C	<1g/C
Salix sp.																							
wood																							
Solanaceae																							
seed																							
Nicotiana sp.																							
seed	1/C																			1/C			
Nicotiana attenuata																							
seed																							
Physalis sp.																							
seed																						1/C	

Table B.2 Bulk soil sample results from pitstructures, Area 3, Grass Mesa Village--Continued

Taxon	Provenience and sample number																						
	Pithouse 1																						
Family Genus species plant part	73 Surf 1 upper control	75 Surf 1	76 Surf 1	78 Surf 1	79 Surf 1	80 Surf 1	81 Surf 1	84 Surf 1	119 Surf 1	120 Surf 1	121 Surf 1	122 Surf 1	124 Surf 1	125 Surf 1	126 Surf 1	127 Surf 1	128 Surf 1	129 Surf 1 Lower control	100 F23 (pit, nts)	101 F16 (hearth) Strat 2	102 F16 (hearth) Strat 3	103 F16 (hearth) Strat 4	104 F16 (hearth) Strat 5
Dicotyledoneae																							
seed																					1/C		
fruit																							
flower																							
leaf																							
bark																							
wood																				<1g/C			
Gymnospermae																							
wood									<1g/C					<1g/C									
Indeterminate																							
stem																	<1g/C						

Table B.2 Bulk soil remains from Pitstructures, Area 3, Grass Mesa Village--Continued

Taxon	Provenience and sample number																			
	Pithouse 3											Pithouse 5								
Family Genus species Plant part	563 Strat 10 upper control	492 Surf 1 lower control	399 Surf 1	413 F237 (floor cist)	414 F237 (floor cist)	423 F100 (hearth) Strat 1	424 F100 (hearth) Strat 2	425 F100 (hearth) Strat 3	325 F144 (floor cist) Surf 2	461 F282 (warming pit) Surf 2	462 F282 (warming pit) Surf 2	174 Strat 18 Upper control	181 Surf 1	291 Surf 1 lower control	296 Surf 1	211 F79 (hearth) Strat 1	212 F79 (hearth) Strat 2	213 F79 (hearth) Strat 3	214 F79 (hearth) Strat 4	264 F79 (hearth) Strat 5
[redacted]ardiaceae [redacted]us aromatica wood																			<1g/C	
Amaranthaceae Amaranthus sp. seed							6/C													
C[redacted]aceae spines																				
Chenopodiaceae Chenopodium sp. [redacted]fruit	1/C					8/C		1/C	2/C	1/N				3/N	1/C	10/N	1/C			1/C, 1/N
"[redacted]no-am" [redacted]fruit	1/C		1/C	2frg/C	2/C, 1/N					4frg/C				3frg/C, 1/N		4/N				1/N
Compositae fruit [redacted]temisia sp. wood [redacted]rysothamnus wood									<1g/C											1/N
Cruciferae seed [redacted]escurainia sp. seed							1/C 11/C									9/C	59/C	16/C		
C[redacted]essaceae Juniperus sp. scale bark [redacted]s [redacted]arma scale				3/C	3/C	<1g/C	1/C		1/P	6/N					6/C	2/C	2frg/C		6/C	6/C <1g/C
Fagaceae Quercus gambelii wood	<1g/C				<1g/C			<1g/C	1.2g/C	<1g/C		<1g/C						<1g/C		<1g/C
G[redacted]inae fruit inflorescence Zea mays kernel cupule inflorescence stem	2/C		2frg/C	1/C	<1g/C	.5g/C 48+/C 1frg/C	1/C	1/C	5.7g/C 10+/C 5frg/C	1/C		1/C				2/C		1/C		1/C
Leguminosae cotyledon seed																		1/C		1/N

Table B.2 Bulk soil sample results from pitstructures, Area 3, Grass Mesa Village--Continued

Taxon	Provenience and sample number																			
	Pithouse 3											Pithouse 5								
Family Genus species plant part	563 Strat 10 upper control	492 Surf 1 lower control	399 Surf 1	413 F237 (floor cist)	414 F237 (floor cist)	423 F100 (hearth) Strat 1	424 F100 (hearth) Strat 2	425 F100 (hearth) Strat 3	325 F144 (floor cist) Surf 1	461 F282 (warming pit) Surf 2	462 F282 (warming pit) Surf 2	174 Strat 18 upper control	181 Surf 1	291 Surf 1 lower control	296 Surf 1	211 F79 (hearth) Strat 1	212 F79 (hearth) Strat 2	213 F79 (hearth) Strat 3	214 F79 (hearth) Strat 4	264 F79 (hearth) Strat 5
Loasaceae																				
Mentzelia sp. seed		1/P							6/N								1/C		1/C	
Malvaceae																				
[redacted] [redacted]lt																				
Pinaceae																				
Pinus sp. cone					2/C															
bark	<1g/C				<1g/C			<1g/C		<1g/C				<1g/C	<1g/C			<1g/C	<1g/C	<1g/C
[redacted]od	<1g/C		<1g/C	<1g/C					<1g/C			<1g/C			<1g/C		<1g/C			
P[redacted] *edulis* [redacted]icle			7/C		1/C															
[redacted]dle	2frg/C		2frg/C	2frg/C	6/C				2frg/C			2/C		2/C	4/C	1/C	1/C	1/C	1/C	2frg/C
wood			<1g/C		1.5g/C	<1g/C				<1g/C		<1g/C						<1g/C	<1g/C	
Pinus ponderosa peduncle			3/C																	
[redacted]dle	1/C		2frg/C						1/C	1/P,2/N		2/C		2/C	1/C	1/C		2frg/C		1/C
[redacted]od						<1g/C								<1g/C		<1g/C				
Pol[redacted]naceae fruit						1/C													1/C	
Polygonum sp. fruit								1/C												
Por[redacted]acaceae																				
P[redacted]*ulaca* sp. [redacted]ed										1/C						1/C				
Rosaceae																				
wood										<1g/C					<1gm/C					
Cer[redacted]*us* sp. [redacted]	<1g/C			<1g/C			<1g/C	<1g/C	<1g/C						<1gm/C			<1gm/C	<1gm/C	<1gm/C
P[redacted] [redacted]*mum* [redacted]od			<1g/C	<1g/C	<1g/C	<1g/C														
Prunus virginiana seed						1/C														
Purshia [redacted]*dentata* [redacted]ood																			<1g/C	
Sal[redacted]ceae																				
wood			<1g/C						<1g/C	<1g/C		<1g/C		<1g/C				<1g/C		
Populus sp. wood	<1g/C															<1g/C	<1g/C	<1g/C	<1g/C	<1g/C
S[redacted]*x* sp. [redacted]ood					<1g/C	<1g/C														
So[redacted]ceae																				
seed						1/C			1/C										1/C	
Nicotiana sp. seed																				
N[redacted]*tiana* [redacted]*enuata* [redacted]ed	9/N		2/N	1/N							3/N				11/N	1/N	4/N		1/C, 1/N	
P[redacted]*salis* sp. seed					1/C					4/C										

Table B.2 Bulk soil sample results from pitstructures, Area 3, Grass Mesa Village--Continued

Taxon	Provenience and sample number																			
	Pithouse 3											Pithouse 5								
Family Genus species plant part	563 Strat 10 upper control	492 Surf 1 lower control	399 Surf 1	413 F237 (floor clst)	414 F237 (floor clst)	423 F100 (hearth) Strat 1	424 F100 (hearth) Strat 2	425 F100 (hearth) Strat 3	325 F144 (floor clst) Surf 1	461 F282 (warming pit) Surf 2	462 F282 (warming pit) Surf 2	174 Strat 18 upper control	181 Surf 1	291 Surf 1 lower control	296 Surf 1	211 F79 (hearth) Strat 1	212 F79 (hearth) Strat 2	213 F79 (hearth) Strat 3	214 F79 (hearth) Strat 4	264 F79 (hearth) Strat 5
Dic[redacted]ledoneae																				
[redacted]ed	1/C,2/N		1/C			2/C	1/C,1/N			1/C							1/C			
[redacted]ult																		1/C	1/P	
flower																1/C				
leaf										1/N										
bark			<1g/C																	
[redacted]od		<1g/C			<1g/C							<1g/C <1g/C	<1g/C	<1g/C	<1g/C <1g/C			<1g/C 1g/C	<1g/C	
Gym[redacted]permae																				
[redacted]od								<1g/C		<1g/C	<1g/C									<1g/C
Indeterminate stem																				

Table B.3 Vegetal remains from pitstructures, Area 3, Grass Mesa Village

Taxon	Provenience											
	Pithse 3											
Family Genus species plant part	F238 (wall niche) Full Cut	F207 (vent) Full Cut	Strat 7 Fill	Strat 8 Fill	Strat 10 Root fall	Surf 1	F224 (pit, nfs) Surf 1	F100 (hearth) Strat 1	F100 (hearth) Strat 1	F209 (post-hole) Surf 1	F247 (post-hole) Surf 1	F322 (pit, nfs) Surf 1
Cupressaceae												
Juniperus sp.												
wood	<1g/C										4g/C	
Fagaceae												
Quercus gambelii												
wood					<1g/C							
Gramineae												
fruit				1/C								
Zea mays												
kernels		2.5g/C		<1g/C				<1g/C	<1g/C			
inflorescence		1frg/C							1frg/C			2frg/C
infructescence					adobe impression							
Leguminosae												
Phaseolus sp.												
cotyledon		5/C										
Pinaceae												
Pinus sp.												
bark						<1g/C						
twig												
wood			<1g/C		*1081g/C *16g/P *9g/N	<1g/C	<1g/C			7.5g/C		
Pinus edulis												
cone					1/C							
needles	2frg/C			2frg/C	8frg/C	2frg/C	2frg/C					
wood				<1g/C		<1g/C						
Pinus porderosa												
cone					1/C							
needles					8frg/C	2frg/C	2frg/C					
wood				9.2g/C	1g/C							
Pseudotsuga menziesii												
needle												
twig												
Salicaceae												
wood					<1g/C							
Populus sp.												
bark				<1g/C								
wood				37g/C	22g/C		8.5g/C					
Dicotyledoneae												
bark							<1g/C					
wood	<1g/C			<1g/C	87.1g/C		2g/C					

*From several field specimens and probably from different roofing elements.

NOTE: /C - Charred.
/P - Partly charred.
/N - Noncharred.
frg - fragment.

F - Feature.
Surf - Surface.
nfs - Not further specified.
#/ - Number present.

g/ - Weight in grams.
Strat - Stratum.
vent - Ventilator.
Pithse - Pithouse.

Table B.3 Vegetal remains from pitstructures, Area 3, Grass Mesa Village--Continued

Taxon	Provenience										
	Pithse 3		Pithse 1			Pithse 5					Pithse 6
Family Genus species plant part	F328 (pit, nfs) Surf 2	F144 (floor cist) Surf 2	F25 (vent) Strat 3 Level 1	Strat 10 Roof fall	Strat 13 Fill	Strat 17 Fill	Strat 18 Roof fall	F68 (posthole) Surf 1 Full cut	F69 (posthole) Surf 1 Full cut	F85 (posthole) Surf 1 Full cut	Strat 4 Fill
Cupressaceae											
Juniperus sp.											
wood	<1g/C							141.3/N			
Fagaceae											
Quercus gambelii											
wood				11.8g/C							
Gramineae											
fruit							1N				
Zea mays											
kernels		12.5g/C		<1g/C							
inflorescence											
infructescence											
Leguminosae											
Phaseolus sp.											
cotyledon			3frg/C								
Pinaceae											
Pinus sp.											
bark							<1g/C				
twig											
wood	11g/C			2.2g/N	<1g/C		10.5g/C		31.3g/P	51.2g/N	
Pinus edulis											
cone											
needles							2frg/C				
wood							14g/P				
Pinus ponderosa											
cone							2frg/C				
needles							8frg/C				
wood						6g/C	16g/C				
Pseudotsuga menziesii											
needle							2frg/C				
twig							<1g/C				
Salicaceae											
wood											
Populus sp.											
bark											
wood				47g/C		5.5g/C	123.5g/C				2.5g/C
Dicotyledoneae											
bark											
wood							23g/C				5.5g/C

RESULTS

Tables B.2 through B.5 present the analysis results. The tables are divided by bulk soil remains versus vegetal remains and separated into the major study units. Macrobotanical remains were recovered in both a charred and noncharred condition. Pedoturbative processes and the generally poor preservation potential of open air sites in the project area makes interpretation of noncharred remains problematic. Human disturbance can initiate successional stages in ruderal plants, many of which may have been economically viable resources, that will continue after the site has been abandoned. Parts of these plants can then become naturally incorporated into the cultural deposits, and whereas they are a byproduct of the prehistoric occupation of the site, they are not directly associated with the cultural deposit (Bohrer 1980; Adams 1980; Dennell 1976; Keepax 1977; Minnis 1981). Three factors are considered when evaluating the integrity of noncharred remains recovered from cultual deposits: (1) the overall condition of the noncharred item--often material can be positively identified as modern, (2) the provenience from which the item was recovered, and (3) the condition of the associated remains. For example, if a noncharred seed was recovered from a deposit in a hearth that contained predominately charred remains, the noncharred seed would be considered a contaminant.

The integrity of charred botanical remains must be evaluated as well. The sampling design used at Area 3 integrates vertical control sampling whereby bulk soil samples are collected from fill above and below a sample of interest (e.g., table 2, BS 73 and 129). If there are similar botanical remains recovered from these control samples as from the feature

Table B.4 Bulk soil sample results from surface structures and miscellaneous study units, Area 3, Grass Mesa Village

Taxon Family Genus species plant part	Sample number and provenience BS 5 Room 5 Feature 2 (ash pit)	 BS 53 square 306S/388E Level 2, midden
Chenopodiaceae		
Chenopodium sp.		
fruit	7X/C	
Compositae		
Iva sp.		
fruit		1/C
Cupressaceae		
Juniperus osteosperma		
seed		1/C
Fagaceae		
Quercus gambelii		
wood		<1g/C
Gramineae		
fruit	1/C	1/C
Zea mays		
cupule		6X/C
Malvaceae		
seed	2/C	
Pinaceae		
Pinus sp.		
bark		<1g/C
wood		1g/C
Pinus edulis		
wood	1.7g/C	
Pinus ponderosa		
wood	<1g/C	
Portulacaceae		
Portulaca sp.		
seed		1/C
Rosaceae		
Cercocarpus sp.		
wood		<1g/C
Salicaceae		
Populus sp.		
wood	<1g/C	<1g/C
Dicotyledoneae		
seed		1/N
fruit		1/C
wood	<1g/C	

NOTE: /C - Charred.
/N - Noncharred.
X/ - Fragments.
BS - Bulk soil.
#/ - Number present.
g/ - Weight in grams.

Table B.5 Vegetal remains from surface structures and miscellaneous excavation units, Area 3, Grass Mesa Village

Taxon	Provenience											
	Room 1	Room 2			Room 7				Room 5	Room 6		
Family Genus species plant part	F7 Niche	Level 2	Surf 1 F8 (post-hole)	Surf 1 F5 (small floor clst)	Strat 3 Roof fall	Strat 2	Surf 1 F6 (pit w/ burning) Strat 1	Surf 1 F37 (pit w/ burning) Strat 2	Strat 3 Fill	Strat 2 Fill	Strat 4 Fill	Surf 1 F58 (post-hole)
Compositae twig w/ inflorescence												
Cupressaceae *Juniperus* sp. bark wood												
Fagaceae *Quercus gambelli* wood												
Gramineae *Zea mays* kernels inflorescence	<1g/C	<1g/C	<1g/C	<1g/C	1.7g	<1g/C	<1g/C		1g/C 1frg/C			
Leguminosae *Phaseolus* sp. cotyledon												
Liliaceae *Yucca* sp. leaf												
Pinaceae *Pinus* sp. wood *Pinus edulis* seed *Pinus ponderosa* wood		1frg/N	1g/N, 16.5g/C		<1g/C			2.7g/C		4g/C		23g/N
Rosaceae *Cercocarpus* sp. wood												
Salicaceae *Populus* sp. wood											3g/C	
Dicotyledoneae leaf wood												
Gymnospermae wood												

NOTE: /C - Charred.
/N - Noncharred.
frg - Fragment.
/P - Partly charred.
F - Feature.
#/ - Number present.
g/ - Weight in grams.
Surf - Surface.
E-units - Excavation units.
Strat - Stratum.

Table B.5 Vegetal remains from surface structures and miscellaneous excavation units, Area 3, Grass Mesa Village--Continued

Taxon	Provenience									
	Room 6						E-units and squares			
Family Genus species plant part	Surf 1 F63 (post-hole)	Surf 1 F72 (post-hole)	Surf 1 F83 (post-hole)	Surf 1 F65 (pit w/ burning) Strat 1	Surf 1 F65 (pit w/ burning) Strat 2	Surf 1 F65 (pit w/ burning)	E-unit 5 Level 7	E-unit 5 Level 8	RDA-2 Animal	Square 284/398 Strat 3
Compositae twig w/ inflorescence									<1g/N	
Cupressaceae *Juniperus* sp. bark wood			1.5g/C			<1g/C				
Fagaceae *Quercus gambelii* wood						<1g/C				
Gramineae *Zea mays* kernels inflorescence				<1g/C		1frg/C	<1g/C		<1g/C	<1g/C
Leguminosae *Phaseolus* sp. cotyledon										
Liliaceae *Yucca* sp. leaf										
Pinaceae *Pinus* sp. wood *Pinus edulis* seed *Pinus ponderosa* wood	<1g/N	40g/N		1.3g/C	4.5g/C	3.5g/C				
Rosaceae *Cercocarpus* sp. wood										
Salicaceae *Populus* sp. wood					2.5g/C	1.5g/C				
Dicotyledoneae leaf wood								2g/C	3frg/N	
Gymnospermae wood			2.8g/N							

Table B.5 Vegetal remains from surface structures and miscellaneous excavation units, Area 3, Grass Mesa Village--Continued

Taxon	Provenience									
	E-units and squares									
Family Genus species plant part	square 284/398 Strat 5	square 284/400 Strat 5	square 286/394 Surf 1 F107 (posthole)	square 286/396 Strat 1	square 288/394 Strat 2	square 288/398 Strat 4	square 289/398 Strat 2	square 289/398 Strat 4 F46 (posthole)	square 295/389 Strat 6	square 297/389 Strat 6
Compositae twig w/ inflorescence										
Cupressaceae *Juniperus* sp. bark wood										
Fagaceae *Quercus gambelii* wood										
Gramineae *Zea mays* kernels inflorescence	<1g/C	<1g/C			<1g/C	<1g/C	1.3g/C		<1g/C	
Leguminosae *Phaseolus* sp. cotyledon							1/C			
Liliaceae *Yucca* sp. leaf				frg/C						
Pinaceae *Pinus* sp. wood *Pinus edulis* seed *Pinus ponderosa* wood							<1g/C	31.5g/N		<1g/C
Rosaceae *Cercocarpus* sp. wood										<1g/C
Salicaceae *Populus* sp. wood			<1g/C				<1g/C			
Dicotyledoneae leaf wood										
Gymnospermae wood			8.5g/N		9g/N					

or surface samples, then a secure association cannot be made between a particular taxa and the feature or surface it was collected from.

Pithouse 3

The macrobotanical remains from Pithouse 3, the oldest of the three excavated pithouses, indicates exploitation of Juniperus sp., Quercus gambelii, Populus sp., and genera within the Pinaceae and Rosaceae families for roofing materials (tables B.2 and B.3). The majority of wood charcoal sent in from Stratum 10, the designated roof fall stratum, could be confidently identified only to the genus level of Pinus spp., although more specific identification would probably concur with the Pinus ponderosa identification of the Laboratory of Tree-Ring Research (note text of report). Wood from postholes (Features 209 and 247) denote use of Pinus spp. as well as Juniperus sp. wood (table B.3) for post supports in Pithouse 3. The wood charcoal from Feature 100 (Surface 1 central hearth) and 282 (Surface 2 warming pit) indicate utilization of Juniperus sp., Quercus gambelii, Pinus edulis, Pinus ponderosa, Cercocarpus sp., Peraphyllum ramosissimum, and Salix sp. wood as probable fuel resources.

Macrobotanical remains were retrieved from three features associated with Surface 2 of Pithouse 3. Feature 328 was a nonspecific pit feature with Juniperus sp. and Pinus spp. wood charcoal collected and identified from the roof fall fill in the feature (table B.3). Feature 144 was a mixed sand-filled floor cist believed to be a storage pit. The botanical remains from this feature (tables B.2 and B.3) are a mixture of corn fragments, seeds, fruits, and wood charcoal. The charcoal implies some mixing of roof fall material into the cist fill. Most of the remaining material retrieved from this feature could have been stored resources that were not removed from the cist when the structure was abandoned and subsequently

burned. However, the six noncharred Mentzelia sp. seeds and the roof fall material may signify mixing of de facto and postabandonment remains that are not related to the function of the feature.

The same reasoning applies to material from Feature 282, sand-filled warming pits. The mixture of charred and noncharred seeds and possible roof fall material obscures clear association of the remains to the feature. Plants such as Chenopodium sp., Portulaca sp., and Physalis sp. could have been growing around the structure, had parts introduced into the roof prior to burning, and could have been incorporated into the fill of Feature 282 upon structure collapse. Conversely, these plant remains, as well as the Nicotiana attenuata seeds and Zea mays cupule may be waste products of vegetal processing activities associated with this feature.

Five of the features associated with Surface 1 of Pithouse 3 contained identifiable vegetal remains, and bulk soil samples were analyzed from two features. As shown in table B.3, vegetal remains from Features 238, 207, 224, and 322 are probably roof fall materials. Since it is unlikely that Feature 207, the ventilator, was a storage or processing facility, the remains of Zea mays and Phaseolus sp. were either associated with the roof prior to its collapse or part of the area's general, broadcast trash that was incorporated into the ventilator fill after abandonment.

The mixture of charred and noncharred seeds as well as wood charcoal extracted from the bulk soils from Feature 237, a sand-filled storage cist (table B.2), resembles the remains from Feature 144, the storage cist associated with Surface 2. The fragments of wood charcoal are probably parts of roof fall material. The other remains from this feature, such as Zea mays fragments, Physalis sp. seeds, "Cheno-am" fruits, and the

Nicotiana sp. seed, may have some association with the feature, or they may be part of postabandonment debris.

Several genera of remains, such as Amaranthus sp., Descurania sp., Polygonum sp., and Prunus virginiana, are unique to the Surface 1 central hearth (Feature 100). The remains from Stratum 1 of the hearth (tables B.2 and B.3) are dubiously associated with the hearth because this stratum was described as a mixed deposit containing roof fall. However, the charred nature of all but one seed, the cooccurrence of a taxa in more than one hearth stratum and the occurrence of usually more than one item within a genus lend support to the functional association between the hearth and its content. Given the functional interpretation of a hearth as a food processing as well as heating facility and the ethnobotanical documentation of many of the genera as food resources (Elmore 1944; Stevenson 1915; Whiting 1939), it is probable that the seeds and fruits associated with Feature 100 are indicative of subsistence resources.

Pithouse 1

There is a noticeable decrease in the quantity and diversity of macrobotanical remains recovered from Pithouse 1 (tables B.2 and B.3). This may be due to collection bias, preservation conditions, or the presence of fewer organic materials in Pithouse 1 than in the other two pithouses. Numerous BS (bulk soil) samples were taken from Surface 1 as part of a special study concerned with macrobotanical remains from surfaces proximal to food processing activity areas (Matthews 1981). The sampling strategy for this study was a modification of the project standardized sampling program and in this case centered around Feature 16, the central hearth (fig. B.1). The paucity of remains from the floor is interpreted as the byproduct of poor preservation and cultural activities

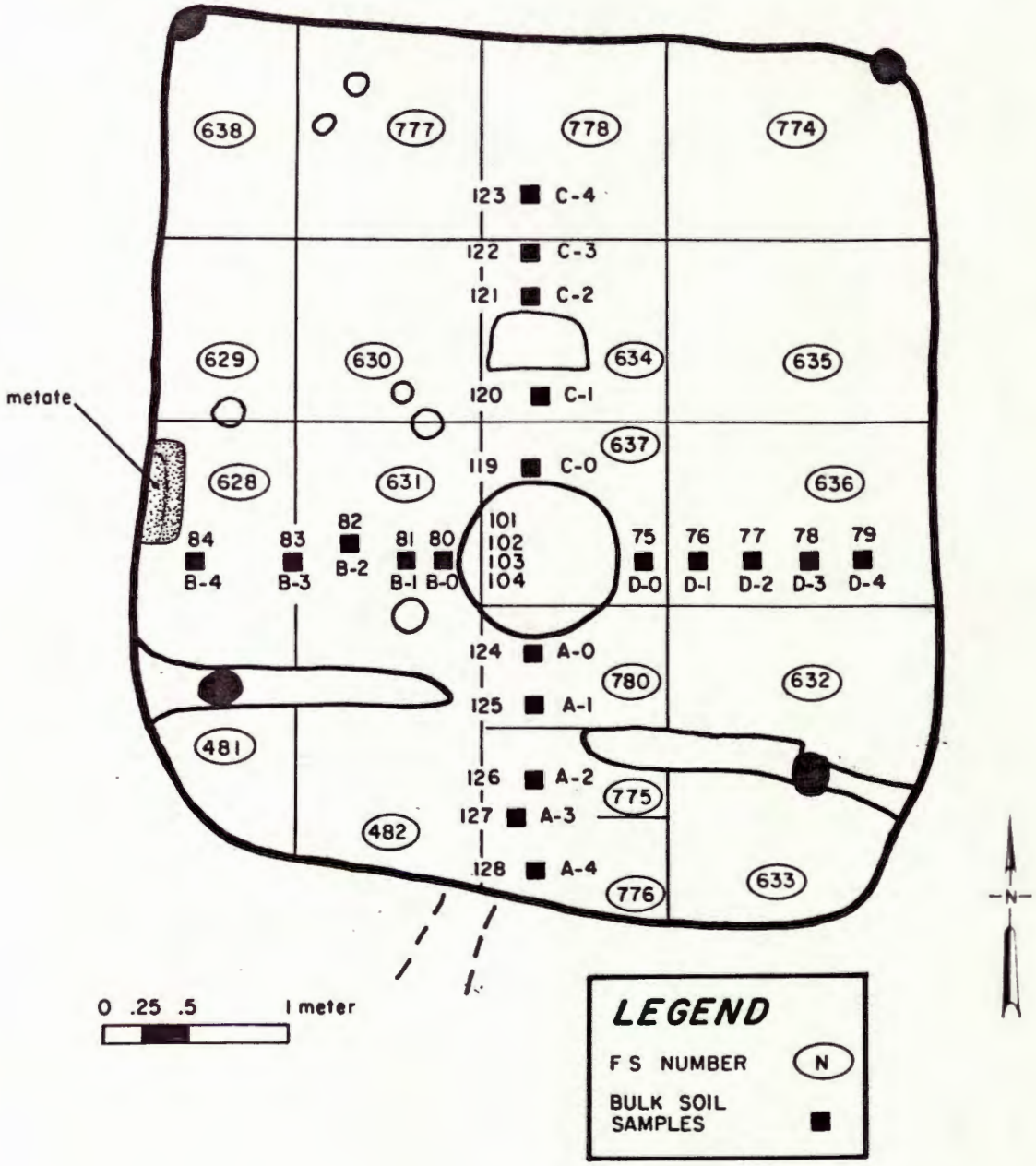

Figure B.1 Bulk soil sampling strategy for the central hearth (Feature 16) from Pithouse 1, Grass Mesa Village.

like cleaning. The macrobotanical remains from these floor samples are considered to be a mixture of roof fall related material and intrusive remains such as the Gramineae inflorescence. The occurrence of Zea mays cupules in bulk soil samples 75 and 76 may be related to the hearth activity area; but the similar occurrence of Zea mays in the upper control sample (BS 73) tends to support the idea that Zea mays remains had been incorporated into the roof fall stratum and deposited on the floor when the roof collapsed.

Strata 2 through 5 in Feature 16 were alternating layers of clean and burned sand. Stratum 1 was a mixed floor fill/roof fall deposit and was not collected for analysis. Processing of cactus, Cheno-am, Physalis sp., and genera of Cruciferae and Malvaceae may have been associated with Feature 16. Feature 23, a sand filled pit, appeared to be spatially associated with the hearth. Only a minimal occurrence of Pinus sp. charcoal was retrieved from the fill of this feature, which is not believed significant enough to associate it with Feature 16 or aid in functional interpretation of the feature.

The vegetal remains from the fill of Pithouse 1 (table B.3) indicate use of Quercus gambelii, Pinus spp., and Populus sp. in the roof construction. The relative abundance of Populus sp. wood may be evidence of increased reliance on this type of wood for a construction material or may reflect what the excavators chose to send into the laboratory as a non-datable vegetal specimens. The occurrence of the Phaseolus sp. cotyledon fragments is not related to the function of the ventilator, Feature 25; they are either from roof fall or postabandonment debris.

Pithouse 5

The macrobotanical remains from Pithouse 5, which was occupied

contemporaneously with Pithouse 1, are more similar in content and quantity to remains from Pithouse 3 than those from Pithouse 1 (table B.2). This similarity could be due to better preservation in Pithouses 3 and 5, to sampling bias, or to a greater quantity of organic debris in Pithouses 3 and 5 at the time of abandonment. Roof fall material consisted of Pinus edulis, Pinus ponderosa, Pseudotsuga menziesii, Quercus gambelii, Populus sp., and possibly rosaceous woods. Wood sent in from Feature 68 (posthole) was identified as Juniperus sp. and wood from Features 69 and 85 (postholes) was identified as Pinus spp. The Botanical Studies identification of wood from Feature 68 did not concur with the Pinus ponderosa identification of the Laboratory of Tree-Ring Research.

The contents of the five strata in the hearth, Feature 79, are similar to macrobotanical remains from the other pithouse hearths, although there is a noticeably greater recovery of both Descurania sp. and Nicotiana attenuata seeds from Feature 79 (table B.2). Again, there is the occurrence of charred and noncharred remains within the same bulk soil sample or genus. The cooccurrence of botanical remains from BS 174 and BS 291, the upper and lower control samples, and remains from Feature 79, as well as Surface 1 samples, implies a certain amount of mixing within the various deposits. Thus, it is difficult to assess the association of Chenopodium sp. (and "Cheno-am") fruits with the function of the hearth. What is interesting is the similarity in the contents of BS 296, a surface sample collected directly south of the hearth, and the hearth contents. This similarity illustrates the capability of bulk soil sampling to test dispersion of a processing activity within an activity area.

Surface Rooms and Other Excavation Units

Tables B.4 and B.5 represent the results of analysis of the macrobotanical remains from surface rooms and other excavation units. The generally poor preservation of the rooms and the disturbance of the cultural deposits argued against analyzing many bulk soil samples from these excavation units. The majority of the macrobotanical material from these proveniences are vegetal remains, predominantly wood charcoal and *Zea mays* remains.

Remains from postholes in Rooms 2 and 6 and square 289S/398E indicate a preference for *Pinus* spp. wood for post supports, although one posthole (Feature 83) in Room 6 yielded a small amount of *Juniperus* sp. wood. Wood from room and feature fills also points to the use of *Pinus* sp., *Pinus ponderosa*, *Juniperus* sp., *Populus* sp., and *Quercus gambelii* in surface room roof construction. Some of this charcoal may also represent hearth debris that was distributed across the area.

It is difficult to use the vegetal remains from features to aid in interpreting feature function because of the mixed cultural and postabandonment fill within the features. Pit features 37 (Room 7) and 65 (Room 6) were burned, and although they were not identified as hearths, the wood charcoal in them may relate to heating processes. The inclusion of *Zea mays* remains in features is also difficult to associate with feature function because of the mixed character of the fills. As can be noted from table B.5 there is a widespread occurrence of *Zea mays* kernels from a variety of proveniences. The recovery of *Zea mays* from generalized fills as well as postholes and pit features implies these remains were part of the area's broadcast trash.

Feature 2 in Room 5 has been interpreted as a possible food processing feature. Remains from BS 5, consisting of wood charcoal and edible seeds and fruits (table B.4), concur with this interpretation. It was hoped that the bulk soil sample from a trash lense in probability square 306/388 would be informative concerning potential botanical resources utilized by the Area 3 residents. Remains from BS 3, however, were comparable to those recovered from the features and surfaces of the structures with the exception of the single occurrence of Iva sp. and the noticeable lack of Nicotiana spp.

Discussion

All three pithouses were characterized as having case 2 abandonment modes (Kane and Robinson 1980) which implies planned, leisurely abandonment, with the structure standing open for a number of years prior to burning. This type of abandonment is not extremely conducive to preservation of botanical remains, and the quantity of botanical debris present at abandonment may be minimal because of cleaning activities. Also, the degree of contamination increases with the amount of time a structure is left open. Parts of plants thriving in an anthropogenic community can become incorporated into the structure prior to burning, then can be charred with in situ material, and noncharred material can filter in later. The general, broadcast debris intrinsically associated with a habitation area can also become incorporated into cultural deposits during postabandonment, further confusing functional associations.

With these factors in mind, a general outline of the resources utilized in Area 3 can be presented. Wood from postholes and roof fall strata show exploitation of Juniperus sp., Pinus edulis, Pinus ponderosa, Quercus

gambelii, Pseudotsuga menziesii, Populus sp., and Cercocarpus sp. for construction purposes. These same taxa of wood as well as Peraphyllum ramosissimum, Purshia tridentata, Salix sp., and Rhus aromatica appear to have been used as fuel resources. This is not to say these latter taxa of wood were not also used in construction, but the proveniences they were recovered from links them directly with hearth features. The use of Artemisia sp. and Chrysothamnus sp. wood cannot be clearly designated based on the proveniences and minimal quantity recovered.

The small scale remains such as the seeds and fruits of Amaranthus sp., Chenopodium sp., Cruciferae, Descurania sp., Mentzelia sp., Malvaceae, Polygonum sp., Portulaca sp., Physalis sp., Nicotiana spp., Iva sp., Prunus virginiana, and Juniperus osteosperma are all represented in the ethnobotanical literature as economic resources (cf., Elmore 1944; Robbins et al. 1916; Stevenson 1915; Whiting 1939). With the exception of Prunus virginiana and Juniperus osteosperma, these plants thrive in a disturbed habitat, such as around habitation areas, and therefore actually may not have beeneexploited but may have been incorporated accidently or naturally into cultural deposits. Recovery of these small scale remains from feature such as the hearths (Features 16, 79, 100), ash pits (Feature 2), or other features with undisturbed cultural fills lends support to their intentional exploitation. However remains of Chenopodium sp., Mentzelia sp., and Nicotiana attenuata are questionable because of their recovery in both a charred and noncharred condition and their occurrence in structural fills as well as features. Although there is a reasonable possibility these plants were considered economic resources, their association with the procurement activities of the Area 3 residents is more tentative than that of the other plants.

Remains of only two cultigens were recovered from Area 3, Zea mays and Phaseolus sp. Absence of Cucurbita sp. does not necessarily mean this cultigen was not being propogated. Processing techniques and the high suceptibility of both Phaseolus sp. and Curcurbita sp. to biological decay (Gasser and Adams 1981) will often eliminate evidence of both of these cultigen groups from the archaeological record.

The present vegetation zones surrounding the Grass Mesa Village are fairly similar to what has been projected to have existed prior to the beginning of modern agricultural and lumbering activities ca. 1920 (Petersen 1983). It should be understood that these zones are characterized by the dominant vegetation type and there is interfingering of zone constitutents. Based on wood recovered from Area 3 deposits, the ponderosa-oak zone and pinyon-juniper zone appear to have been major resource zones. The riparian zone may or may not have increased in importance between the occupation of Pithouse 3 and Pithouses 1 and 5. The occurrence of rosaceous woods, i.e., Cercocarpus sp., Peraphyllum ramosissimum, indicates selective use of the mountain brush zone. The Douglas-fir zone, which occurs in restricted areas in the vicinity of Grass Mesa Village, does not appear to have been extensively utilized.

Most of the plants represented by the small-scale remains have relatively versatile habitat requirements and can be found as understory growth within the pinyon-juniper, ponderosa-oak, or mountain brush zones. Some plants like Portulaca sp. or Nicotiana attenuata have certain restrictive habitat requirements like well drained sandy soil or particular moisture regimes. As previously mentioned, many of these plants thrive in an anthropogenic community, and once established in the area of a site, they would be propogated through disturbance and possibly human manipulation.

The three major architectural units excavated in Area 3 are Pithouses 1, 3, and 5. Pithouse 3, and possibly the surface rooms, are assigned to the Periman Subphase. Pithouses 1 and 5 are grouped and are assigned to the Grass Mesa Subphase. According to Breternitz, there was a hiatus between the occupation of Pithouse 3 and Pithouses 1 and 5. In general, there does not appear to be a significant difference in the macrobotanical assemblages between the two occupations. There are minor differences in occurrence and quantity of remains (e.g., more Zea mays occurs in the Pithouse 3, Surface 2 hearth or more Descurainia sp. seeds occur in the Pithouse 5 central hearth), but given the problems of preservation and post-abandonment disturbance processes, the variation in macrobotanical remains cannot be viewed as indicating different subsistence regimes between the two occupation periods.

Breternitz suggests that there are functional differnces between the pithouses. Pithouses 1 and 3 are inferred to have served the dual functions of ceremonial and domestic structures, whereas Pithouse 5 is believed to have been purely domestic. With the exception of Mentzelia sp. and Nicotiana spp., the macrobotanical remains from Pithouses 1 and 3 are more often related to food and construction purposes in the ethnobotanical literature. Also, the content and quantity of materials recovered are more similar between Pithouses 3 and 5 than between Pithouses 1 and 3. Therefore, while there is a possibility that the exiguous remains from Pithouse 1 indicate nondomestic activities, either the activities are not strictly comparable to the activities in Pithouse 3 or the view of the activities in Pithouse 1 has been biased by poor preservation.

Breternitz also postulates that a decrease in the use of Pinus ponderosa wood with the converse increase of Populus sp. wood in the later occupation supports the concept of wood resource depletion in the Grass Mesa Locality. Although table B.3 does show an inverse relationship of Pinus spp. wood to Pithouse 3 compared to Populus sp. wood to Pithouse 5, the macrobotanical assemblage from Area 3 cannot adequately substantiate the idea of wood resource depletion. The wood remains from bulk soil samples are essentially the same and as Breternitz points out, there was a bias in collection of vegetal remains from the pithouses. Investigation of the macrobotanical remains from other habitation areas on Grass Mesa should provide comparative data concerning wood resource exploitation patterns.

The macrobotanical remains from Area 3 are the first to be analyzed from the Grass Mesa Village. This assemblage has given insight into potential subsistence resources exploited and the vegetation zones exploited by the Area 3 residents. However, material from other areas of the site, occupied contemporaneously or otherwise, needs to be studied before the macrobotanical data base from Area 3 can be placed in perspective.

Introduction[1]

The faunal assemblage from Area 3 is not described in the site report, but a brief review of the assemblage in its present form is undertaken here. However, neither the excavation of Grass Mesa Village nor the identification of the faunal remains recovered from this site is complete. Therefore, only a preliminary description and an initial discussion of the significance of this assemblage is possible at this time. Nevertheless, the faunal assemblage from Area 3 at Grass Mesa Village (5MT23) does provide evidence for faunal exploitation at large villages during the McPhee Phase of the Dolores Anasazi seqence.

Recovery and Analytic Procedures

No special sampling procedures were employed in the field, and all of the NHB (nonhuman bone) described in this appendix was recovered during the course of normal excavation. A bias against the smallest faunal remains may exist in this assemblage. However, over 80 percent of the NHB from Area 3 was collected by dry-screening through one-quarter-inch mesh, and an additional 3.7 percent of the NHB was collected by dry-screening through one-eighth-inch mesh (table 1). These figures suggest that bias is minimal for all but the smallest animal remains.

Two other factors may make the assemblage described here less representative than might be expected. First, very little excavation of the midden area (Subarea 3) was undertaken. Well reserved trash deposits were excavated in various other contexts, but it is not known if the excavated refuse deposits from Area 3 are fully representative of the elements of occupation. Second, the identification of the NHB from the 1980 season at

[1]Tables for this appendix were compiled by Donna Fesselmeyer, Faunal Studies Group, Dolores Archaeological Program.

APPENDIX C

FAUNAL REMAINS FROM AREA 3, GRASS MESA VILLAGE

by

Sarah W. Neusius

Grass Mesa Village is not complete, and some fragments from Area 3 may still need to be examined. However, most of the excavations in Area 3 were completed in 1979 and even Pithouse 3, the primary focus of the 1980 excavations, is represented in this sample. Thus, this discussion assumes that little bias has been created in the assemblage described here as a result of the incomplete identification of NHB from Area 3.

Table C.1 Collection modes for nonhuman bone, Area 3, Grass Mesa Village

Collection mode	N	%
Intensive surface	51	1.8
Shovel	36	1.3
Trowel	164	5.8
Shovel and trowel	204	7.2
Dry screen one-eighth-inch mesh	106	3.7
Dry screen one-quarter-inch mesh	2,272	80.2
Total	2,833	100.0

Identification of most of the NHB from Area 3 was completed under the direction of Steven D. Emslie. NHB recovered in the field was either washed or dry-brushed, and cataloged. A preliminary sort was made and these results were provided to the excavation crew chief. Final identifications were made using comparative skeletons belonging to either the Anasazi Heritage Center or the Center for Western Studies. In some instances, other collections were consulted as well. Microtine rodent remains were forwarded to a specialist along with similar materials from other DAP sites, but the results of these special identifications were not available for this appendix.

Except for a small amount of previously examined modified bone, the 1980 NHB from Area 3, which is included in this sample, was identified by

M. Binford under the direction of S. Neusius. The procedures followed are outlined in Petersen et al. (1982) with the exception that the preliminary sort was not done separately. Only the Anasazi Heritage Center comparative collection was consulted. Because of the limitations of this collection, some identifications are being held at the order,family, or genus level until other collections can be consulted for more specific identifications.

In the preparation of this appendix, only the topic of taxonomic composition has been addressed and even this topic has been examined in the simplest fashion. Relative abundance has been assessed in terms of the NISP (Number of Individual Specimens [Payne 1975]). Critiques of this measure of abundance have pointed out that it bears only minimal relationship to the MNI (number of individual animals [White 1953]) present, and furthermore, NISP need have no relationship to the caloric or nutrient yield (e.g., Daly 1969; Grayson 1979; White 1953; Wing and Brown 1979). Nevertheless, NISP does provide a simple means of assessing occurrence.

Description of the Faunal Assemblage

Area 3 was occupied during the Periman Subphase (A.D. 850-900), and again during the Grass Mesa Subphase (A.D. 880-925). It is believed that the roomblock and Pithouse 3 were used during the Periman Subphase while Pithouses 1, 5, and 8 represent domestic structures occupied during the Grass Mesa Subphase. However, since the temporal-spatial assignments for Area 3 have not been finalized, the faunal assemblage cannot be subdivided according to occupation.

Instead, in the following discussion, the assemblage is divided by type of context. NHB recovered from surface structure fills and floors

and pithouse fills or floors are listed separately in the tables. All other NHB is aggregated into one general provenience; including NHB from a questionable nonstructural unit, several recently disturbed areas, and miscellaneous trenches and grid squares are included in this general category. Over half of the faunal assemblage comes from these latter contexts, and further breakdown would be useful in future analysis.

As shown in table C.2, 2833 pieces of NHB are included in the Area 3 assemblage at this time. Of these, 25.7 percent or 727 were identifiable to order, family, genus, or species. This is consistent with the percentage identifiable from other DAP assemblages (Neusius 1983a, 1983b) and is indicative of the good preservation characteristic of DAP sites. The percentage of identifiable bone is highest for pitstructure floors (34.2 percent of the pitstructure assemblage) and surface structure floors (28.4 percent of the surface structure assemblage). This could be the result of better preservation on floors or of different types of bones being associated with floors as opposed to other contexts. However, the differences in percentage of identifiable bone are small and sample size may be a factor as well.

Mammals are the most important taxonomic group. This is true regardless of type of context. In the assemblage as a whole mammals represent 97.8 percent while they contribute between 97.4 percent and 98.5 percent to the various subassemblages. Aves is the only other class represented Aside from one fragment of fish bone birds are the only other class represented.

The overall proportions between small, medium, and large mammals are nearly equal. Large mammal is slightly more common than small mammal, while medium mammal represents over one-fourth of the mammalian assem-

Table C.2 Composition of the total faunal assemblage, Area 3, Grass Mesa Village

	Surface rooms														
	Fill									Floor					
	Indeterminate			Identifiable*			Total			Indeterminate			Identifiable*			Total		
	N	% class	% total	N	% class	% total	N	% class	% total	N	% class	% total	N	% class	% total	N	% class	% total
Fish																		
Bird	4	100.0	0.9	6	100.0	5.7	10	100.0	1.9				1	100.0	5.3	1	100.0	1.5
Bird/mammal	3	100.0	0.7				3	100.0	0.6									
Indeter mammal				6	6.0	5.7	6	1.1	1.1				1	5.6	5.3	1	1.5	1.5
Small mammal	43	10.2	10.0	40	40.0	37.7	83	15.9	15.5	5	10.4	10.4	14	77.7	73.7	19	28.8	28.4
Medium mammal	240	56.9	55.9	19	19.0	17.9	259	49.6	48.4	34	70.8	70.8	1	5.6	5.3	35	53.0	52.2
Large mammal	139	32.9	32.4	35	35.0	33.0	174	33.3	32.5	9	18.7	18.7	2	11.1	10.5	11	16.7	16.4
Total	429		100.0	106		100.0	535		100.0	48		100.0	19		100.0	67	100.0	100.0

* Assignable to order, family, genus, and species.

NOTE: Unident - Unidentifiable.
Indeter - Indeterminate.

Table C.2 Composition of the total faunal assemblage, Area 3, Grass Mesa Village--Continued

	Pithouses														
	Fill									Floor					
	Indeterminate			Identifiable*			Total			Indeterminate			Identifiable*			Total		
	N	% class	% total	N	% class	% total	N	% class	% total	N	% class	% total	N	% class	% total	N	% class	% total
Fish																		
Bird	6	100.0	1.1	8	100.0	4.2	14	100.0	2.0				1	100.0	3.9	1	100.0	1.3
Bird/mammal	3	100.0	0.6				3	100.0	0.4	1	100.0	2.0				1	100.0	1.3
Indeter mammal	8	1.5	1.5	5	2.8	2.7	13	1.9	1.8				1	4.0	3.9	1	1.4	1.3
Small mammal	73	14.1	13.8	108	59.7	57.1	181	25.9	25.2	6	12.2	12.0	5	20.0	19.2	11	14.9	14.5
Medium mammal	105	20.2	19.9	9	5.0	4.8	114	16.3	15.9	29	59.2	58.0	2	8.0	7.7	31	41.9	40.8
Large mammal	333	64.2	63.1	59	32.6	31.2	392	56.0	54.7	14	28.6	28.0	17	68.0	65.4	31	41.9	40.8
Total	528		100.0	189		100.0	717		100.0	50		100.0	26		100.1	76		100.0

Table C.2 Composition of the total faunal assemblage, Area 3, Grass Mesa Village--Continued

	Other									Total								
	Indeterminate			Identifiable*			Total			Indeterminate			Identifiable*			Total		
	N	% class	% total	N	% class	% total	N	% class	% total	N	% class	% total	N	% class	% total	N	% class	% total
Fish	1	100.0	0.1				1	100.0	<0.1	1	100.0	<0.1				1	100.0	<0.1
Bird	9	100.0	0.9	18	100.0	4.7	27	100.0	1.9	19	100.0	0.9	34	100.0	4.7	53	100.0	1.9
Bird/mammal	1	100.0	0.1				1	100.0	<0.1	8	100.0	0.4				8	100.0	0.3
Indeter mammal				2	0.5	0.5	2	0.1	0.1	8	0.4	0.4	15	2.2	2.1	23	0.8	0.8
Small mammal	367	35.3	34.9	239	64.8	61.8	606	43.0	42.1	494	23.8	23.4	406	53.6	55.8	900	32.5	31.8
Medium mammal	253	24.3	24.1	28	7.6	7.2	281	19.9	19.5	661	31.8	31.4	59	8.5	8.1	720	26.0	25.4
Large mammal	420	40.4	40.0	100	27.1	25.8	520	36.9	36.2	915	44.0	43.4	213	30.7	29.3	1,128	40.7	39.8
Total	1,051		100.0	387		100.0	1,438		100.0	2,106		100.0	727		100.1	2,833		100.0

blage. Only a small amount of indeterminate mammal bone was recovered. These proportions vary depending on context type. Medium mammal is particularly common in the fill and floors of surface structures, large mammal occurs next most frequently, and small mammal is much less common. The fill and floor assemblages of the pitstructures are less similar. In the fill assemblage, large mammal is most common, followed by small mammal with medium mammal being least common. On pitstructure floors large and medium mammal occur in equal proportions and small mammal contributes less than 15.0 percent. Finally, in the other contexts small mammal is most common, followed by large and then medium mammals.

The high proportions of medium and large mammals in floor contexts is surprising, although the significance of this is not immediately clear. It might be expected that clean-up activities would have removed most large bone refuse and that small mammal remains would be more common in floor contexts. However, bone tools are common on floor surfaces and most of the worked bone items from Area 3 are from medium and large mammals (table C.3).

The figures in table C.2 also demonstrate that the percentage of identifiable bone varies considerably between the taxonomic groups. Birds and small mammals tend to contribute more to the percentage of the assemblage that is identifiable than to the indeterminate. Just the opposite can be said for medium and large mammal remains which are most common in the indeterminate assemblage. As has been noted previously (Neusius 1983a, 1983b), this characteristic of DAP faunal assemblages may be related to processing activities. However, it probably is related, at least partially, to the heavy occurrence of highly diagnostic lagomorphs and sciurids among the small mammals.

Table C.3 Composition of the identifiable faunal assemblage, Area 3, Grass Mesa Village

Taxon	Surface rooms						Pithouses						Other			Total		
	Fill			Floor			Fill			Floor								
	N	% class	% total	N	% class	% total	N	% class	% total	N	% class	% total	N	% class	% total	N	% class	% total
Mammals:																		
Sylvilagus spp. cottontail rabbit	13	12.1	11.5	1	9.1	8.3	30	16.6	15.9	2	8.0	7.7	138	37.4	35.7	184	26.6	25.3
c.f. *Sylvilagus* sp. cottontail rabbit							1	0.6	0.5							1	0.1	0.1
Lepus spp. hare							3	1.7	1.6	1	4.0	3.9	2	0.5	0.5	6	0.9	0.8
Lepus americanus snowshoe hare	1	0.9	0.9										1	0.3	0.3	2	0.3	0.3
Lepus townsendii white-tailed jackrabbit	1	0.9	0.9										1	0.3	0.3	2	0.3	0.3
Lepus californicus black-tailed jackrabbit	11	10.3	9.7	3	27.3	25.0	63	34.8	33.3	2	8.0	7.7	44	11.9	11.4	123	17.8	16.9
Rodentia rodent				1	9.1	8.3	3	1.7	1.6	1	4.0	3.9	2	0.5	0.5	7	1.0	1.0
Sciuridae squirrel	3	2.8	2.7				2	1.1	1.1				9	2.4	2.3	14	2.0	1.9
Marmota flaviventris yellow bellied marmot	4	3.7	3.5	1	9.1	8.3	1	0.6	0.5				10	2.7	2.6	16	2.3	2.2
c.f. *Marmota flaviventris* yellow bellied marmot				1	9.1	8.3							1	0.3	0.3	2	0.3	0.3
Spermophilus lateralis golden-mantled ground squirrel	2	1.9	1.8										1	0.3	0.3	3	0.4	0.4
Spermophilus variegatus rock squirrel	2	1.9	1.8				1	0.6	0.5				9	2.4	2.3	12	1.7	1.7
Cynomys gunnisoni Gunnison's prairie dog							1	0.6	0.5				7	1.9	1.8	8	1.2	1.1
Thomomys spp. pocket gopher	2	1.9	1.8										8	2.2	2.1	10	1.4	1.4
Castor canadensis beaver	6	5.6	5.3				5	2.8	2.7	1	4.0	3.9	3	0.8	0.8	15	2.2	2.1
Cricetidae New World rats and mice							1	0.6	0.5							1	0.1	0.1
Neotoma spp. wood rat	2	1.9	1.8				2	1.1	1.1				5	1.4	1.3	9	1.3	1.2
c.f. *Neotoma* spp. wood rat				1	9.1	8.3							1	0.3	0.3	2	0.3	0.3
Neotoma mexicana Mexican wood rat	1	0.9	0.9													1	0.1	0.1
Erethizon dorsatum porcupine	2	1.9	1.8	1	9.1	8.3	1	0.6	0.5				7	1.9	1.8	11	1.6	1.5
c.f. *Erethizon dorsatum* porcupine	1	0.9	8.9													1	0.1	0.1
Canidae canid	3	2.8	2.7				1	0.6	0.5							4	0.6	0.6
c.f. Canidae canid							3	1.7	1.6				1	0.3	0.3	4	0.6	0.6
Canis spp.	4	3.7	3.5				2	1.1	1.1				1	0.3	0.3	7	1.0	1.0
c.f. *Canis familiaris* domestic dog	2	1.9	1.8				1	0.6	0.5				11	3.0	2.8	14	2.0	1.9
Canis latrans coyote	6	5.6	5.3										2	0.5	0.5	8	1.2	1.1
Ursus sp. bear													1	0.3	0.3	1	0.1	0.1

NOTE: c.f. - Compares favorably.

Table C.3 Composition of the identifiable faunal assemblage, Area 3, Grass Mesa Village--Continued

Taxon	Surface rooms						Pithouses						Other			Total		
	Fill			Floor			Fill			Floor								
	N	% class	% total	N	% class	% total	N	% class	% total	N	% class	% total	N	% class	% total	N	% class	% total
Mammals (cont):																		
Martes americana marten	1	0.9	0.9													1	0.1	0.1
Mustela frenata long-tailed weasel	3	2.8	2.7													3	0.4	0.4
Taxidae taxus badger	1	0.9	0.9													1	0.1	0.1
Mephitis mephitis striped skunk													1	0.3	0.3	1	0.1	0.1
Lynx rufus bobcat	1	0.9	0.9				1	0.6	0.5	1	4.0	3.9	3	0.8	0.8	6	0.9	0.8
c.f. *Lynx rufus* bobcat							1	0.6	0.5				1	0.3	0.3	2	0.3	0.3
Artiodactyla even-toed ungulates	13	12.1	11.5	2	18.2	16.7	25	13.8	13.2	11	44.0	42.3	51	13.8	13.2	102	14.7	14.0
c.f. Artiodactyla even-toed ungulates							1	0.6	0.5							1	0.1	0.1
Odocoileus hemionus mule deer	21	19.6	18.6				27	14.9	14.3	5	20.0	19.2	44	11.9	11.4	97	14.0	13.3
c.f. *Odocoileus hemionus* mule deer							1	0.6	0.5							1	0.1	0.1
Antilocapra americana pronghorn	1	0.9	0.9				3	1.7	1.6				1	0.3	0.3	5	0.7	0.7
Ovis canadensis bighorn							1	0.6	0.5	1	4.0	3.9	3	0.8	0.8	5	0.7	0.7
Total mammals	107	100.0	94.7	11	100.0	91.7	181	100.0	95.8	25	100.0	96.2	369	100.0	95.3	693	100.0	95.3
Birds:																		
Buteo sp. hawks	1	16.7	0.9													1	2.9	0.1
Aquila chrysaeotos golden eagle													1	5.6	0.3	1	2.9	0.1
c.f. *Falco sparverius* American kestrel													1	5.6	0.3	1	2.9	0.1
Tetraonidae grouse spp.	3	50.0	2.7				4	50.0	2.1	1	100.0	3.9	8	44.4	2.1	16	47.1	2.2
Centrocercus urophasianus sage grouse	1	16.7	0.9													1	2.9	0.1
Meleagris gallopavo turkey	1	16.7	0.9				3	37.5	1.6				6	33.3	1.6	10	29.4	1.4
Grus canadensis sandhill crane							1	12.5	0.5				1	5.6	0.3	2	5.9	0.3
c.f. *Grus canadensis* sandhill crane				1	100.0	8.3										1	2.9	0.1
Corvus corax common raven													1	5.6	0.3	1	2.9	0.1
Total birds	6	100.0	5.3	1	100.0	8.3	8	100.0	4.2	1	100.0	3.9	18	100.0	4.7	34	100.0	4.7
Total assemblage	113		100.0	12		100.0	189		100.0	26		100.0	387		100.0	727		100.0

A detailed breakdown of the identifiable assemblage is given in table 3. The richness of avian taxa present is high given the small number of bird remains (34). Grouse (Tetraonidae) and turkey (Meleagris gallopavo) are the most common birds (50.0 percent and 29.4 percent, respectively). The turkey may be wild or domestic; however, there are no bird pens or guano layers evident at any DAP sites to support an inference of domestication. The presence of sandhill crane (Grus canadensis) also should be noted, as the modern migration route for this species encompasses areas farther east in the San Luis Valley.

The mammalian assemblage is diverse. A large number of taxa occur and no single taxon dominates the assemblage. However, the two groups of primary, importance are rabbits (Lagomorpha) and artiodactyl (Artiodactyla). Rabbits make up almost half of the identifiable assemblage (43.7 percent). Cottontails (Sylvilagus spp.) are somewhat more common than jackrabbit (Lepus spp.). Both the desert cottontail (Sylvilagus audubonii) and Nuttall's cottontail (Sylvilagus nuttallii) may be represented. The most common jackrabbit is the black-tailed jackrabbit (Lepus californicus), but both snowshoe hare (Lepus americanus) and white-tailed jackrabbit (Lepus townsendii) also are present. Rabbits are more common in the fill of pitstructures and in the other contexts than in surface rooms and on pitstructure floors. This is consistent with observations concerning small mammals in general.

Artiodactyls represent 29.0 percent of the identifiable assemblage. Many of the bones were identifiable only as artiodactyl. However, mule deer (Odocoileus hemionus) represents 13.3 percent. Both pronghorn (Antilocapra americana) and bighorn (Ovis canadensis) remains occur in small numbers. The presence of pronghorn and the lack of elk (Cervus

elaphus) distinguish this assemblage from those recovered at LeMoc Shelter and Prince Hamlet (Neusius 1983a, 1983b). Artiodactyl remains make up over 65.0 percent of the assemblage from pitstructure floors. As noted previously, many of these fragments may represent bone tools which are expected to occur in greatest frequencies on surfaces. However, the lowest proportion of artiodactyl remains occurs in the assemblage from surface structure floors.

Many types of rodents are included in this assemblage. The most important group is the squirrel family (Sciuridae) including yellow-bellied marmot (Marmota flaviventris), golden-mantled ground squirrel (Spermophilus lateralis), rock squirrel (Spermophilus variegatus), and Gunnison's prairie dog (Cynomys gunnisoni). Members of this family are often found in DAP faunal assemblages (e.g., Neusius 1983a, 1983b). Other rodents included in this assemblage are beaver (Castor canadensis), pocket gopher (Thomomys spp.), wood rat (Neotoma spp., and Neotoma mexicana), and porcupine (Erethizon dorsatum).

A variety of carnivores also are present. These include canids (Canidae, Canis spp., c.f. Canis familiaris, and Canis latrans), bear (Ursus sp.), mustelids (Martes americana, Mustela frenata, Taxidea taxus, and Mephitis mephitis), and bobcat (Lynx rufus). None of the NHB from these animals occurs in clusters, which would suggest intentional burial or natural interment.

Examination of habitat distributions for the taxa included in this assemblage underscores the fact that some of the remains may be intrusive to the site and may not reflect aboriginal resource use. Archaeological sites are attractive to many species: the soft, organic deposits may attract burrowing species, and weedy, disturbance vegetation may attract

others. The presence of many of the rodents in the Area 3 faunal assemblage (e.g., pocket gopher, ground squirrels, Gunnison's prairie dog) is suspected not to be of cultural origin. However, if skeletal completeness is an indicator of intrusion (Thomas 1971), there is little reason to conclude that any of the animals represented became incorporated in the deposits naturally. Futhermore, Pueblo ethnographies indicate that most of the questionable species in this assemblage were occasionally hunted for food and raw material by historic groups (Gnabasik 1981).

In summary, the faunal assemblage from Area 3 at Grass Mesa is dominated by mammals, but within this class, it is particularly diverse. Rabbits are the most frequently identified taxa followed by artiodactyls. However, large mammal bones are much more common among the indeterminate remains. A variety of other rodents and carnivores also are present.

Habitat Utilization

Preliminary observations on the habitat types represented by the taxa in this assemblage add to understanding of the adaptive strategies of the occupants of Area 3. Instead of viewing these observations as indicators of past environment, these should be understood as suggestive of patterns of habitat utilization by the Anasazi. These patterns can be compared with projected habitat distributions of the past, which are based on less biased indicators of past environments (e.g., Petersen 1982).

Most of the faunal resources in the Dolores area can be found in several habitat types. Figure C.1 compares the habitat distributions of taxa recovered from Area 3 with the projected distributions for the period between A.D. 600 and 950. In this figure, estimates of the proportions of modern species known to frequent each vegetation type are represented by A. The species list was developed by consulting a variety of sources

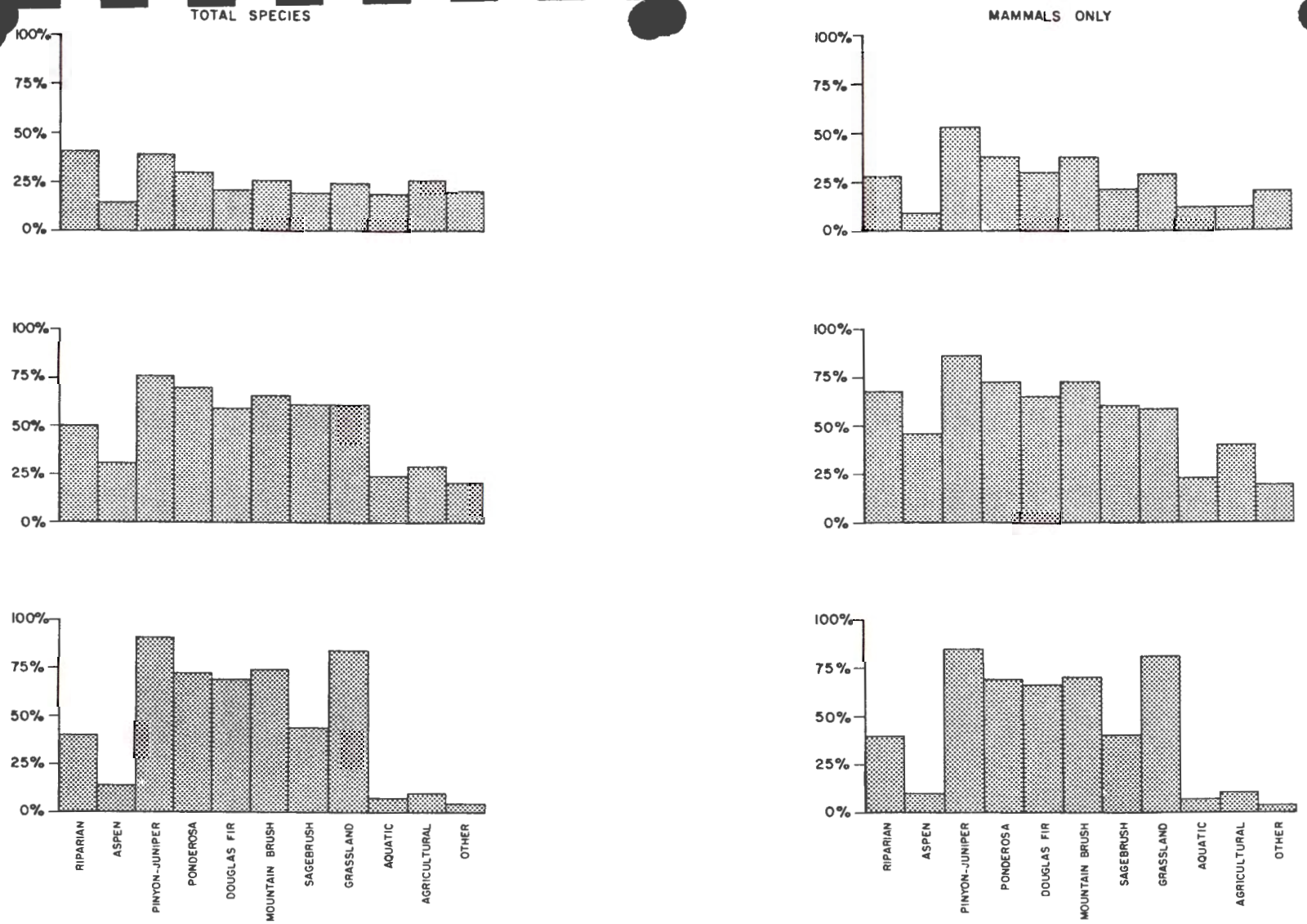

Figure C.1 Habitat representation in the total identifiable faunal assemblage and in the mammalian assemblage, Area 3, Grass Mesa Village.

(e.g., Anderson 1961; Armstrong 1972; Stebbins 1966; Koster 1957; Peterson 1961; Holden and Stalnaker 1975), and the distributions are based on the Colorado Division of Wildlife latilong studies (Bissell 1978; Hammerson and Lauglis 1981; Kingery and Graul 1978). These studies summarize reliable observations of species and their distribution but are perhaps incomplete. In addition, the agricultural category may be inaccurate due to the poor quality of observations within this zone. Modern fields also may contrast significantly with Anasazi fields with respect to ground cover and plant food resources.

The distribution of taxa present in the Area 3 faunal assemblage is assessed in two ways. First, the proportion of the species recovered that might represent each zone has been calculated (B). Second, this has been weighted by NISP (C). Distributions have been plotted for both the mammalian and the total assemblages.

The habitats represented by the archaeological assemblages (B) differ more from the expected habitats (A) for all species than from the expected for mammals alone. This is because mammals make up the bulk of the archaeological assemblage but represent less than one-third of the species present in the Dolores area. Thus, it is predictable that the aquatic zone will be poorly represented.

In general, the observed lines of distribution indicate exploitation in proportion to natural occurrence in the Dolores area. Somewhat less use of the aspen, grassland, aquatic, and other habitat types is indicated. The agricultural zone is better represented than was expected for that habitat. Nevertheless the key zones are pinyon-juniper woodland, ponderosa pine woodland, and mountain brush.

The weighted figures (C) show more discrepancies from the expected figures (A). These weighted lines suggest less use of the sagebrush zone and more use of grassland habitat types; in addition, the agricultural zone is not well represented.

The interpretation of these distributions would be aided by analysis of the Grass Mesa catchment. Until the catchment has been studied, it can generally be concluded that a variety of habitat types were utilized by the inhabitants of Area 3; the pinyon-juniper, ponderosa pine, and mountain brush zones, which probably were found in much of the area around the site, seem to have been most important while aspen woodland, aquatic, and other habitats seem to have been largely avoided.

The only evidence for procurement of mammals outside of the immediate area comes from the presence of snowshoe hare and pronghorn. Showshoe hare usually is found at higher elevations than those within the Dolores area (Armstrong 1972). On the other hand, it is expected that pronghorn was found primarily to the south and the west in the Montezuma Valley particularly in the winter (Neusius and Phagan 1983). Since only a few bones were recovered from each of these species, their presence cannot be interpreted as evidence of an extensive practice of long-distance hunting.

Discussion

The faunal assemblage from Area 3 suggests that game procurement was important to the inhabitants of this part of Grass Mesa Village. A diversity of game was procured with rabbits and artiodactyls being the principal types. However, the high frequency of medium mammal bones in this assemblage is perplexing as is the heavy concentration of large and medium mammals on pitstructure floors. Both these topics will require additional

study once the excavation and faunal identification for Grass Mesa Village are completed.

Comparison of the faunal assemblage from Area 3 with the assemblages from Elements 1 and 2 at Prince Hamlet (Site 5MT2161) provides comparative information concerning adaptive strategies. Prince Hamlet is a small habitation site located north of Grass Mesa Village on the north side of the river. The faunal assemblages from Element 1 (Dos Casas Subphase, A.D. 760-850) and Element 2 (Periman Subphase, A.D. 850-900) have received preliminary study (Neusius 1983b). An increase in the proportion of large mammal and artiodactyl remains is evident between the Dos Casas and Periman Subphases in the faunal assemblages from Prince Hamlet. Since the same increase is found in the assemblages from LeMoc Shelter (Site 5MT2151), it was proposed that a shift toward heavier utilization of large mammals took place at this time.

In a general sense, the assemblage from Area 3 resembles those from Prince Hamlet. All the assemblages are dominated by mammal remains, and the diversity of mammalian taxa is high at both sites. Habitat utilization apparently was broadly based in the woodland and mountain brush zones, which are probably found in the vicinity of both sites and the adjacent uplands. Nonterrestrial habitats were used very little.

However, the Area 3 assemblage does not resemble either of the assemblages from Prince Hamlet in terms of proportions of small, medium, and large mammals (fig. C.2). Instead, at Area 3 the proportions of all three subclasses are close to one-third; however, Lagomorphs are more common than artiodactyls (fig. C.3). These proportions are more similar to Element 1 than Element 2 at Prince Hamlet.

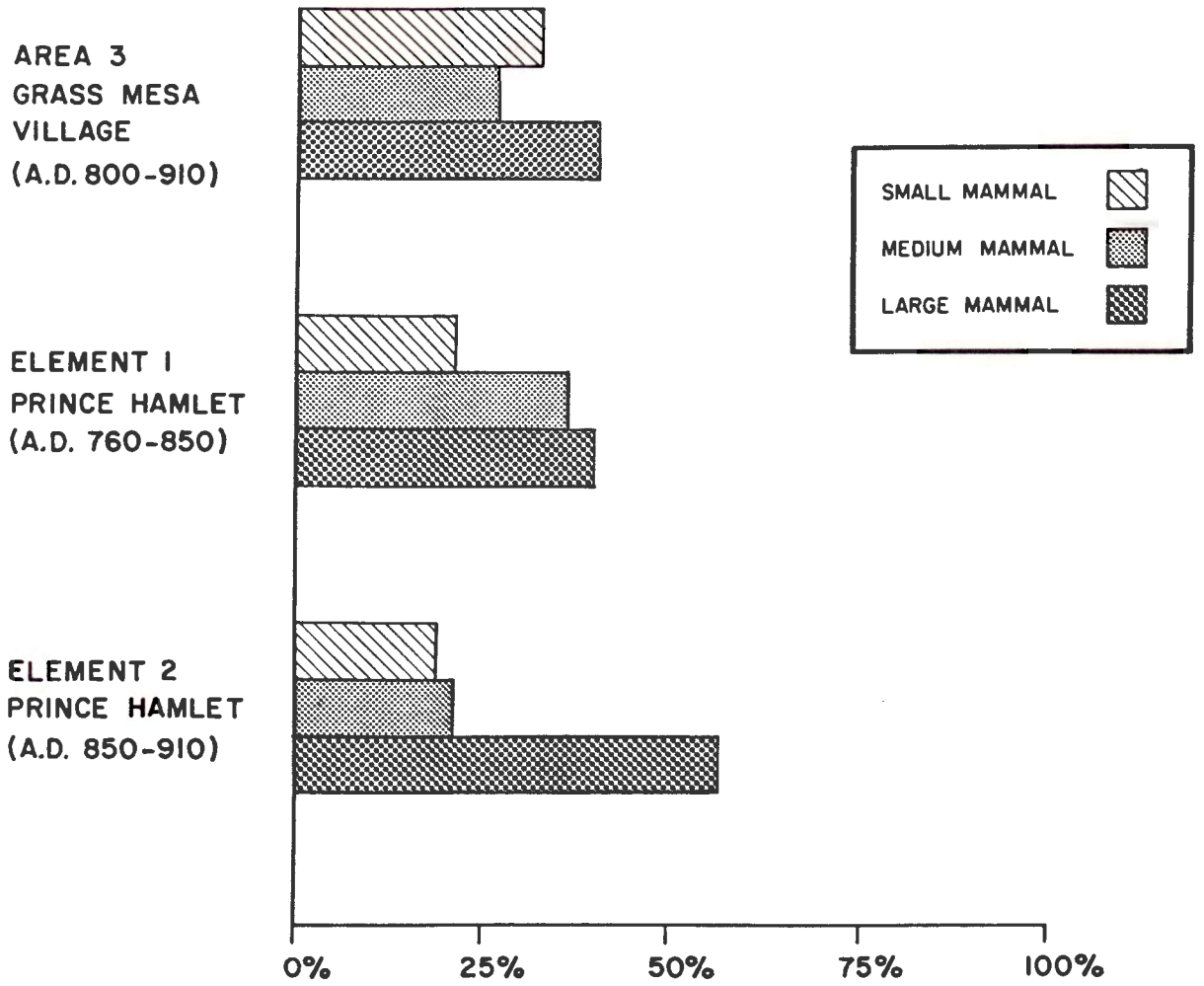

Figure C.2 Mammalian class composition at Prince Hamlet (Site 5MT2161) and at Area 3, Grass Mesa Village.

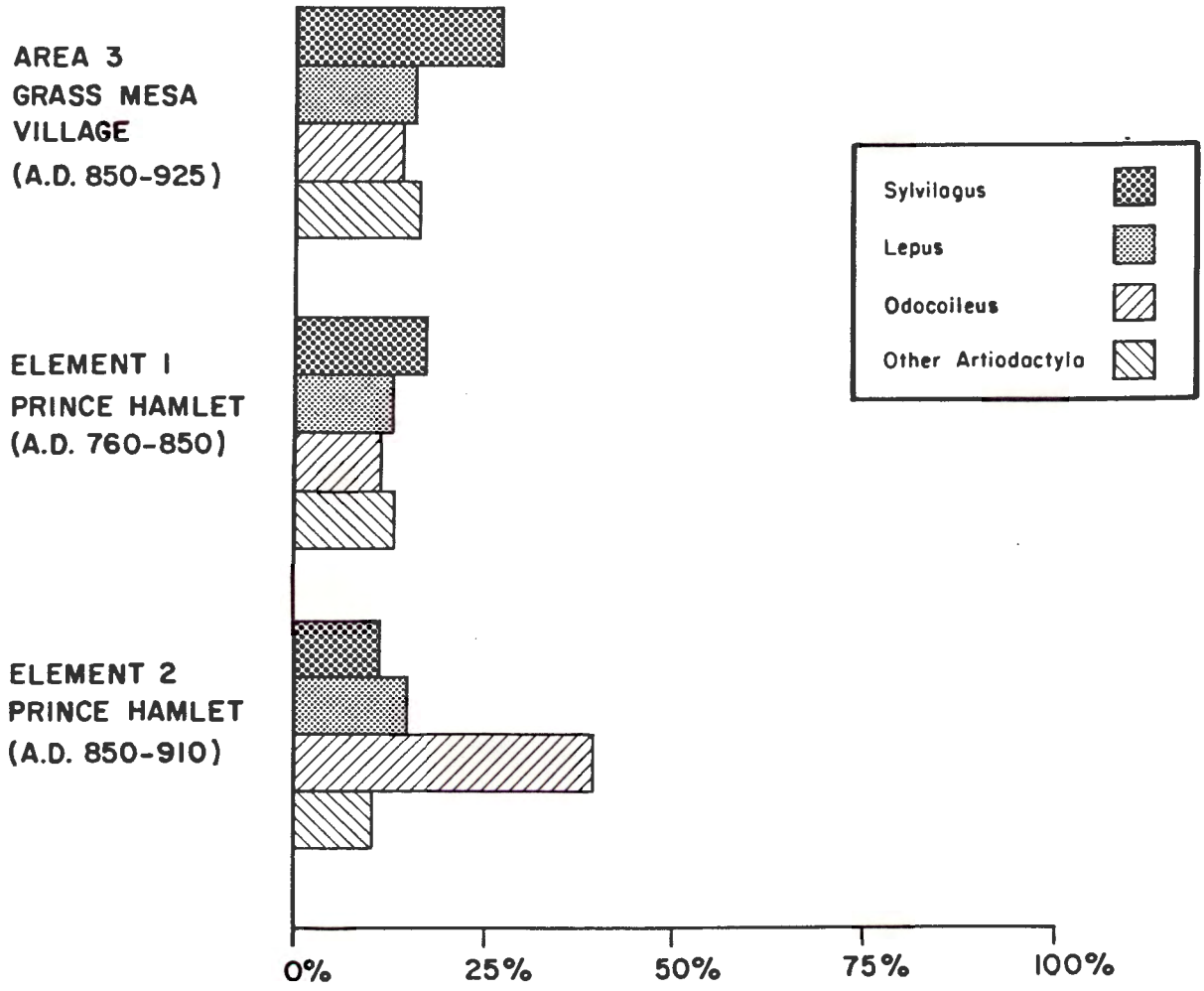

Figure C.3 Proportions of Lagomorpha and Artiodactyla at Prince Hamlet (Site 5MT2161) and at Area 3, Grass Mesa Village.

Thus, there is no unequivocal support from the Area 3 faunal assemblage for the proposition that large mammal utilization increased after A.D. 850. This trend may not be evident because temporal subdivisions of the Area 3 data could not be employed. There may be some indication of increase in large mammal exploitation in the higher proportion of large mammal, such as Artiodactyla, bone on pitstructure floors. Since all of these floors seem to date after A.D. 850, this may support the trend, but it is possible that the differences are related to contrasts in faunal exploitation between large, aggregated villages and small habitations. Both possibilities should be explored in future analyses of the Grass Mesa Village faunal assemblage.

Summary

At present the faunal assemblage from Area 3 at Grass Mesa Village consists of 2833 fragments of nonhuman bone. This assemblage indicates a broad-based dependence on mammals and some birds and utilization of a variety of woodland habitats that probably occurred in the vicinity of Grass Mesa. This assemblage contrasts with those from smaller habitations in the Grass Mesa Locality in terms of the relative proportions of small, medium, and large mammals.

APPENDIX D

MATERIAL CULTURE, AREA 3, GRASS MESA VILLAGE

Table D.1 Selected ceramic data, Area 3, Grass Mesa Village--Continued

Culture category / Tract / Ware / Type	Room 6						Room 2	
	cultural fills and features		noncultural fills and features		total		floor and features	
	N	%wt	N	%wt	N	%wt	N	%wt
Mesa Verde:								
Dolores Tract								
Gray ware								
Chapin Gray							1	4.4
Moccasin Gray	3	15.7			3	11.1	3	24.3
Mancos Gray								
Early Pueblo Gray	12	84.3	2	100.0	14	88.9	9	67.8
Late Pueblo Gray								
White ware								
Chapin Black-on-white								
Piedra Black-on-white								
Cortez Black-on-white								
Early Pueblo White								
Late Pueblo White								
Red ware								
Bluff Black-on-red								
San Juan Tract								
Gray ware								
Chapin Gray								
Moccasin Gray								
Mancos Gray								
Early Pueblo Gray								
White ware								
Chapin Black-on-white								
Piedra Black-on-white								
Cortez Black-on-white								
Mancos Black-on-white								
Early Pueblo White								
Late Pueblo White								
Cahone Tract								
Gray ware								
Chapin Gray								
Moccasin Gray								
Early Pueblo Gray								
White ware								
Early Pueblo White								
Red ware								
Abajo Red-on-orange								
Early Pueblo Red								
Sandstone Tract								
Gray ware								
Early Pueblo Gray								
White ware								
Chapin Black-on-white								
Early Pueblo White								
Blanding Tract								
Red ware								
Abajo Red-on-orange								
Bluff Black-on-red								
McPhee Black-on-red								
Deadmans Black-on-red								
Early Pueblo Red							1	3.5
Late Pueblo Red								
Kayenta:								
White ware								
Kana-a Black-on-white								
Early Pueblo White								
Late Pueblo White								
Red ware								
Tallahogan Red								
Chuska:								
Gray ware								
Early Pueblo Gray								
White ware								
Early Mineral Paint								
Early Pueblo White								
Late Pueblo White								
Cibola:								
Gray ware								
Early Pueblo Gray								
White ware								
Early Pueblo White								
Cibola or Kayenta:								
Gray ware								
Early Pueblo Gray								
Late Pueblo Gray								
White ware								
Early Pueblo White								
Indeterminate:								
Gray ware								
Unclassifiable Gray								
White ware								
Unclassifiable White								
Total ceramics	15	100.0	2	100.0	17	100.0	14	100.0
Total wt (g)	70.5		29.9		100.4		51.9	
Vessel form:								
Gray ware								
Bowl								
Jar	15	100.0	2	100.0	17	100.0	13	96.5
Other								
White ware								
Bowl								
Jar								
Other								
Red ware								
Bowl							1	3.5
Jar								
Other								

Table D.1 Selected ceramic data, Area 3, Grass Mesa Village

Culture category / Tract / Ware / Type	Modern ground surface		Room 1					
			cultural fills and features		noncultural fills and features		fill	
	N	%wt	N	%wt	N	%wt	N	%wt
Mesa Verde:								
Dolores Tract								
Gray ware								
Chapin Gray	56	3.4	4	3.3	7	5.4	11	4.4
Moccasin Gray	125	8.5	10	20.7	11	16.0	21	18.2
Mancos Gray	10	.4	2	3.9	1	3.2	3	3.5
Early Pueblo Gray	1,474	81.7	69	71.5	103	72.0	172	71.7
Late Pueblo Gray								
White ware								
Chapin Black-on-white	3	.5						
Piedra Black-on-white								
Cortez Black-on-white								
Early Pueblo White	39	1.9	1	.3	2	.8	3	.6
Late Pueblo White	5	.2						
Red ware								
Bluff Black-on-red	1							
San Juan Tract								
Gray ware								
Chapin Gray	1							
Moccasin Gray								
Mancos Gray								
Early Pueblo Gray	3	.4						
White ware								
Chapin Black-on-white								
Piedra Black-on-white								
Cortez Black-on-white								
Mancos Black-on-white								
Early Pueblo White	2	.2						
Late Pueblo White								
Cahone Tract								
Gray ware								
Chapin Gray								
Moccasin Gray								
Early Pueblo Gray	12	.7			1	.3	1	.2
White ware								
Early Pueblo White	2							
Red ware								
Abajo Red-on-orange								
Early Pueblo Red	2							
Sandstone Tract								
Gray ware								
Early Pueblo Gray	2	.2						
White ware								
Chapin Black-on-white	1							
Early Pueblo White								
Blanding Tract								
Red ware								
Abajo Red-on-orange	3	.2						
Bluff Black-on-red	2	.2						
McPhee Black-on-red								
Deadmans Black-on-red								
Early Pueblo Red	40	1.2	1	.3	5	2.2	6	1.3
Late Pueblo Red	3	.1			1	.1	1	.1
Kayenta:								
White ware								
Kana-a Black-on-white								
Early Pueblo White								
Late Pueblo White								
Red ware								
Tallahogan Red	1							
Chuska:								
Gray ware								
Early Pueblo Gray								
White ware								
Early Mineral Paint								
Early Pueblo White								
Late Pueblo White								
Cibola:								
Gray ware								
Early Pueblo Gray								
White ware								
Early Pueblo White	1							
Cibola or Kayenta:								
Gray ware								
Early Pueblo Gray	1	.1						
Late Pueblo Gray								
White ware								
Early Pueblo White								
Indeterminate:								
Gray ware								
Unclassifiable Gray								
White ware								
Unclassifiable White								
Total ceramics	1,789	100.0	87	100.0	131	100.0	218	100.0
Total wt (g)	8,906.9		653.3		772.2		1,425.5	
Vessel form:								
Gray ware								
Bowl								
Jar	1,679	95.2	85	99.4	123	96.9	208	98.0
Other	5	.1						
White ware								
Bowl	39	2.0	1	.3	2	.8	3	.6
Jar	13	.9						
Other	1							
Red ware								
Bowl	40	1.4	1	.3	6	2.3	7	1.4
Jar	12	.3						
Other								

NOTE: Nonstr - Nonstructural.

Table D.1 Selected ceramic data, Area 3, Grass Mesa Village--Continued

Culture category / Tract / Ware / Type	Room 2							
	roof fall 1 and features		cultural fills and features		mixed fills and features		fill	
	N	%wt	N	%wt	N	%wt	N	%wt
Mesa Verde:								
Dolores Tract								
Gray ware								
Chapin Gray	1	2.3	1	.6	15	3.7	17	2.8
Moccasin Gray	10	37.3	3	4.3	13	35.1	26	28.3
Mancos Gray			1	.7	5	1.3	6	1.0
Early Pueblo Gray	46	50.3	75	88.0	102	40.0	223	52.2
Late Pueblo Gray								
White ware								
Chapin Black-on-white								
Piedra Black-on-white								
Cortez Black-on-white								
Early Pueblo White			1	.5	10	13.7	11	9.1
Late Pueblo White								
Red ware								
Bluff Black-on-red								
San Juan Tract								
Gray ware								
Chapin Gray								
Moccasin Gray								
Mancos Gray	1	1.2					1	.1
Early Pueblo Gray					1	.3	1	.2
White ware								
Chapin Black-on-white								
Piedra Black-on-white								
Cortez Black-on-white								
Mancos Black-on-white								
Early Pueblo White	1	2.3			1	2.6	2	2.0
Late Pueblo White								
Cahone Tract								
Gray ware								
Chapin Gray								
Moccasin Gray								
Early Pueblo Gray					2	.5	2	.3
White ware								
Early Pueblo White	1	1.7					1	.2
Red ware								
Abajo Red-on-orange								
Early Pueblo Red			1	.5				
Sandstone Tract								
Gray ware								
Early Pueblo Gray								
White ware								
Chapin Black-on-white								
Early Pueblo White								
Blanding Tract								
Red ware								
Abajo Red-on-orange								
Bluff Black-on-red								
McPhee Black-on-red								
Deadmans Black-on-red								
Early Pueblo Red	3	4.8	6	5.4	10	2.6	20	3.6
Late Pueblo Red								
Kayenta:								
White ware								
Kana-a Black-on-white								
Early Pueblo White								
Late Pueblo White								
Red ware								
Tallahogan Red								
Chuska:								
Gray ware								
Early Pueblo Gray								
White ware								
Early Mineral Paint								
Early Pueblo White								
Late Pueblo White								
Cibola:								
Gray ware								
Early Pueblo Gray								
White ware								
Early Pueblo White								
Cibola or Kayenta:								
Gray ware								
Early Pueblo Gray					1	.2	1	.1
Late Pueblo Gray								
White ware								
Early Pueblo White								
Indeterminate:								
Gray ware								
Unclassifiable Gray								
White ware								
Unclassifiable White								
Total ceramics	63	100.0	88	100.0	160	100.0	311	100.0
Total wt (g)	176.3		351.5		1,007.1		1,534.9	
Vessel form:								
Gray ware								
Bowl								
Jar	58	91.2	77	89.2	139	81.2	274	84.2
Other			3	4.4			3	1.0
White ware								
Bowl	2	4.0			4	2.0	6	1.8
Jar					5	11.6	5	7.5
Other			1	.5	2	2.7	3	1.9
Red ware								
Bowl	3	4.8	4	4.0	8	2.0	15	2.9
Jar			3	1.9	1	.1	4	.5
Other					1	.4	1	.3

Table D.1 Selected ceramic data, Area 3, Grass Mesa Village--Continued

Culture category / Tract / Ware / Type	Room 7							
	floor and features		roof fall 1 and features		roof fall 2 and features		fill	
	N	%wt	N	%wt	N	%wt	N	%wt
Mesa Verde:								
Dolores Tract								
Gray ware								
Chapin Gray	2	3.8	1	1.0	1	2.6	2	1.8
Moccasin Gray			8	12.5	13	18.3	21	15.3
Mancos Gray	1	2.9						
Early Pueblo Gray	23	81.6	49	77.1	49	72.0	98	74.5
Late Pueblo Gray								
White ware								
Chapin Black-on-white								
Piedra Black-on-white								
Cortez Black-on-white								
Early Pueblo White	5	5.8	1	.7	5	4.3	6	2.6
Late Pueblo White								
Red ware								
Bluff Black-on-red								
San Juan Tract								
Gray ware								
Chapin Gray								
Moccasin Gray								
Mancos Gray								
Early Pueblo Gray	1	2.7						
White ware								
Chapin Black-on-white								
Piedra Black-on-white								
Cortez Black-on-white			1	5.6			1	2.8
Mancos Black-on-white								
Early Pueblo White								
Late Pueblo White								
Cahona Tract								
Gray ware								
Chapin Gray								
Moccasin Gray								
Early Pueblo Gray								
White ware								
Early Pueblo White								
Red ware								
Abajo Red-on-orange								
Early Pueblo Red								
Sandstone Tract								
Gray ware								
Early Pueblo Gray								
White ware								
Chapin Black-on-white								
Early Pueblo White								
Blanding Tract								
Red ware								
Abajo Red-on-orange								
Bluff Black-on-red								
McPhee Black-on-red								
Deadmans Black-on-red								
Early Pueblo Red	2	3.2	1	.7	3	2.2	4	1.5
Late Pueblo Red								
Kayenta:								
White ware								
Kana-a Black-on-white								
Early Pueblo White								
Late Pueblo White								
Red ware								
Tallahogan Red								
Chuska:								
Gray ware								
Early Pueblo Gray								
White ware								
Early Mineral Paint								
Early Pueblo White								
Late Pueblo White								
Cibola:								
Gray ware								
Early Pueblo Gray					1	.7	1	0.3
White ware								
Early Pueblo White								
Cibola or Kayenta:								
Gray ware								
Early Pueblo Gray								
Late Pueblo Gray			1	2.5			1	1.2
White ware								
Early Pueblo White								
Indeterminate:								
Gray ware								
Unclassifiable Gray								
White ware								
Unclassifiable White								
Total ceramics	34	100.0	62	100.0	72	100.0	134	100.0
Total wt (g)	184.9		269.1		266.4		535.5	
Vessel form:								
Gray ware								
Bowl								
Jar	25	85.5	59	93.0	64	93.5	123	93.3
Other	2	5.5						
White ware								
Bowl	4	4.2	2	6.3	4	3.5	6	4.9
Jar	1	1.7			1	.8	1	.4
Other								
Red ware								
Bowl	1	1.6			1	.9	1	.4
Jar	1	1.7	1	.7	2	1.2	3	.9
Other								

Table D.1 Selected ceramic data, Area 3, Grass Mesa Village--Continued

Culture category / Tract / Ware / Type	Room 5							
	floor and features		roof fall 1 and features		roof fall 2 and features		cultural fills and features	
	N	%wt	N	%wt	N	%wt	N	%wt
Mesa Verde:								
Dolores Tract								
Gray ware								
Chapin Gray							5	5.1
Moccasin Gray			2	22.7	2	13.0	10	10.9
Mancos Gray			1	3.2				
Early Pueblo Gray	7	83.7	5	68.4	12	77.7	108	80.0
Late Pueblo Gray								
White ware								
Chapin Black-on-white								
Piedra Black-on-white								
Cortez Black-on-white								
Early Pueblo White					1	4.7	4	2.2
Late Pueblo White								
Red ware								
Bluff Black-on-red								
San Juan Tract								
Gray ware								
Chapin Gray								
Moccasin Gray								
Mancos Gray								
Early Pueblo Gray								
White ware								
Chapin Black-on-white								
Piedra Black-on-white								
Cortez Black-on-white								
Mancos Black-on-white								
Early Pueblo White								
Late Pueblo White								
Canone Tract								
Gray ware								
Chapin Gray								
Moccasin Gray								
Early Pueblo Gray			1	5.8				
White ware								
Early Pueblo White								
Red ware								
Abajo Red-on-orange								
Early Pueblo Red								
Sandstone Tract								
Gray ware								
Early Pueblo Gray								
White ware								
Chapin Black-on-white								
Early Pueblo White								
Blanding Tract								
Red ware								
Abajo Red-on-orange								
Bluff Black-on-red								
McPhee Black-on-red								
Deadmans Black-on-red								
Early Pueblo Red					1	4.7	5	1.8
Late Pueblo Red								
Kayenta:								
White ware								
Kana-a Black-on-white								
Early Pueblo White								
Late Pueblo White								
Red ware								
Tallahogan Red								
Chuska:								
Gray ware								
Early Pueblo Gray								
White ware								
Early Mineral Paint								
Early Pueblo White	1	16.3						
Late Pueblo White								
Cibola:								
Gray ware								
Early Pueblo Gray								
White ware								
Early Pueblo White								
Cibola or Kayenta:								
Gray ware								
Early Pueblo Gray								
Late Pueblo Gray								
White ware								
Early Pueblo White								
Indeterminate:								
Gray ware								
Unclassifiable Gray								
White ware								
Unclassifiable White								
Total ceramics	8	100.0	9	100.0	16	100.0	132	100.0
Total wt (g)	22.1		56.9		51.5		522.7	
Vessel form:								
Gray ware								
Bowl								
Jar	7	83.7	9	100.0	14	90.7	123	96.0
Other								
White ware								
Bowl	1	16.3			1	4.7	4	2.2
Jar								
Other								
Red ware								
Bowl					1	4.7	3	1.2
Jar							2	.6
Other								

Table D.1 Selected ceramic data, Area 3, Grass Mesa Village--Continued

Culture category / Tract / Ware / Type	Room 5				Room 6			
	noncultural fills and features		total		floor and features		roof fall 1 and features	
	N	%wt	N	%wt	N	%wt	N	%wt
La Verde:								
Dolores Tract								
Gray ware								
Chapin Gray	1	.4	6	2.9	1	1.7	7	2.6
Moccasin Gray	4	7.8	18	10.5	3	3.3	16	7.2
Mancos Gray	1	.9	2	.5	1	2.0	1	.3
Early Pueblo Gray	52	80.8	177	79.5	22	71.2	110	71.1
Late Pueblo Gray								
White ware								
Chapin Black-on-white								
Piedra Black-on-white								
Cortez Black-on-white								
Early Pueblo White	2	1.5	7	1.9	2	17.5	16	14.0
Late Pueblo White								
Red ware								
Bluff Black-on-red								
San Juan Tract								
Gray ware								
Chapin Gray								
Moccasin Gray								
Mancos Gray								
Early Pueblo Gray								
White ware								
Chapin Black-on-white								
Piedra Black-on-white								
Cortez Black-on-white								
Mancos Black-on-white								
Early Pueblo White								
Late Pueblo White								
Cahone Tract								
Gray ware								
Chapin Gray								
Moccasin Gray								
Early Pueblo Gray			1	.3				
White ware								
Early Pueblo White								
Red ware								
Abajo Red-on-orange								
Early Pueblo Red								
Sandstone Tract								
Gray ware								
Early Pueblo Gray								
White ware								
Chapin Black-on-white								
Early Pueblo White								
Blanding Tract								
Red ware								
Abajo Red-on-orange								
Bluff Black-on-red								
McPhee Black-on-red								
Deadmans Black-on-red								
Early Pueblo Red	10	7.2	16	3.8	3	4.2	7	4.1
Late Pueblo Red							1	.7
Kayenta:								
White ware								
Kana-a Black-on-white								
Early Pueblo White								
Late Pueblo White								
Red ware								
Tallahogan Red								
Chuska:								
Gray ware								
Early Pueblo Gray								
White ware								
Early Mineral Paint								
Early Pueblo White								
Late Pueblo White								
Cibola:								
Gray ware								
Early Pueblo Gray	1	1.4	1	.5				
White ware								
Early Pueblo White								
Cibola or Kayenta:								
Gray ware								
Early Pueblo Gray								
Late Pueblo Gray								
White ware								
Early Pueblo White								
Indeterminate:								
Gray ware								
Unclassifiable Gray								
White ware								
Unclassifiable White								
Total ceramics	71	100.0	228	100.0	32	100.0	158	100.0
Total wt (g)	359.4		990.5		206.3		872.4	
Vessel form:								
Gray ware								
Bowl								
Jar	59	91.3	205	94.2	27	78.2	133	81.0
Other							1	.2
White ware								
Bowl	2	1.5	7	2.0	2	17.5	6	3.0
Jar							10	11.0
Other								
Red ware								
Bowl	6	4.5	10	2.6	3	4.2	7	4.6
Jar	4	2.7	6	1.2			1	.1
Other								

Table D.1 Selected ceramic data, Area 3, Grass Mesa Village--Continued

Culture category / Tract / Ware / Type	Room 4				Room 11			
	mixed fills and features		fill		roof fall 1 and features		noncultural fills and features	
	N	%wt	N	%wt	N	%wt	N	%wt
Mesa Verde:								
Dolores Tract								
Gray ware								
Chapin Gray			7	2.3	1	1.5	1	1.0
Moccasin Gray	1	5.4	17	6.9	2	1.5	9	8.8
Mancos Gray	1	8.5	2	1.4			1	2.6
Early Pueblo Gray	11	74.4	121	71.6	45	43.4	78	69.5
Late Pueblo Gray								
White ware								
Chapin Black-on-white								
Piedra Black-on-white								
Cortez Black-on-white								
Early Pueblo White	1	4.7	17	12.8	5	12.6	12	16.0
Late Pueblo White								
Red ware								
Bluff Black-on-red								
San Juan Tract								
Gray ware								
Chapin Gray								
Moccasin Gray								
Mancos Gray								
Early Pueblo Gray								
White ware								
Chapin Black-on-white								
Piedra Black-on-white								
Cortez Black-on-white					1	1.9		
Mancos Black-on-white								
Early Pueblo White	2	7.0	2	1.0				
Late Pueblo White								
Cahone Tract								
Gray ware								
Chapin Gray								
Moccasin Gray								
Early Pueblo Gray					1	1.3	1	.4
White ware								
Early Pueblo White								
Red ware								
Abajo Red-on-orange								
Early Pueblo Red								
Sandstone Tract								
Gray ware								
Early Pueblo Gray								
White ware								
Chapin Black-on-white								
Early Pueblo White								
Blanding Tract								
Red ware								
Abajo Red-on-orange								
Bluff Black-on-red					3	36.2		
McPhee Black-on-red								
Deadmans Black-on-red								
Early Pueblo Red			7	3.6	4	1.6	3	1.8
Late Pueblo Red			1	.6				
Kayenta:								
White ware								
Kana-a Black-on-white								
Early Pueblo White								
Late Pueblo White								
Red ware								
Tallahogan Red								
Chuska:								
Gray ware								
Early Pueblo Gray								
White ware								
Early Mineral Paint								
Early Pueblo White								
Late Pueblo White								
Cibola:								
Gray ware								
Early Pueblo Gray								
White ware								
Early Pueblo White								
Cibola or Kayenta:								
Gray ware								
Early Pueblo Gray								
Late Pueblo Gray								
White ware								
Early Pueblo White								
Indeterminate:								
Gray ware								
Unclassifiable Gray								
White ware								
Unclassifiable White								
Total ceramics	16	100.0	174	100.0	62	100.0	105	100.0
Total wt (g)	136.3		1,008.7		451.6		445.4	
Vessel form:								
Gray ware								
Bowl								
Jar	13	88.3	146	82.1	49	47.7	90	82.2
Other			1	.2				
White ware								
Bowl			6	2.6	3	8.9	3	2.1
Jar	3	11.7	13	11.1	3	5.7	9	13.9
Other								
Red ware								
Bowl			7	4.0	3	1.4	2	1.0
Jar			1	.1	4	36.3	1	.8
Other								

Table D.1 Selected ceramic data, Area 3, Grass Mesa Village--Continued

Culture category / Tract / Ware / Type	Room 11		Pithouse 1					
	fill		mainchamber floor and features		mainchamber roof fall 1 and features		mainchamber cultural fills and features	
	N	%wt	N	%wt	N	%wt	N	%wt
Mesa Verde:								
Dolores Tract								
Gray ware								
Chapin Gray	2	1.3			2	.2	32	4.2
Moccasin Gray	11	5.1	24	26.6	21	10.1	77	11.1
Mancos Gray	1	1.3	4	8.8	1	.2	14	1.9
Early Pueblo Gray	123	56.4	35	29.2	227	75.2	541	71.0
Late Pueblo Gray								
White ware								
Chapin Black-on-white								
Piedra Black-on-white			3	3.2				
Cortez Black-on-white								
Early Pueblo White	17	14.3	4	18.4	9	5.0	24	6.5
Late Pueblo White							4	.3
Red ware								
Bluff Black-on-red								
San Juan Tract								
Gray ware								
Chapin Gray								
Moccasin Gray								
Mancos Gray								
Early Pueblo Gray								
White ware								
Chapin Black-on-white					1	.4		
Piedra Black-on-white								
Cortez Black-on-white	1	.9	4	11.4	1	.3		
Mancos Black-on-white								
Early Pueblo White			1	1.6	1	.3	2	.4
Late Pueblo White					2	.4	1	.1
Cahone Tract								
Gray ware								
Chapin Gray								
Moccasin Gray								
Early Pueblo Gray	2	.8					1	
White ware								
Early Pueblo White					1	.1	1	.1
Red ware								
Abajo Red-on-orange								
Early Pueblo Red								
Sandstone Tract								
Gray ware								
Early Pueblo Gray					1	4.5	1	.1
White ware								
Chapin Black-on-white								
Early Pueblo White								
Blanding Tract								
Red ware								
Abajo Red-on-orange								
Bluff Black-on-red	3	18.2						
McPhee Black-on-red								
Deadmans Black-on-red								
Early Pueblo Red	7	1.7	2	.9	16	2.9	30	4.3
Late Pueblo Red								
Kayenta:								
White ware								
Kana-a Black-on-white								
Early Pueblo White								
Late Pueblo White								
Red ware								
Tallahogan Red								
Chuska:								
Gray ware								
Early Pueblo Gray								
White ware								
Early Mineral Paint								
Early Pueblo White								
Late Pueblo White								
Cibola:								
Gray ware								
Early Pueblo Gray								
White ware								
Early Pueblo White								
Cibola or Kayenta:								
Gray ware								
Early Pueblo Gray								
Late Pueblo Gray								
White ware								
Early Pueblo White								
Indeterminate:								
Gray ware								
Unclassifiable Gray					2	.3		
White ware								
Unclassifiable White								
Total ceramics	167	100.0	77	100.0	285	100.0	728	100.0
Total wt (g)	897.0		1,717.2		2,266.5		6,954.9	
Vessel form:								
Gray ware								
Bowl								
Jar	139	64.8	63	64.5	254	90.6	663	88.1
Other							3	.2
White ware								
Bowl	6	5.5	9	19.9	12	5.6	22	1.7
Jar	12	9.8	2	13.0	1	.2	8	5.4
Other	•		1	1.6	2	.6	2	.3
Red ware								
Bowl	5	1.2	1	.8	10	1.7	17	1.8
Jar	5	18.7	1	.1	5	1.1	12	2.4
Other					1	.2	1	.1

Table D.1 Selected ceramic data, Area 3, Grass Mesa Village--Continued

Culture category / Tract / Ware / Type	Pithouse 1				Pithouse 3			
	mainchamber noncultural fills and features		total		mainchamber floor 2 and features		mainchamber floor 1 and features	
	N	%wt	N	%wt	N	%wt	N	%wt
Mesa Verde:								
Dolores Tract								
Gray ware								
Chapin Gray	8	2.6	42	2.7	1	.2		
Moccasin Gray	15	11.8	137	13.1	2	2.4	10	4.7
Mancos Gray	9	3.5	28	2.8			2	.6
Early Pueblo Gray	202	73.9	1,005	66.6	42	88.7	101	62.6
Late Pueblo Gray								
White ware								
Chapin Black-on-white								
Piedra Black-on-white			3	.4			2	.7
Cortez Black-on-white							2	3.5
Early Pueblo White	11	2.3	48	7.2	4	6.5	14	6.4
Late Pueblo White	2	2.0	6	.5			3	3.1
Red ware								
Bluff Black-on-red								
San Juan Tract								
Gray ware								
Chapin Gray							1	.1
Moccasin Gray								
Mancos Gray								
Early Pueblo Gray					1	.4	3	2.2
White ware								
Chapin Black-on-white			1	.1				
Piedra Black-on-white							1	.3
Cortez Black-on-white			5	1.6				
Mancos Black-on-white							1	3.3
Early Pueblo White			4	.5				
Late Pueblo White			3	.1				
Cahone Tract								
Gray ware								
Chapin Gray								
Moccasin Gray								
Early Pueblo Gray	1	.2	2					
White ware								
Early Pueblo White			2	.1				
Red ware								
Abajo Red-on-orange								
Early Pueblo Red								
Sandstone Tract								
Gray ware								
Early Pueblo Gray			2	.8				
White ware								
Chapin Black-on-white								
Early Pueblo White								
Blanding Tract								
Red ware								
Abajo Red-on-orange							7	6.6
Bluff Black-on-red								
McPhee Black-on-red								
Deadmans Black-on-red								
Early Pueblo Red	15	3.2	63	3.4	2	1.8	8	3.3
Late Pueblo Red							2	.9
Kayenta:								
White ware								
Kana-a Black-on-white								
Early Pueblo White	1	.5	1	.1				
Late Pueblo White								
Red ware								
Tallahogan Red								
Chuska:								
Gray ware								
Early Pueblo Gray								
White ware								
Early Mineral Paint							1	1.7
Early Pueblo White								
Late Pueblo White								
Cibola:								
Gray ware								
Early Pueblo Gray								
White ware								
Early Pueblo White								
Cibola or Kayenta:								
Gray ware								
Early Pueblo Gray								
Late Pueblo Gray								
White ware								
Early Pueblo White								
Indeterminate:								
Gray ware								
Unclassifiable Gray			2	.1				
White ware								
Unclassifiable White	1	.1	1					
Total ceramics	265	100.0	1,355	100.0	52	100.0	158	100.0
Total wt (g)	2,007.9		12,946.5		184.3		1,312.8	
Vessel form:								
Gray ware								
Bowl								
Jar	235	92.0	1,215	86.0	46	91.7	116	70.1
Other			3	.1			1	.1
White ware								
Bowl	12	2.3	55	4.9	3	5.2	20	14.3
Jar	2	2.0	13	5.0	1	1.2	4	4.8
Other	1	.5	6	.6				
Red ware								
Bowl	11	2.8	39	1.8	2	1.8	15	10.0
Jar	3	.3	21	1.5			2	.8
Other	1	.1	3	.1				

Table D.1 Selected ceramic data, Area 3, Grass Mesa Village--Continued

Culture category / Tract / Ware / Type	Pithouse 3							
	mainchamber roof fall 1 and features		mainchamber roof fall 2 and features		mainchamber cultural fills and features		mainchambe noncultural fills and features	
	N	%wt	N	%wt	N	%wt	N	%wt
Mesa Verde:								
Dolores Tract								
Gray ware								
Chapin Gray	35	4.7			5	1.5	25	2.0
Moccasin Gray	114	11.3			56	10.5	75	8.9
Mancos Gray	17	2.9			15	3.2	23	2.0
Early Pueblo Gray	672	72.0	3	100.0	443	76.1	592	78.8
Late Pueblo Gray								
White ware								
Chapin Black-on-white								
Piedra Black-on-white							5	1.4
Cortez Black-on-white	1	.1			3	.6		
Early Pueblo White	46	4.9			21	2.8	26	2.3
Late Pueblo White	1				1		2	.1
Red ware								
Bluff Black-on-red								
San Juan Tract								
Gray ware								
Chapin Gray	1				1	.1		
Moccasin Gray								
Mancos Gray								
Early Pueblo Gray	6	.4					4	.3
White ware								
Chapin Black-on-white								
Piedra Black-on-white					1	.3	1	.2
Cortez Black-on-white								
Mancos Black-on-white								
Early Pueblo White	1						5	.3
Late Pueblo White								
Cahone Tract								
Gray ware								
Chapin Gray	1							
Moccasin Gray								
Early Pueblo Gray	2	.1					2	.2
White ware								
Early Pueblo White					1	.2		
Red ware								
Abajo Red-on-orange								
Early Pueblo Red								
Sandstone Tract								
Gray ware								
Early Pueblo Gray	1	.1						
White ware								
Chapin Black-on-white								
Early Pueblo White								
Blanding Tract								
Red ware								
Abajo Red-on-orange							1	.1
Bluff Black-on-red	1	.3			1	.2		
McPhee Black-on-red					1	.3		
Deadmans Black-on-red							1	1.1
Early Pueblo Red	42	3.0			27	4.0	30	2.1
Late Pueblo Red	2	.1			3	.3	3	.2
Kayenta:								
White ware								
Kana-a Black-on-white								
Early Pueblo White								
Late Pueblo White								
Red ware								
Tallahogan Red								
Chuska:								
Gray ware								
Early Pueblo Gray								
White ware								
Early Mineral Paint								
Early Pueblo White								
Late Pueblo White								
Cibola:								
Gray ware								
Early Pueblo Gray	1	.1						
White ware								
Early Pueblo White	1							
Cibola or Kayenta:								
Gray ware								
Early Pueblo Gray								
Late Pueblo Gray								
White ware								
Early Pueblo White								
Indeterminate:								
Gray ware								
Unclassifiable Gray	1							
White ware								
Unclassifiable White								
Total ceramics	946	100.0	3	100.0	579	100.0	795	100.0
Total wt (g)	6,428.3		20.6		4,433.5		5,757.6	
Vessel form:								
Gray ware								
Bowl							28	4.3
Jar	846	90.9	3	100.0	519	91.3	689	86.8
Other	5	.7			1	.1	4	1.1
White ware								
Bowl	39	2.8			22	3.3	37	4.1
Jar	11	2.3			5	.6	2	.2
Other								
Red ware								
Bowl	36	1.6			27	3.8	22	2.6
Jar	8	1.5			5	1.0	12	.8
Other	1	.2					1	.1

Table D.1 Selected ceramic data, Area 3, Grass Mesa Village--Continued

Culture category / Tract / Ware / Type	Pithouse 3 total N	Pithouse 3 total %wt	Pithouse 5 mainchamber floor and features N	Pithouse 5 mainchamber floor and features %wt	Pithouse 5 mainchamber roof fall 1 and features N	Pithouse 5 mainchamber roof fall 1 and features %wt	Pithouse 5 mainchamber noncultural fills and features N	Pithouse 5 mainchamber noncultural fills and features %wt
a Verde:								
olores Tract								
Gray ware								
Chapin Gray	66	2.7	19	19.6	6	2.8	3	3.7
Moccasin Gray	257	9.8	9	12.9	18	4.6	4	1.4
Mancos Gray	57	2.5	3	3.4	14	5.3	4	1.7
Early Pueblo Gray	1,850	74.7	42	42.5	272	75.2	92	58.1
Late Pueblo Gray								
White ware								
Chapin Black-on-white			2	4.9				
Piedra Black-on-white	7	.5			1	.5		
Cortez Black-on-white	6	.4	2	9.1				
Early Pueblo White	111	3.7	3	6.4	21	6.2	9	15.3
Late Pueblo White	7	.3			1	.2		
Red ware								
Bluff Black-on-red								
San Juan Tract								
Gray ware								
Chapin Gray	3							
Moccasin Gray								
Mancos Gray								
Early Pueblo Gray	14	.4						
White ware								
Chapin Black-on-white								
Piedra Black-on-white	3	.2						
Cortez Black-on-white								
Mancos Black-on-white	1	.2						
Early Pueblo White	6	.1			3	.5	2	11.5
Late Pueblo White								
Cahone Tract								
Gray ware								
Chapin Gray	1							
Moccasin Gray							1	.3
Early Pueblo Gray	4	.1			1	.1	3	1.1
White ware								
Early Pueblo White	1				2	.5		
Red ware								
Abajo Red-on-orange								
Early Pueblo Red								
Sandstone Tract								
Gray ware								
Early Pueblo Gray	1							
White ware								
Chapin Black-on-white								
Early Pueblo White								
Blanding Tract								
Red ware								
Abajo Red-on-orange	8	.5						
Bluff Black-on-red	2	.1			1	.1		
McPhee Black-on-red	1	.1						
Deadmans Black-on-red	1	.4						
Early Pueblo Red	109	3.0	4	1.2	15	2.8	5	3.6
Late Pueblo Red	10	.2					2	3.2
ayenta:								
White ware								
Kana-a Black-on-white								
Early Pueblo White								
Late Pueblo white								
Red ware								
Tallahogan Red								
Chuska:								
Gray ware								
Early Pueblo Gray					1	.7		
White ware								
Early Mineral Paint	1	.1						
Early Pueblo White								
Late Pueblo White								
Cibola:								
Gray ware								
Early Pueblo Gray	1				1	.1		
White ware								
Early Pueblo White	1							
Cibola or Kayenta:								
Gray ware								
Early Pueblo Gray								
Late Pueblo Gray								
White ware								
Early Pueblo White					1	.1		
Indeterminate:								
Gray ware								
Unclassifiable Gray	1							
White ware								
Unclassifiable White					1	.3		
Total ceramics	2,530	100.0	84	100.0	359	100.0	125	100.0
Total wt (g)	18,116.5		1,371.9		2,840.2		802.8	
Vessel form:								
Gray ware								
Bowl	28	1.4	3	3.4				
Jar	2,216	88.2	67	68.9	310	87.3	106	64.0
Other	11	.6	3	6.2	3	1.4	1	2.4
White ware								
Bowl	121	4.2	5	14.2	19	4.7	6	13.5
Jar	23	1.4	1	1.8	10	3.4	5	13.3
Other			1	4.3	1	.2		
Red ware								
Bowl	102	3.1	4	1.2	14	2.6	6	6.6
Jar	27	1.1			2	.4	1	.3
Other	2	.1						

Table D.1 Selected ceramic data, Area 3, Grass Mesa Village--Continued

Culture category / Tract / Ware / Type	Pithouse 5 total N	Pithouse 5 total %wt	Pithouse 8 mainchamber floor and features N	Pithouse 8 mainchamber floor and features %wt	Pithouse 8 mainchamber roof fall 1 and features N	Pithouse 8 mainchamber roof fall 1 and features %wt	Pithouse 8 mainchamber roof fall 2 and features N	Pithouse 8 mainchamber roof fall 2 and features %wt
Verde:								
Cores Tract								
Gray ware								
Chapin Gray	28	7.6			5	3.0	13	7.0
Moccasin Gray	31	6.4	35	31.3	1	.9	18	6.8
Mancos Gray	21	4.2	3	1.1	5	6.4	1	2.0
Early Pueblo Gray	406	63.5	22	44.7	133	79.0	218	75.8
Late Pueblo Gray								
White ware								
Chapin Black-on-white	2	1.3						
Piedra Black-on-white	1	.3						
Cortez Black-on-white	2	2.5						
Early Pueblo White	33	7.7	6	18.8	11	8.4	9	2.2
Late Pueblo White	1	.1					3	.3
Red ware								
Bluff Black-on-red								
San Juan Tract								
Gray ware								
Chapin Gray								
Moccasin Gray								
Mancos Gray								
Early Pueblo Gray								
White ware								
Chapin Black-on-white								
Piedra Black-on-white								
Cortez Black-on-white								
Mancos Black-on-white								
Early Pueblo White	5	2.1					5	1.0
Late Pueblo White								
Canone Tract								
Gray ware								
Chapin Gray								
Moccasin Gray	1	.1						
Early Pueblo Gray	4	.3					2	.4
White ware								
Early Pueblo White	2	.3						
Red ware								
Abajo Red-on-orange								
Early Pueblo Red							1	.2
Sandstone Tract								
Gray ware								
Early Pueblo Gray								
White ware								
Chapin Black-on-white								
Early Pueblo White								
Blanding Tract								
Red ware								
Abajo Red-on-orange							1	.1
Bluff Black-on-red	1	.1	9	4.0			2	1.1
McPhee Black-on-red								
Deadmans Black-on-red								
Early Pueblo Red	24	2.5	1		3	.6	14	3.2
Late Pueblo Red	2	.5			1	.4		
Kayenta:								
White ware								
Kana-a Black-on-white								
Early Pueblo White								
Late Pueblo White								
Red ware								
Tallahogan Red								
Chuska:								
Gray ware								
Early Pueblo Gray	1	.4						
White ware								
Early Mineral Paint								
Early Pueblo White								
Late Pueblo White								
Cibola:								
Gray ware								
Early Pueblo Gray	1							
White ware								
Early Pueblo White								
Cibola or Kayenta:								
Gray ware								
Early Pueblo Gray								
Late Pueblo Gray								
White ware								
Early Pueblo White	1				1	1.3		
Indeterminate:								
Gray ware								
Unclassifiable Gray								
White ware								
Unclassifiable White	1	.2						
Total ceramics	568	100.0	76	100.0	160	100.0	287	100.0
Total wt (g)	5,014.9		2,898.5		1,074.0		1,655.9	
Vessel form:								
Gray ware								
Bowl	3	.9						
Jar	483	78.6	60	77.1	144	89.3	252	92.0
Other	7	2.9						
White ware								
Bowl	30	8.7	5	5.8	10	8.0	14	2.5
Jar	16	4.5	1	13.0	2	1.7	3	1.0
Other	2	1.3						
Red ware								
Bowl	24	2.9	10	4.1	1	.2	14	3.9
Jar	3	.2			3	.7	4	.6
Other								

Table D.1 Selected ceramic data, Area 3, Grass Mesa Village--Continued

Culture category / Tract / Ware / Type	Pithouse 8						Nonstr unit 1	
	mainchamber roof fall 3 and features		mainchamber cultural fills and features		total		floor and features	
	N	%wt	N	%wt	N	%wt	N	%wt
Mesa Verde:								
Mesa Verde Tract								
Gray ware								
Chapin Gray	2	7.5	4	7.0	24	2.8		
Moccasin Gray			1	1.8	55	17.5	4	18.8
Mancos Gray					9	2.3		
Early Pueblo Gray	14	92.5	91	74.0	478	61.2	22	63.4
Late Pueblo Gray			1	1.4	1	.1		
White ware								
Chapin Black-on-white								
Piedra Black-on-white								
Cortez Black-on-white								
Early Pueblo White			3	4.5	29	11.5	6	17.9
Late Pueblo White					3	.1		
Red ware								
Bluff Black-on-red								
San Juan Tract								
Gray ware								
Chapin Gray								
Moccasin Gray								
Mancos Gray								
Early Pueblo Gray								
White ware								
Chapin Black-on-white								
Piedra Black-on-white								
Cortez Black-on-white								
Mancos Black-on-white								
Early Pueblo White			2	3.7	7	.4		
Late Pueblo White								
Cahone Tract								
Gray ware								
Chapin Gray								
Moccasin Gray								
Early Pueblo Gray					2	.1		
White ware								
Early Pueblo White								
Red ware								
Abajo Red-on-orange								
Early Pueblo Red					1			
Sandstone Tract								
Gray ware								
Early Pueblo Gray								
White ware								
Chapin Black-on-white								
Early Pueblo White								
Blanding Tract								
Red ware								
Abajo Red-on-orange			2	2.4	3	.1		
Bluff Black-on-red					11	2.3		
McPhee Black-on-red								
Deadmans Black-on-red								
Early Pueblo Red			4	5.2	22	1.2		
Late Pueblo Red					1	.1		
Kayenta:								
White ware								
Kana-a Black-on-white								
Early Pueblo White								
Late Pueblo White								
Red ware								
Tallahogan Red								
Chuska:								
Gray ware								
Early Pueblo Gray								
White ware								
Early Mineral Paint								
Early Pueblo White								
Late Pueblo White								
Cibola:								
Gray ware								
Early Pueblo Gray								
White ware								
Early Pueblo White								
Cibola or Kayenta:								
Gray ware								
Early Pueblo Gray								
Late Pueblo Gray								
White ware								
Early Pueblo White					1	.2		
Indeterminate:								
Gray ware								
Unclassifiable Gray								
White ware								
Unclassifiable White								
Total ceramics	16	100.0	108	100.0	647	100.0	32	100.0
Total wt (g)	56.2		230.8		5,915.4		168.0	
Vessel form:								
Gray ware								
Bowl								
Jar	16	100.0	97	84.2	569	84.0	26	82.1
Other								
White ware								
Bowl			4	6.2	33	5.2	4	11.5
Jar			1	2.1	7	7.1	2	6.3
Other								
Red ware								
Bowl			4	5.5	29	3.3		
Jar			2	2.1	9	.4		
Other								

Table D.1 Selected ceramic data, Area 3, Grass Mesa Village--Continued

Culture category / Tract / Ware / Type	Nonstr unit 1 total N	Nonstr unit 1 total %wt	Nonstr unit 3 noncultural fills and features N	Nonstr unit 3 noncultural fills and features %wt	Nonstr unit 3 total N	Nonstr unit 3 total %wt	Other excavated units N	Other excavated units %wt
Mesa Verde:								
Dolores Tract								
Gray ware								
Chapin Gray							409	5.5
Moccasin Gray	4	18.8					918	9.4
Mancos Gray							124	2.0
Early Pueblo Gray	22	63.4	21	78.2	21	78.2	7,384	72.2
Late Pueblo Gray								
White ware								
Chapin Black-on-white							10	.1
Piedra Black-on-white							2	.1
Cortez Black-on-white							15	.2
Early Pueblo White	6	17.9	2	6.1	2	6.1	446	6.1
Late Pueblo White							23	.2
Red ware								
Bluff Black-on-red								
San Juan Tract								
Gray ware								
Chapin Gray							1	
Moccasin Gray							2	
Mancos Gray								
Early Pueblo Gray							5	.1
White ware								
Chapin Black-on-white							1	
Piedra Black-on-white								
Cortez Black-on-white							4	.1
Mancos Black-on-white							1	
Early Pueblo White							25	.3
Late Pueblo White								
Cahone Tract								
Gray ware								
Chapin Gray							2	
Moccasin Gray								
Early Pueblo Gray							47	.3
White ware								
Early Pueblo White							4	
Red ware								
Abajo Red-on-orange							1	
Early Pueblo Red							4	
Sandstone Tract								
Gray ware								
Early Pueblo Gray							6	
White ware								
Chapin Black-on-white								
Early Pueblo White								
Blanding Tract								
Red ware								
Abajo Red-on-orange							17	.2
Bluff Black-on-red							5	.1
McPhee Black-on-red								
Deadmans Black-on-red								
Early Pueblo Red			1	14.3	1	14.3	383	2.6
Late Pueblo Red			1	1.3	1	1.3	19	.1
Kayenta:								
White ware								
Kana-a Black-on-white							1	
Early Pueblo White							2	
Late Pueblo White							2	
Red ware								
Tallahogan Red							1	
Chuska:								
Gray ware								
Early Pueblo Gray							1	
White ware								
Early Mineral Paint							1	
Early Pueblo White							1	
Late Pueblo White							1	
Cibola:								
Gray ware								
Early Pueblo Gray							2	.1
White ware								
Early Pueblo White							1	
Cibola or Kayenta:								
Gray ware								
Early Pueblo Gray							10	.1
Late Pueblo Gray								
White ware								
Early Pueblo White							2	
Indeterminate:								
Gray ware								
Unclassifiable Gray							2	
White ware								
Unclassifiable White							1	
Total ceramics	32	100.0	25	100.0	25	100.0	9,888	100.0
Total wt (g)	168.0		68.5		68.5		58,313.1	
Vessel form:								
Gray ware								
Bowl								
Jar	26	82.1	21	78.2	21	78.2	8,900	89.4
Other							13	.3
White ware								
Bowl	4	11.5	2	6.1	2	6.1	302	3.5
Jar	2	6.3					237	3.7
Other							6	.1
Red ware								
Bowl			2	15.6	2	15.6	320	2.3
Jar							101	.6
Other							9	.1

Table D.1 Selected ceramic data, Area 3, Grass Mesa Village--Continued

Culture category / Tract / Ware / Type	Total site	
	N	%wt
Mesa Verde:		
Dolores Tract		
Gray ware		
Chapin Gray	674	4.4
Moccasin Gray	1,650	10.4
Mancos Gray	265	2.1
Early Pueblo Gray	13,629	71.4
Late Pueblo Gray	1	
White ware		
Chapin Black-on-white	15	.1
Piedra Black-on-white	13	.2
Cortez Black-on-white	23	.3
Early Pueblo White	782	5.9
Late Pueblo White	45	.2
Red ware		
Bluff Black-on-red	1	
San Juan Tract		
Gray ware		
Chapin Gray	5	
Moccasin Gray	2	
Mancos Gray	1	
Early Pueblo Gray	24	.1
White ware		
Chapin Black-on-white	2	
Piedra Black-on-white	3	
Cortez Black-on-white	11	.3
Mancos Black-on-white	2	
Early Pueblo White	53	.4
Late Pueblo White	3	
Cahone Tract		
Gray ware		
Chapin Gray	3	
Moccasin Gray	1	
Early Pueblo Gray	77	.3
White ware		
Early Pueblo White	12	
Red ware		
Abajo Red-on-orange	1	
Early Pueblo Red	8	
Sandstone Tract		
Gray ware		
Early Pueblo Gray	11	.1
White ware		
Chapin Black-on-white	1	
Early Pueblo White	2	
Blanding Tract		
Red ware		
Abajo Red-on-orange	31	.2
Bluff Black-on-red	24	.3
McPhee Black-on-red	1	
Deadmans Black-on-red	1	.1
Early Pueblo Red	707	2.6
Late Pueblo Red	38	.1
Kayenta:		
White ware		
Kana-a Black-on-white	1	
Early Pueblo White	3	
Late Pueblo White	2	
Red ware		
Tallahogan Red	2	
Chuska:		
Gray ware		
Early Pueblo Gray	2	
White ware		
Early Mineral Paint	2	
Early Pueblo White	2	
Late Pueblo White	1	
Cibola:		
Gray ware		
Early Pueblo Gray	6	
White ware		
Early Pueblo White	3	
Cibola or Kayenta:		
Gray ware		
Early Pueblo Gray	12	.1
Late Pueblo Gray	1	
White ware		
Early Pueblo White	4	
Indeterminate:		
Gray ware		
Unclassifiable Gray	5	
White ware		
Unclassifiable White	3	
Total ceramics	18,171	100.0
Total wt (g)	116,407.5	
Vessel form:		
Gray ware		
Bowl	31	.3
Jar	16,293	88.3
Other	45	.4
White ware		
Bowl	627	3.9
Jar	343	3.5
Other	18	.2
Red ware		
Bowl	606	2.4
Jar	193	.9
Other	15	.1

Table D.2 Flaked lithic tools, Area 3, Grass Mesa

	Modern ground surface			Room 1 cultural fill			Room 1 noncultural fill		
	N	%	Mean wt(g)	N	%	Mean wt(g)	N	%	Mean wt(g)
Total tools:	91	100.0	128	6	100.0	161	7	100.0	31
Tool morpho-use									
Indeterminate	1	1.1	138						
Utilized flake	50	54.9	63	1	16.7	2	4	57.1	41
Core	5	5.5	99	1	16.7	93			
Used core, cobble tool	14	15.4	371	1	16.7	854			
Thick uniface	3	3.3	458						
Thin uniface	10	11.0	23	2	33.3	7	3	42.9	17
Specialized form	2	2.2	26						
Thick biface	5	5.5	206						
Thin biface	1	1.1	2	1	16.7	4			
Projectile point									
Grain size									
Unidentifiable									
Medium	1	1.1	278						
Fine	4	4.4	96						
Very fine	73	80.2	143	6	100.0	161	7	100.0	31
Microscopic	13	14.3	44						
Item condition									
Broken									
Indeterminate	1	1.1	268						
Indeterminate	2	2.2	208						
Distal present	1	1.1	2						
Proximal present									
Medial/lateral present									
Complete/nearly complete	87	95.6	126	6	100.0	161	7	100.0	31
Dorsal face evaluation									
Indeterminant									
Core	19	20.9	299	1	16.7	93			
Unworked with cortex	25	27.5	142	2	33.3	433	4	57.1	36
Unworked without cortex	41	45.1	39	3	50.0	3	3	42.9	23
Edged with cortex	3	3.3	179						
Edged without cortex									
Primarily thinned									
Secondarily thinned									
Well shaped	3	3.3	94						
Highly stylized									

Table D.2 Flaked lithic tools, Area 3, Grass Mesa--Continued

	Room 1 Total			Room 2 cultural fill			Room 2 Mixed fill		
	N	%	Mean wt(g)	N	%	Mean wt(g)	N	%	Mean wt(g)
Total tools:	13	100.0	91	1	100.0	39	7	100.0	62
Tool morpho-use									
Indeterminate									
Utilized flake	5	38.5	33	1	100.0	39	2	28.6	3
Core	1	7.7	93						
Used core, cobble tool	1	7.7	854				1	14.3	422
Thick uniface									
Thin uniface	5	38.5	13				1	14.3	7
Specialized form									
Thick biface									
Thin biface	1	7.7	4						
Projectile point							3	42.9	1
Grain size									
Unidentifiable									
Medium									
Fine									
Very fine	13	100.0	91	1	100.0	39	1	14.3	422
Microscopic							6	85.7	3
Item condition									
Broken									
Indeterminate									
Indeterminate									
Distal present							1	14.3	1
Proximal present									
Medial/lateral present									
Complete/nearly complete	13	100.0	91	1	100.0	39	6	85.7	73
Dorsal face evaluation									
Indeterminant									
Core	1	7.7	93				1	14.3	422
Unworked with cortex	6	46.2	168	1	100.0	39	1	14.3	3
Unworked without cortex	6	46.2	13				2	28.6	5
Edged with cortex									
Edged without cortex									
Primarily thinned									
Secondarily thinned									
Well shaped							3	42.9	1
Highly stylized									

Table D.2 Flaked lithic tools, Area 3, Grass Mesa--Continued

	Room 2 total			Room 7 roof fall			Room 7 total		
	N	%	Mean wt(g)	N	%	Mean wt(g)	N	%	Mean wt(g)
Total tools:	8	100.0	60	1	100.0	1	1	100.0	1
Tool morpho-use									
Indeterminate									
Utilized flake	3	37.5	15						
Core									
Used core, cobble tool	1	12.5	422						
Thick uniface									
Thin uniface	1	12.5	7						
Specialized form									
Thick biface									
Thin biface									
Projectile point	3	37.5	1	1	100.0	1	1	100.0	1
Grain size									
Unidentifiable									
Medium									
Fine									
Very fine	2	25.0	231						
Microscopic	6	75.0	3	1	100.0	1	1	100.0	1
Item condition									
Broken									
Indeterminate									
Indeterminate									
Distal present	1	12.5	1						
Proximal present									
Medial/lateral present									
Complete/nearly complete	7	87.5	68	1	100.0	1	1	100.0	1
Dorsal face evaluation									
Indeterminant									
Core	1	12.5	422						
Unworked with cortex	2	25.0	21						
Unworked without cortex	2	25.0	5						
Edged with cortex									
Edged without cortex									
Primarily thinned									
Secondarily thinned									
Well shaped	3	37.5	1	1	100.0	1	1	100.0	1
Highly stylized									

Table D.2 Flaked lithic tools, Area 3, Grass Mesa--Continued

	Room 5 roof fall			Room 5 noncultural fill			Room 5 total		
	N	%	Mean wt(g)	N	%	Mean wt(g)	N	%	Mean wt(g)
Total tools:	1	100.0	95	3	100.0	37	4	100.0	52
Tool morpho-use									
Indeterminate									
Utilized flake	1	100.0	95	1	33.3	106	2	50.0	101
Core									
Used core, cobble tool									
Thick uniface									
Thin uniface				2	66.7	3	2	50.0	3
Specialized form									
Thick biface									
Thin biface									
Projectile point									
Grain size									
Unidentifiable									
Medium									
Fine									
Very fine				1	33.3	106	1	25.0	106
Microscopic	1	100.0	95	2	66.7	3	3	75.0	33
Item condition									
Broken									
Indeterminate									
Indeterminate									
Distal present									
Proximal present									
Medial/lateral present									
Complete/nearly complete	1	100.0	95	3	100.0	37	4	100.0	52
Dorsal face evaluation									
Indeterminant									
Core									
Unworked with cortex	1	100.0	95	1	33.3	106	2	50.0	101
Unworked without cortex				2	66.7	3	2	50.0	3
Edged with cortex									
Edged without cortex									
Primarily thinned									
Secondarily thinned									
Well shaped									
Highly stylized									

Table D.2 Flaked lithic tools, Area 3, Grass Mesa--Continued

	Room 6 floor			Room 6 roof fall			Room 6 total		
	N	%	Mean wt(g)	N	%	Mean wt(g)	N	%	Mean wt(g)
Total tools:	2	100.0	153	5	100.0	27	7	100.0	63
Tool morpho-use									
Indeterminate									
Utilized flake				1	20.0	52	1	14.3	52
Core									
Used core, cobble tool									
Thick uniface	1	50.0	304	1	20.0	76	2	28.6	190
Thin uniface				1	20.0	3	1	14.3	3
Specialized form									
Thick biface									
Thin biface									
Projectile point	1	50.0	2	2	40.0	1	3	42.9	1
Grain size									
Unidentifiable									
Medium									
Fine									
Very fine	1	50.0	304	3	60.0	43	4	57.1	108
Microscopic	1	50.0	2	2	40.0	2	3	42.9	2
Item condition									
Broken									
Indeterminate									
Indeterminate									
Distal present				1	20.0	1	1	14.3	1
Proximal present									
Medial/lateral present									
Complete/nearly complete	2	100.0	153	4	80.0	33	6	85.7	73
Dorsal face evaluation									
Indeterminant									
Core									
Unworked with cortex	1	50.0	304	1	20.0	3	2	28.6	154
Unworked without cortex				2	40.0	64	2	28.6	64
Edged with cortex									
Edged without cortex									
Primarily thinned									
Secondarily thinned									
Well shaped	1	50.0	2	2	40.0	1	3	42.9	1
Highly stylized									

Table D.2 Flaked lithic tools, Area 3, Grass Mesa--Continued

	Room 11 noncultural fill			Room 11 total			Pithouse 1 mainchamber floor		
	N	%	Mean wt(g)	N	%	Mean wt(g)	N	%	Mean wt(g)
Total tools:	4	100.0	11	4	100.0	11	14	100.0	212
Tool morpho-use									
Indeterminate									
Utilized flake	2	50.0	11	2	50.0	11	6	42.9	135
Core									
Used core, cobble tool							5	35.7	289
Thick uniface							1	7.1	511
Thin uniface	1	25.0	21	1	25.0	21	1	7.1	52
Specialized form									
Thick biface							1	7.1	147
Thin biface	1	25.0	1	1	25.0	1			
Projectile point									
Grain size									
Unidentifiable									
Medium							1	7.1	52
Fine									
Very fine	2	50.0	21	2	50.0	21	11	78.6	239
Microscopic	2	50.0	1	2	50.0	1	2	14.3	140
Item condition									
Broken									
Indeterminate									
Indeterminate									
Distal present	1	25.0	1	1	25.0	1			
Proximal present									
Medial/lateral present									
Complete/nearly complete	3	75.0	14	3	75.0	14	14	100.0	212
Dorsal face evaluation									
Indeterminant									
Core							5	35.7	289
Unworked with cortex	1	25.0	21	1	25.0	21	4	28.6	262
Unworked without cortex	2	50.0	11	2	50.0	11	4	28.6	81
Edged with cortex							1	7.1	147
Edged without cortex									
Primarily thinned									
Secondarily thinned									
Well shaped	1	25.0	1	1	25.0	1			
Highly stylized									

Table D.2 Flaked lithic tools, Area 3, Grass Mesa--Continued

	Pithouse 1 mainchamber roof fall			Pithouse 1 mainchamber cultural fill			Pithouse 1 mainchamber noncultural fill		
	N	%	Mean wt(g)	N	%	Mean wt(g)	N	%	Mean wt(g)
Total tools:	14	100.0	434	29	100.0	93	9	100.0	27
Tool morpho-use									
Indeterminate									
Utilized flake	5	35.7	26	10	34.5	26	5	55.6	15
Core				3	10.3	151			
Used core, cobble tool	4	28.6	1,303	4	13.8	310			
Thick uniface	1	7.1	357	2	6.9	163			
Thin uniface	1	7.1	17	4	13.8	22			
Specialized form	1	7.1	4						
Thick biface	1	7.1	356	1	3.4	310	1	11.1	153
Thin biface	1	7.1	2				1	11.1	12
Projectile point				5	17.2	3	2	22.2	1
Grain size									
Unidentifiable									
Medium	1	7.1	921						
Fine	2	14.3	187	1	3.4	209	2	22.2	25
Very fine	8	57.1	595	20	69.0	115	4	44.4	43
Microscopic	3	21.4	8	8	27.6	23	3	33.3	7
Item condition									
Broken									
Indeterminate									
Indeterminate									
Distal present							1	11.1	1
Proximal present	1	7.1	2	2	6.9	2			
Medial/lateral present									
Complete/nearly complete	13	92.9	467	27	93.1	100	8	88.9	30
Dorsal face evaluation									
Indeterminant									
Core	4	28.6	1,303	7	24.1	242			
Unworked with cortex	6	42.9	137	7	24.1	111	2	22.2	25
Unworked without cortex	2	14.3	19	10	34.5	21	4	44.4	7
Edged with cortex							2	22.2	83
Edged without cortex									
Primarily thinned	1	7.1	2						
Secondarily thinned									
Well shaped	1	7.1	4	5	17.2	3	1	11.1	1
Highly stylized									

Table D.2 Flaked lithic tools, Area 3, Grass Mesa--Continued

	Pithouse 1 total			Pithouse 3 mainchamber floor 1			Pithouse 3 mainchamber floor 2		
	N	%	Mean wt(g)	N	%	Mean wt(g)	N	%	Mean wt(g)
Total tools:	66	100.0	181	18	100.0	287	5	100.0	29
Tool morpho-use									
Indeterminate				1	5.6	1	1	20.0	1
Utilized flake	26	39.4	49	4	22.2	147	1	20.0	138
Core	3	4.5	151	2	11.1	223			
Used core, cobble tool	13	19.7	608	8	44.4	474			
Thick uniface	4	6.1	299	2	11.1	45			
Thin uniface	6	9.1	26				1	20.0	5
Specialized form	1	1.5	4						
Thick biface	4	6.1	242	1	5.6	252			
Thin biface	2	3.0	7						
Projectile point	7	10.6	3				2	40.0	1
Grain size									
Unidentifiable				1	5.6	975			
Medium	2	3.0	487	1	5.6	423			
Fine	5	7.6	127	9	50.0	256	1	20.0	1
Very fine	43	65.2	229	7	38.9	209	1	20.0	138
Microscopic	16	24.2	32				3	60.0	2
Item condition									
Broken									
Indeterminate									
Indeterminate				2	11.1	43			
Distal present	1	1.5	1				1	20.0	138
Proximal present	3	4.5	2				1	20.0	1
Medial/lateral present				1	5.6	36	1	20.0	1
Complete/nearly complete	62	93.9	193	15	83.3	336	2	40.0	3
Dorsal face evaluation									
Indeterminant									
Core	16	24.2	522	10	55.6	424			
Unworked with cortex	19	28.8	142	6	33.3	146	2	40.0	72
Unworked without cortex	20	30.3	30	1	5.6	53			
Edged with cortex	3	4.5	104						
Edged without cortex				1	5.6	1			
Primarily thinned	1	1.5	2						
Secondarily thinned							2	40.0	1
Well shaped	7	10.6	3				1	20.0	1
Highly stylized									

Table D.2 Flaked lithic tools, Area 3, Grass Mesa--Continued

	Pithouse 3 mainchamber roof fall			Pithouse 3 mainchamber cultural fill			Pithouse 3 mainchamber noncultural fill		
	N	%	Mean wt(g)	N	%	Mean wt(g)	N	%	Mean wt(g)
Total tools:	19	100.0	131	12	100.0	66	23	100.0	149
Tool morpho-use									
Indeterminate	1	5.3	4				2	8.7	10
Utilized flake	8	42.1	72	1	8.3	10	5	21.7	33
Core				2	16.7	69	1	4.3	87
Used core, cobble tool	4	21.1	447	2	16.7	275	4	17.4	549
Thick uniface	2	10.5	13				3	13.0	265
Thin uniface	2	10.5	41	4	33.3	21	1	4.3	20
Specialized form							1	4.3	2
Thick biface	2	10.5	7						
Thin biface							2	8.7	65
Projectile point				3	25.0	4	4	17.4	1
Grain size									
Unidentifiable									
Medium									
Fine	2	10.5	611	1	8.3	39	3	13.0	247
Very fine	13	68.4	96	4	33.3	143	11	47.8	230
Microscopic	4	21.1	5	7	58.3	26	9	39.1	17
Item condition									
Broken									
Indeterminate									
Indeterminate	1	5.3	4				3	13.0	49
Distal present							2	8.7	1
Proximal present	1	5.3	1						
Medial/lateral present	1	5.3	18						
Complete/nearly complete	16	84.2	154	12	100.0	66	18	78.3	181
Dorsal face evaluation									
Indeterminant									
Core	2	10.5	488	4	33.3	172	5	21.7	457
Unworked with cortex	8	42.1	177	1	8.3	10	8	34.8	95
Unworked without cortex	8	42.1	10	4	33.3	21	4	17.4	91
Edged with cortex									
Edged without cortex	1	5.3	15						
Primarily thinned							1	4.3	1
Secondarily thinned							3	13.0	1
Well shaped				3	25.0	4	1	4.3	2
Highly stylized							1	4.3	1

Table D.2 Flaked lithic tools, Area 3, Grass Mesa--Continued

	Pithouse 3 total			Pithouse 5 mainchamber floor			Pithouse 5 Mainchamber roof fall 1		
	N	%	Mean wt (g)	N	%	Mean wt (g)	N	%	Mean wt (g)
Total tools:	77	100.0	156	17	100.0	157	18	100.0	117
Tool morpho-use									
Indeterminate	5	6.5	5						
Utilized flake	19	24.7	78	3	17.6	85	3	16.7	29
Core	5	6.5	134						
Used core, cobble tool	18	23.4	463	5	29.4	330	5	27.8	253
Thick uniface	7	9.1	130	3	17.6	98	1	5.6	611
Thin uniface	8	10.4	24	2	11.8	232	2	11.1	27
Specialized form	1	1.3	2						
Thick biface	3	3.9	89				1	5.6	77
Thin biface	2	2.6	65						
Projectile point	9	11.7	2	4	23.5	2	6	33.3	2
Grain size									
Unidentifiable	1	1.3	975						
Medium	1	1.3	423						
Fine	16	20.8	269						
Very fine	36	46.8	165	10	58.8	258	9	50.0	219
Microscopic	23	29.9	16	7	41.2	13	9	50.0	15
Item condition									
Broken									
Indeterminate									
Indeterminate	6	7.8	40						
Distal present	3	3.9	47				1	5.6	1
Proximal present	2	2.6	1				1	5.6	2
Medial/lateral present	3	3.9	18						
Complete/nearly complete	63	81.8	184	17	100.0	157	16	88.9	131
Dorsal face evaluation									
Indeterminant									
Core	21	27.3	390	5	29.4	330	5	27.8	253
Unworked with cortex	25	32.5	128	5	29.4	190	3	16.7	218
Unworked without cortex	17	22.1	34	3	17.6	20	4	22.2	43
Edged with cortex							1	5.6	2
Edged without cortex	2	2.6	8				1	5.6	2
Primarily thinned	1	1.3	1						
Secondarily thinned	5	6.5	1						
Well shaped	5	6.5	3	4	23.5	2	4	22.2	2
Highly stylized	1	1.3	1						

Table D.2 Flaked lithic tools, Area 3, Grass Mesa--Continued

	Pithouse 5 mainchamber noncultural fill			Pithouse 5 total			Pithouse 8 mainchamber roof fall 1		
	N	%	Mean wt (g)	N	%	Mean wt (g)	N	%	Mean wt (g)
Total tools:	2	100.0	38	37	100.0	131	1	100.0	28
Tool morpho-use									
Indeterminate									
Utilized flake	2	100.0	38	8	21.6	52	1	100.0	28
Core									
Used core, cobble tool				10	27.0	291			
Thick uniface				4	10.8	226			
Thin uniface				4	10.8	129			
Specialized form									
Thick biface				1	2.7	77			
Thin biface									
Projectile point				10	27.0	2			
Grain size									
Unidentifiable									
Medium									
Fine	1	50.0	19	1	2.7	19			
Very fine	1	50.0	57	20	54.1	230			
Microscopic				16	43.2	14	1	100.0	28
Item condition									
Broken									
Indeterminate									
Indeterminate									
Distal present				1	2.7	1			
Proximal present				1	2.7	2			
Medial/lateral present									
Complete/nearly complete	2	100.0	38	35	94.6	138	1	100.0	28
Dorsal face evaluation									
Indeterminant									
Core				10	27.0	291			
Unworked with cortex	1	50.0	57	9	24.3	185			
Unworked without cortex	1	50.0	19	8	21.6	32	1	100.0	28
Edged with cortex				1	2.7	2			
Edged without cortex				1	2.7	2			
Primarily thinned									
Secondarily thinned									
Well shaped				8	21.6	2			
Highly stylized									

Table D.2 Flaked lithic tools, Area 3, Grass Mesa--Continued

	Pithouse 8 mainchamber roof fall 2			Pithouse 8 total			Nonstructure 1 floor		
	N	%	Mean wt (g)	N	%	Mean wt (g)	N	%	Mean wt (g)
Total tools:	5	100.0	22	6	100.0	23	2	100.0	125
Tool morpho-use									
Indeterminate									
Utilized flake	2	40.0	19	3	50.0	22	1	50.0	3
Core									
Used core, cobble tool									
Thick uniface							1	50.0	247
Thin uniface	1	20.0	4	1	16.7	4			
Specialized form	2	40.0	35	2	33.3	35			
Thick biface									
Thin biface									
Projectile point									
Grain size									
Unidentifiable									
Medium									
Fine	1	20.0	13	1	16.7	13			
Very fine							2	100.0	125
Microscopic	4	80.0	25	5	83.3	25			
Item condition									
Broken									
Indeterminate									
Indeterminate									
Distal present									
Proximal present									
Medial/lateral present									
Complete/nearly complete	5	100.0	22	6	100.0	23	2	100.0	125
Dorsal face evaluation									
Indeterminant									
Core									
Unworked with cortex	4	80.0	27	4	66.7	27	1	50.0	247
Unworked without cortex	1	20.0	4	2	33.3	16	1	50.0	3
Edged with cortex									
Edged without cortex									
Primarily thinned									
Secondarily thinned									
Well shaped									
Highly stylized									

Table D.2 Flaked lithic tools, Area 3, Grass Mesa--Continued

	Nonstructure 1 total			Other excavated units			Total		
	N	%	Mean wt (g)	N	%	Mean wt (g)	N	%	Mean wt (g)
Total tools:	2	100.0	125	421	100.0	68	737	100.0	97
Tool morpho-use									
Indeterminate				2	.5	53	8	1.1	34
Utilized flake	1	50.0	3	242	57.5	32	362	49.1	40
Core				14	3.3	60	28	3.8	91
Used core, cobble tool				49	11.6	290	106	14.4	375
Thick uniface	1	50.0	247	16	3.8	125	37	5.0	190
Thin uniface				49	11.6	19	88	11.9	24
Specialized form				4	1.0	15	10	1.4	19
Thick biface				12	2.9	200	25	3.4	190
Thin biface				12	2.9	11	19	2.6	15
Projectile point				21	5.0	2	54	7.3	2
Grain size									
Unidentifiable							1	.1	975
Medium				5	1.2	255	9	1.2	328
Fine				15	3.6	156	42	5.7	183
Very fine	2	100.0	125	268	63.7	83	464	63.0	120
Microscopic				133	31.6	20	221	30.0	20
Item condition									
Broken									
Indeterminate				16	3.8	59	17	2.3	72
Indeterminate				1	.2	2	9	1.2	73
Distal present				5	1.2	1	14	1.9	11
Proximal present				9	2.1	2	15	2.0	2
Medial/lateral present				3	.7	2	6	.8	10
Complete/nearly complete	2	100.0	125	387	91.9	71	676	91.7	103
Dorsal face evaluation									
Indeterminant				2	.5	14	2	.3	14
Core				62	14.7	239	130	17.6	311
Unworked with cortex	1	50.0	247	160	38.0	54	256	34.7	85
Unworked without cortex	1	50.0	3	164	39.0	23	267	36.2	27
Edged with cortex				6	1.4	182	13	1.8	150
Edged without cortex				1	.2	1	4	.5	5
Primarily thinned				2	.5	7	4	.5	4
Secondarily thinned				1	.2	5	6	.8	2
Well shaped				23	5.5	2	54	7.3	7
Highly stylized							1	.1	1

Table D.3 Flaked lithic debitage

	Modern ground surface			Surface Structure 1 cultural fill			Surface Structure 1 noncultural fill			Surface Structure 1 total			Surface Structure 6 cultural fill		
	N	%	Mean wt(g)	N	%	Mean wt(g)	N	%	Mean wt(g)	N	%	Mean wt(g)	N	%	Mean wt(g)
Flakes/flake frags:															
Grain size															
Medium	7	.9	5	2	2.7	3	4	3.0	14	6	2.9	10			
Fine	16	2.1	36	2	2.7	2	3	2.3	7	5	2.4	5			
Very fine	580	75.5	9	61	82.4	5	114	86.4	2	175	85.0	3	16	94.1	1
Microscopic	165	21.5	6	9	12.2	2	11	8.3	3	20	9.7	2	1	5.9	1
Total flakes/ Flake frags	768	100.0	9	74	100.0	4	132	100.0	3	206	100.0	3	17	100.0	1
Items with cortex	193	25.1		18	24.3		30	22.7		48	23.3		5	29.4	
Whole flakes	431	56.1		55	74.3		60	45.5		115	55.8		10	58.8	
Non-local items															
Angular debris															

Table D.3 Flaked lithic debitage--Continued

	Surface Structure 6 noncultural fill			Surface Structure 6 total			Room 2 floor 1			Room 2 roof fall			Room 2 cultural fill		
	N	%	Mean wt(g)	N	%	Mean wt(g)	N	%	Mean wt(g)	N	%	Mean wt(g)	N	%	Mean wt(g)
Flakes/flake frags:															
Grain size															
Medium													1	1.2	6
Fine										2	4.8	87	2	2.4	5
Very fine	1	100.0	2	17	94.4	1	25	96.2	1	29	69.0	2	65	79.3	8
Microscopic				1	5.6	1	1	3.8	2	11	26.2	3	14	17.1	2
Total flakes/ Flake frags	1	100.0	2	18	100.0	1	26	100.0	1	42	100.0	7	82	100.0	7
Items with cortex				5	27.8		5	19.2		10	23.8		25	30.5	
Whole flakes	1	100.0		11	61.1		12	46.2		24	57.1		63	76.8	
Non-local items															
Angular debris															

Table D.3 Flaked lithic debitage--Continued

	Room 2 mixed fills			Room 2 total			Room 7 floor			Room 7 roof fall 1			Room 7 roof fall 2		
	N	%	Mean wt(g)	N	%	Mean wt(g)	N	%	Mean wt(g)	N	%	Mean wt(g)	N	%	Mean wt(g)
Flakes/flake frags:															
Grain size															
Medium	8	5.8	4	9	3.1	4	1	3.7	1				1	1.8	5
Fine	1	.7	1	5	1.7	37	11	40.7	2	31	63.3	1	2	3.6	4
Very fine	116	84.1	2	235	81.6	3	11	40.7	2	11	22.4	2	40	72.7	2
Microscopic	13	9.4	2	39	13.5	2	4	14.8	2	7	14.3	2	12	21.8	2
Total flakes/ Flake frags	138	100.0	2	288	100.0	4	27	100.0	2	49	100.0	1	55	100.0	2
Items with cortex	26	18.8		66	22.9		9	33.3		5	10.2		8	14.5	
Whole flakes	58	42.0		157	54.5		6	22.2		21	42.9		18	32.7	
Non-local items															
Angular debris															

Table D.3 Flaked lithic debitage--Continued

	Room 7 total			Room 5 roof fall 2			Room 5 roof fall 3			Room 5 cultural fill			Room 5 noncultural fill		
	N	%	Mean wt(g)	N	%	Mean wt(g)	N	%	Mean wt(g)	N	%	Mean wt(g)	N	%	Mean wt(g)
Flakes/flake frags:															
Grain size															
Medium	2	1.5	3												
Fine	44	33.6	1				6	54.5	2	4	3.0	5	3	4.4	6
Very fine	62	47.3	2	4	57.1	2				106	79.1	2	59	86.8	3
Microscopic	23	17.6	2	3	42.9	1	5	45.5	4	24	17.9	2	6	8.8	4
Total flakes/ Flake frags	131	100.0	2	7	100.0	1	11	100.0	3	134	100.0	2	68	100.0	4
Items with cortex	22	16.8		2	28.6		2	18.2		14	10.4		20	29.4	
Whole flakes	45	34.4		3	42.9		4	36.4		58	43.3		46	67.6	
Non-local items															
Angular debris															

Table D.3 Flaked lithic debitage--Continued

	Room 5 total			Room 6 floor			Room 6 roof fall			Room 6 mixed fill			Room 6 total		
	N	%	Mean wt(g)	N	%	Mean wt(g)	N	%	Mean wt(g)	N	%	Mean wt(g)	N	%	Mean wt(g)
Flakes/flake frags:															
Grain size															
Medium				7	31.8	4	1	.9	1				8	5.7	4
Fine	13	5.9	4	1	4.5	1	18	16.1	5				19	13.6	5
Very fine	169	76.8	3	11	50.0	1	67	59.8	6	4	66.7	3	82	58.6	5
Microscopic	38	17.3	2	3	13.6	1	26	23.2	4	2	33.3	16	31	22.1	5
Total flakes/ Flake frags	220	100.0	3	22	100.0	2	112	100.0	5	6	100.0	7	140	100.0	5
Items with cortex	38	17.3		4	18.2		16	14.3		2	33.3		22	15.7	
Whole flakes	111	50.5		10	45.5		29	25.9		3	50.0		42	30.0	
Non-local items															
Angular debris															

Table D.3 Flaked lithic debitage--Continued

	Room 11 roof fall 3			Room 11 noncultural fill			Room 11 total			Pithouse 1 mainchamber floor			Pithouse 1 mainchamber roof fall 3		
	N	%	Mean wt(g)	N	%	Mean wt(g)	N	%	Mean wt(g)	N	%	Mean wt(g)	N	%	Mean wt(g)
Flakes/flake frags:															
Grain size															
Medium	1	5.3	3	3	5.8	3	4	5.6	3				7	4.8	9
Fine	4	21.1	5	19	36.5	3	23	32.4	3	4	7.8	1	13	8.9	8
Very fine	7	36.8	10	9	17.3	3	16	22.5	6	37	72.5	18	92	63.0	10
Microscopic	7	36.8	1	21	40.4	2	28	39.4	2	10	19.6	4	34	23.3	4
Total flakes/ Flake frags	19	100.0	5	52	100.0	3	71	100.0	3	51	100.0	14	146	100.0	8
Items with cortex	8	42.1		8	15.4		16	22.5		10	19.6		34	23.3	
Whole flakes	13	68.4		24	46.2		37	52.1		32	62.7		76	52.1	
Non-local items													1	.7	
Angular debris															

Table D.3 Flaked lithic debitage--Continued

	Pithouse 1 mainchamber cultural fill			Pithouse 1 mainchamber noncultural fill			Pithouse 1 total			Pithouse 3 mainchamber floor 1			Pithouse 3 mainchamber floor 2		
	N	%	Mean wt(g)	N	%	Mean wt(g)	N	%	Mean wt(g)	N	%	Mean wt(g)	N	%	Mean wt(g)
Flakes/flake frags:															
Grain size															
Medium	6	1.6	17	1	.9	28	14	2.0	14						
Fine	12	3.2	39	25	21.7	1	54	7.8	11	19	30.2	25	36	30.3	2
Very fine	267	71.0	12	59	51.3	9	455	66.1	12	39	61.9	7	46	38.7	2
Microscopic	91	24.2	4	30	26.1	4	165	24.0	4	5	7.9	5	37	31.1	2
Total flakes/ Flake frags	376	100.0	11	115	100.0	6	688	100.0	10	63	100.0	12	119	100.0	2
Items with cortex	106	28.2		21	18.3		171	24.9		31	49.2		62	52.1	
Whole flakes	240	63.8		53	46.1		401	58.3		33	52.4		47	39.5	
Non-local items							1	.1							
Angular debris										6		92	20		1

Table D.3 Flaked lithic debitage--Continued

	Pithouse 3 mainchamber roof fall 3			Pithouse 3 mainchamber cultural fill			Pithouse 3 mainchamber noncultural fill			Pithouse 3 total			Pithouse 5 mainchamber floor		
	N	%	Mean wt(g)	N	%	Mean wt(g)	N	%	Mean wt(g)	N	%	Mean wt(g)	N	%	Mean wt(g)
Flakes/flake frags:															
Grain size															
Medium	3	.7	5	7	3.6	15	4	.6	7	14	.9	10			
Fine	102	23.1	9	15	7.7	32	114	17.1	6	286	19.3	9	9	9.4	31
Very fine	247	56.0	5	117	60.3	7	400	60.1	4	849	57.2	5	66	68.8	5
Microscopic	89	20.2	2	55	28.4	6	148	22.2	4	334	22.5	4	21	21.9	9
Total flakes/ Flake frags	441	100.0	5	194	100.0	9	666	100.0	4	1483	100.0	5	96	100.0	8
Items with cortex	116	26.3		32	16.5		181	27.2		422	28.5		14	14.6	
Whole flakes	194	44.0		65	33.5		332	49.8		671	45.2		36	37.5	
Non-local items				1	.5		3	.5		4	.3				
Angular debris	37		10				31		7	94		12			

Table D.3 Flaked lithic debitage--Continued

	Pithouse 5 mainchamber roof fall 3			Pithouse 5 mainchamber noncultural fill			Pithouse 5 total			Pithouse 8 mainchamber roof fall 3			Pithouse 8 mainchamber cultural fill		
	N	%	Mean wt(g)	N	%	Mean wt(g)	N	%	Mean wt(g)	N	%	Mean wt(g)	N	%	Mean wt(g)
Flakes/flake frags:															
Grain size															
Medium	6	3.4	16	1	2.6	78	7	2.3	25	1	.9	5			
Fine	26	14.7	11	5	13.2	13	40	12.9	15	12	11.1	4	2	5.4	9
Very fine	91	51.4	5	22	57.9	8	179	57.6	6	59	54.6	6	17	45.9	3
Microscopic	54	30.5	7	10	26.3	7	85	27.3	7	36	33.3	4	18	48.6	2
Total flakes/ Flake frags	177	100.0	7	38	100.0	10	311	100.0	8	108	100.0	5	37	100.0	3
Items with cortex	53	29.9		16	42.1		83	26.7		20	18.5		4	10.8	
Whole flakes	77	43.5		23	60.5		136	43.7		42	38.9		15	40.5	
Non-local items															
Angular debris				4		4	4		4						

Table D.3 Flaked lithic debitage--Continued

	Pithouse 8 total			Nonstructure 1 floor			Nonstructure 1 total			Nonstructure 3 noncultural fill			Nonstructure 3 total		
	N	%	Mean wt(g)	N	%	Mean wt(g)	N	%	Mean wt(g)	N	%	Mean wt(g)	N	%	Mean wt(g)
Flakes/flake frags:															
Grain size															
Medium	1	.7	5							1	11.1	1	1	11.1	1
Fine	14	9.7	4	11	52.4	10	11	52.4	10						
Very fine	76	52.4	5	4	19.0	57	4	19.0	57	4	44.4	5	4	44.4	5
Microscopic	54	37.2	3	6	28.6	7	6	28.6	7	4	44.4	2	4	44.4	2
Total flakes/ Flake frags	145	100.0	5	21	100.0	18	21	100.0	18	9	100.0	3	9	100.0	3
Items with cortex	24	16.6		4	19.0		4	19.0		1	11.1		1	11.1	
Whole flakes	57	39.3		8	38.1		8	38.1		2	22.2		2	22.2	
Non-local items															
Angular debris															

Table D.3 Flaked lithic debitage--Continued

	Other excavated units			Total		
	N	%	Mean wt(g)	N	%	Mean wt(g)
Flakes/flake frags:						
Grain size						
Medium	174	2.5	6	247	2.1	7
Fine	454	6.5	8	984	8.6	9
Very fine	4,493	64.3	4	7,396	64.4	5
Microscopic	1,869	26.7	3	2,862	24.9	3
Total flakes/ Flake frags	6,990	100.0	4	11,489	100.0	5
Items with cortex	1,374	19.7		2,489	21.7	
Whole flakes	2,912	41.7		5,136	44.7	
Non-local items				5		
Angular debris				98		12

Table D.4 Nonflaked lithic tools, Area 3, Grass Mesa

	Modern ground surface			Room 1 cultural fill			Room 1 total		
	N	%	Mean wt (g)	N	%	Mean wt (g)	N	%	Mean wt (g)
Total tools:	96	100.0	2,265	4	100.0	482	4	100.0	482
Tool morpho use									
Indeterminate	6	6.3	579	3	75.0	520	3	75.0	520
Miscellaneous	15	15.6	426						
Hammerstone	10	10.4	639						
Mano fragment, nfs									
One-hand mano									
Two-hand mano	19	19.8	1,047	1	25.0	368	1	25.0	368
Metate fragment, nfs	7	7.3	2,564						
Trough metate	38	39.6	4,288						
Hafted item	1	1.0	414						
Ornament									
Blank type									
Indeterminate	1	1.0	275						
Rounded cobble									
Flattened cobble									
Slab; nfs, fragment									
Thick slab									
Thin slab									
Very thin slab	2	2.1	191						
Completely modified item									
Data not available	93	96.9	2,331	4	100.0	482	4	100.0	482
Item condition									
Indeterminant									
Broken									
Unidentifiable	10	10.4	1,860						
Identifiable	60	62.5	2,379	4	100.0	482	4	100.0	482
Complete/nearly complete	26	27.1	2,159						
Production evaluation									
Indeterminant	16	16.7	1,188	1	25.0	120	1	25.0	120
Natural (unmodified)	22	22.9	634	2	50.0	721	2	50.0	721
Minimally modified	17	17.7	4,678						
Well shaped	41	42.7	2,561	1	25.0	368	1	25.0	368
Stylized									

Table D.4 Nonflaked lithic tools, Area 3, Grass Mesa--Continued

	Room 2 floor			Room 2 mixed fill			Room 2 total		
	N	%	Mean wt (g)	N	%	Mean wt (g)	N	%	Mean wt (g)
Total tools:	1	100.0	911	11	100.0	1,282	12	100.0	1,251
Tool morpho use									
Indeterminate									
Miscellaneous				3	27.3	1,741	3	25.0	1,741
Hammerstone				2	18.2	560	2	16.7	560
Mano fragment, nfs									
One-hand mano									
Two-hand mano	1	100.0	911	6	54.5	1,292	7	58.3	1,238
Metate fragment, nfs									
Trough metate									
Hafted item									
Ornament									
Blank type									
Indeterminate									
Rounded cobble									
Flattened cobble									
Slab; nfs, fragment									
Thick slab									
Thin slab									
Very thin slab									
Completely modified item									
Data not available	1	100.0	911	11	100.0	1,282	12	100.0	1,251
Item condition									
Indeterminant									
Broken									
Unidentifiable									
Identifiable	1	100.0	911	4	36.4	1,737	5	41.7	1,572
Complete/nearly complete				7	63.6	1,021	7	58.3	1,021
Production evaluation									
Indeterminant									
Natural (unmodified)	1	100.0	911	3	27.3	766	4	33.3	802
Minimally modified				3	27.3	1,204	3	25.0	1,204
Well shaped				5	45.5	1,637	5	41.7	1,637
Stylized									

Table D.4 Nonflaked lithic tools, Area 3, Grass Mesa--Continued

	Room 7 floor			Room 7 roof fall			Room 7 total		
	N	%	Mean wt (g)	N	%	Mean wt (g)	N	%	Mean wt (g)
Total tools:	2	100.0	3,800	3	100.0	131	5	100.0	1,598
Tool morpho use									
Indeterminate	1	50.0	199				1	20.0	199
Miscellaneous				3	100.0	131	3	60.0	131
Hammerstone									
Mano fragment, nfs									
One-hand mano									
Two-hand mano									
Metate fragment, nfs									
Trough metate	1	50.0	7,400				1	20.0	7,400
Hafted item									
Ornament									
Blank type									
Indeterminate									
Rounded cobble									
Flattened cobble									
Slab; nfs, fragment									
Thick slab									
Thin slab									
Very thin slab									
Completely modified item									
Data not available	2	100.0	3,800	3	100.0	131	5	100.0	1,598
Item condition									
Indeterminant									
Broken									
Unidentifiable									
Identifiable	2	100.0	3,800				2	40.0	3,800
Complete/nearly complete				3	100.0	131	3	60.0	131
Production evaluation									
Indeterminant	1	50.0	199				1	20.0	199
Natural (unmodified)				3	100.0	131	3	60.0	131
Minimally modified									
Well shaped	1	50.0	7,400				1	20.0	7,400
Stylized									

Table D.4 Nonflaked lithic tools, Area 3, Grass Mesa--Continued

	Room 5 noncultural fill			Room 5 total			Room 6 floor		
	N	%	Mean wt (g)	N	%	Mean wt (g)	N	%	Mean wt (g)
Total tools:	1	100.0	333	1	100.0	333	6	100.0	1,126
Tool morpho use									
Indeterminate							1	16.7	563
Miscellaneous							1	16.7	661
Hammerstone							1	16.7	370
Mano fragment, nfs									
One-hand mano									
Two-hand mano	1	100.0	333	1	100.0	333	1	16.7	2,078
Metate fragment, nfs							1	16.7	1,550
Trough metate									
Hafted item							1	16.7	1,535
Ornament									
Blank type									
Indeterminate									
Rounded cobble									
Flattened cobble									
Slab; nfs, fragment									
Thick slab									
Thin slab									
Very thin slab							1	16.7	1,550
Completely modified item									
Data not available	1	100.0	333	1	100.0	333	5	83.3	1,041
Item condition									
Indeterminant									
Broken									
Unidentifiable							1	16.7	1,550
Identifiable	1	100.0	333	1	100.0	333	1	16.7	563
Complete/nearly complete							4	66.7	1,161
Production evaluation									
Indeterminant							1	16.7	1,550
Natural (unmodified)							3	50.0	531
Minimally modified							1	16.7	1,535
Well shaped	1	100.0	333	1	100.0	333	1	16.7	2,078
Stylized									

Table D.4 Nonflaked lithic tools, Area 3, Grass Mesa--Continued

	Room 6 roof fall			Room 6 total			Pithouse 1 mainchamber floor		
	N	%	Mean wt (g)	N	%	Mean wt (g)	N	%	Mean wt (g)
Total tools:	1	100.0	15	7	100.0	967	41	100.0	1,878
Tool morpho use									
Indeterminate				1	14.3	563	3	7.3	4,933
Miscellaneous	1	100.0	15	2	28.6	338	4	9.8	499
Hammerstone				1	14.3	370	11	26.8	458
Mano fragment, nfs									
One-hand mano							3	7.3	857
Two-hand mano				1	14.3	2,078	16	39.0	1,540
Metate fragment, nfs				1	14.3	1,550	1	2.4	1,244
Trough metate							1	2.4	24,925
Hafted item				1	14.3	1,535	2	4.9	892
Ornament									
Blank type									
Indeterminate									
Rounded cobble							1	2.4	30
Flattened cobble							3	7.3	1,389
Slab; nfs, fragment									
Thick slab									
Thin slab									
Very thin slab				1	14.3	1,550			
Completely modified item									
Data not available	1	100.0	15	6	85.7	870	37	90.2	1,968
Item condition									
Indeterminant									
Broken									
Unidentifiable				1	14.3	1,550	2	4.9	747
Identifiable				1	14.3	563	4	9.8	1,122
Complete/nearly complete	1	100.0	15	5	71.4	932	35	85.4	2,029
Production evaluation									
Indeterminant				1	14.3	1,550	2	4.9	1,007
Natural (unmodified)	1	100.0	15	4	57.1	402	19	46.3	1,184
Minimally modified				1	14.3	1,535	2	4.9	1,299
Well shaped				1	14.3	2,078	18	43.9	2,772
Stylized									

Table D.4 Nonflaked lithic tools, Area 3, Grass Mesa--Continued

	Pithouse 1 mainchamber roof fall			Pithouse 1 mainchamber cultural fill			Pithouse 1 mainchamber noncultural fill		
	N	%	Mean wt (g)	N	%	Mean wt (g)	N	%	Mean wt (g)
Total tools:	35	100.0	1,101	12	100.0	452	6	100.0	1,462
Tool morpho use									
Indeterminate	2	5.7	2,243	2	16.7	106	1	16.7	20
Miscellaneous	6	17.1	312	2	16.7	411	2	33.3	674
Hammerstone	11	31.4	657	2	16.7	407			
Mano fragment, nfs				1	8.3	172			
One-hand mano	1	2.9	953						
Two-hand mano	8	22.9	1,369	4	33.3	679	1	16.7	520
Metate fragment, nfs									
Trough metate	7	20.0	1,864				2	33.3	3,442
Hafted item				1	8.3	690			
Ornament									
Blank type									
Indeterminate							1	16.7	20
Rounded cobble	1	2.9	500	1	8.3	250			
Flattened cobble				1	8.3	700			
Slab; nfs, fragment									
Thick slab									
Thin slab									
Very thin slab									
Completely modified item									
Data not available	34	97.1	1,119	10	83.3	447	5	83.3	1,750
Item condition									
Indeterminant									
Broken									
Unidentifiable				1	8.3	700	1	16.7	20
Identifiable	19	54.3	1,166	6	50.0	276	5	83.3	1,750
Complete/nearly complete	16	45.7	1,024	5	41.7	614			
Production evaluation									
Indeterminant	1	2.9	3,625						
Natural (unmodified)	19	54.3	574	9	75.0	346	2	33.3	111
Minimally modified	1	2.9	603				1	16.7	353
Well shaped	14	40.0	1,671	3	25.0	769	3	50.0	2,732
Stylized									

Table D.4 Nonflaked lithic tools, Area 3, Grass Mesa--Continued

	Pithouse 1 total			Pithouse 3 mainchamber floor 1			Pithouse 3 mainchamber floor 2		
	N	%	Mean wt (g)	N	%	Mean wt (g)	N	%	Mean wt (g)
Total tools:	94	100.0	1,380	28	100.0	2,988	4	100.0	2,455
Tool morpho use									
Indeterminate	8	8.5	2,440	4	14.3	2,216			
Miscellaneous	14	14.9	431	5	17.9	188	2	50.0	1,592
Hammerstone	24	25.5	545	2	7.1	627			
Mano fragment, nfs	1	1.1	172	2	7.1	1,018			
One-hand mano	4	4.3	881						
Two-hand mano	29	30.9	1,339	4	14.3	1,336	1	25.0	1,235
Metate fragment, nfs	1	1.1	1,244						
Trough metate	10	10.6	4,486	8	28.6	8,044	1	25.0	5,400
Hafted item	3	3.2	825	1	3.6	884			
Ornament				2	7.1	1			
Blank type									
Indeterminate	1	1.1	20						
Rounded cobble	3	3.2	260	3	10.7	262			
Flattened cobble	4	4.3	1,217	14	50.0	2,329	3	75.0	2,273
Slab; nfs, fragment									
Thick slab				1	3.6	32,800			
Thin slab				4	14.3	3,188			
Very thin slab							1	25.0	3,000
Completely modified item				2	7.1	1			
Data not available	86	91.5	1,443	4	14.3	1,181			
Item condition									
Indeterminant									
Broken									
Unidentifiable	4	4.3	554	2	7.1	1,022	1	25.0	3,000
Identifiable	34	36.2	1,090	8	28.6	4,057	1	25.0	5,400
Complete/nearly complete	56	59.6	1,616	18	64.3	2,732	2	50.0	709
Production evaluation									
Indeterminant	3	3.2	1,879	5	17.9	4,156	1	25.0	5,400
Natural (unmodified)	49	52.1	750	12	42.9	1,126	1	25.0	183
Minimally modified	4	4.3	889	6	21.4	7,456	1	25.0	1,235
Well shaped	38	40.4	2,205	3	10.7	1,547	1	25.0	3,000
Stylized				2	7.1	1			

Table D.4 Nonflaked lithic tools, Area 3, Grass Mesa--Continued

	Pithouse 3 mainchamber roof fall			Pithouse 3 mainchamber cultural fill			Pithouse 3 mainchamber noncultural fill		
	N	%	Mean wt (g)	N	%	Mean wt (g)	N	%	Mean wt (g)
Total tools:	6	100.0	608	5	100.0	849	23	100.0	2,682
Tool morphouse									
Indeterminate	2	33.3	148				4	17.4	857
Miscellaneous	2	33.3	232	1	20.0	231	5	21.7	377
Hammerstone				1	20.0	250	2	8.7	629
Mano fragment, nfs							2	8.7	167
One-hand mano									
Two-hand mano	1	16.7	2,450	3	60.0	1,255	5	21.7	1,408
Metate fragment, nfs									
Trough metate	1	16.7	440				4	17.4	11,937
Hafted item									
Ornament							1	4.3	1
Blank type									
Indeterminate							2	8.7	122
Rounded cobble	1	16.7	217				1	4.3	481
Flattened cobble	3	50.0	996				11	47.8	5,009
Slab; nfs, fragment							1	4.3	415
Thick slab									
Thin slab							1	4.3	989
Very thin slab							3	13.0	897
Completely modified item							2	8.7	288
Data not available	2	33.3	222	5	100.0	849	2	8.7	601
Item condition									
Indeterminant									
Broken									
Unidentifiable	1	16.7	217				7	30.4	636
Identifiable	1	16.7	440	1	20.0	437	4	17.4	12,982
Complete/nearly complete	4	66.7	748	4	80.0	952	12	52.2	3,776
Production evaluation									
Indeterminant	1	16.7	440				6	26.1	2,264
Natural (unmodified)	4	66.7	190	2	40.0	241	8	34.8	496
Minimally modified							3	13.0	2,982
Well shaped	1	16.7	2,450	3	60.0	1,255	5	21.7	1,038
Stylized							1	4.3	1

Table D.4 Nonflaked lithic tools, Area 3, Grass Mesa--Continued

	Pithouse 3 total			Pithouse 5 mainchamber floor			Pithouse 5 mainchamber roof fall 1		
	N	%	Mean wt (g)	N	%	Mean wt (g)	N	%	Mean wt (g)
Total tools:	66	100.0	2,471	35	100.0	4,299	30	100.0	2,827
Tool morphouse									
Indeterminate	10	15.2	1,259	1	2.9	324			
Miscellaneous	15	22.7	447	10	28.6	306	7	23.3	2,751
Hammerstone	5	7.6	552	4	11.4	568	4	13.3	322
Mano fragment, nfs	4	6.1	592	1	2.9	248			
One-hand mano							1	3.3	982
Two-hand mano	14	21.2	1,417	12	34.3	1,720	9	30.0	1,196
Metate fragment, nfs							6	20.0	1,823
Trough metate	14	21.2	8,424	4	11.4	30,500	3	10.0	13,867
Hafted item	1	1.5	884	2	5.7	953			
Ornament	3	4.5	1	1	2.9	1			
Blank type									
Indeterminate	2	3.0	122				1	3.3	250
Rounded cobble	5	7.6	297						
Flattened cobble	31	47.0	3,146	7	20.0	1,052			
Slab; nfs, fragment	1	1.5	415						
Thick slab	1	1.5	32,800						
Thin slab	5	7.6	2,748	1	2.9	33,900			
Very thin slab	4	6.1	1,423						
Completely modified item	4	6.1	145						
Data not available	13	19.7	816	27	77.1	4,414	29	96.7	2,916
Item condition									
Indeterminant									
Broken									
Unidentifiable	11	16.7	883				1	3.3	250
Identifiable	15	22.7	3,378	7	20.0	774	17	56.7	2,859
Complete/nearly complete	40	60.6	2,567	28	80.0	5,180	12	40.0	2,998
Production evaluation									
Indeterminant	13	19.7	3,093	1	2.9	324	4	13.3	1,311
Natural (unmodified)	27	40.9	700	20	57.1	2,222	18	60.0	3,267
Minimally modified	10	15.2	8,492	10	28.6	7,656	4	13.3	1,225
Well shaped	13	19.7	1,465	3	8.6	9,708	4	13.3	3,970
Stylized	3	4.5	1	1	2.9	1			

Table D.4 Nonflaked lithic tools, Area 3, Grass Mesa--Continued

	Pithouse 5 mainchamber noncultural fill			Pithouse 5 total			Pithouse 8 mainchamber floor 1		
	N	%	Mean wt (g)	N	%	Mean wt (g)	N	%	Mean wt (g)
Total tools:	2	100.0	405	67	100.0	3,524	1	100.0	73
Tool morpho use									
Indeterminate				1	1.5	324			
Miscellaneous				17	25.4	1,312	1	100.0	73
Hammerstone				8	11.9	445			
Mano fragment, nfs				1	1.5	248			
One-hand mano				1	1.5	982			
Two-hand mano	1	50.0	798	22	32.8	1,464			
Metate fragment, nfs				6	9.0	1,823			
Trough metate				7	10.4	23,371			
Hafted item				2	3.0	953			
Ornament	1	50.0	12	2	3.0	7			
Blank type									
Indeterminate				1	1.5	250			
Rounded cobble									
Flattened cobble	1	50.0	798	8	11.9	1,020			
Slab; nfs, fragment									
Thick slab									
Thin slab				1	1.5	23,900			
Very thin slab									
Completely modified item									
Data not available	1	50.0	12	57	85.1	3,575	1	100.0	73
Item condition									
Indeterminant									
Broken									
Unidentifiable				1	1.5	250			
Identifiable				24	35.8	2,251			
Complete/nearly complete	2	100.0	405	42	62.7	4,329	1	100.0	73
Production evaluation									
Indeterminant				5	7.5	1,113			
Natural (unmodified)				38	56.7	2,717	1	100.0	73
Minimally modified	1	50.0	798	15	22.4	5,484			
Well shaped	1	50.0	12	8	11.9	5,627			
Stylized				1	1.5	1			

Table D.4 Nonflaked lithic tools, Area 3, Grass Mesa--Continued

	Pithouse 8 mainchamber roof fall			Pithouse 8 mainchamber cultural fill			Pithouse 8 total		
	N	%	Mean wt (g)	N	%	Mean wt (g)	N	%	Mean wt (g)
Total tools:	1	100.0	23	1	100.0	750	3	100.0	282
Tool morpho use									
Indeterminate									
Miscellaneous	1	100.0	23	1	100.0	750	3	100.0	282
Hammerstone									
Mano fragment, nfs									
One-hand mano									
Two-hand mano									
Metate fragment, nfs									
Trough metate									
Hafted item									
Ornament									
Blank type									
Indeterminate									
Rounded cobble									
Flattened cobble				1	100.0	750	1	33.3	750
Slab; nfs, fragment									
Thick slab									
Thin slab									
Very thin slab									
Completely modified item									
Data not available	1	100.0	23				2	66.7	48
Item condition									
Indeterminant									
Broken									
Unidentifiable									
Identifiable				1	100.0	750	1	33.3	750
Complete/nearly complete	1	100.0	23				2	66.7	48
Production evaluation									
Indeterminant									
Natural (unmodified)	1	100.0	23	1	100.0	750	3	100.0	282
Minimally modified									
Well shaped									
Stylized									

Table D.4 Nonflaked lithic tools, Area 3, Grass Mesa--Continued

	Nonstructure 1 floor			Nonstructure 1 total			Other excavated units		
	N	%	Mean wt (g)	N	%	Mean wt (g)	N	%	Mean wt (g)
Total tools:	5	100.0	427	5	100.0	427	123	100.0	2,361
Tool morpho use									
Indeterminate	1	20.0	222	1	20.0	222	13	10.6	1,823
Miscellaneous	1	20.0	863	1	20.0	863	28	22.8	900
Hammerstone	1	20.0	329	1	20.0	329	19	15.4	446
Mano fragment, nfs									
One-hand mano							5	4.1	658
Two-hand mano							28	22.8	1,073
Metate fragment, nfs							5	4.1	8,067
Trough metate	2	40.0	361	2	40.0	361	22	17.9	7,187
Hafted item							2	1.6	647
Ornament							1	.8	1
Blank type									
Indeterminate							2	1.6	550
Rounded cobble							1	.8	500
Flattened cobble							1	.8	250
Slab; nfs, fragment									
Thick slab									
Thin slab									
Very thin slab							1	.8	3,200
Completely modified item									
Data not available	5	100.0	427	5	100.0	427	118	95.9	2,419
Item condition									
Indeterminant							1	.8	500
Broken									
Unidentifiable	1	20.0	222	1	20.0	222	7	5.7	794
Identifiable	2	40.0	361	2	40.0	361	55	44.7	3,229
Complete/nearly complete	2	40.0	596	2	40.0	596	60	48.8	1,780
Production evaluation									
Indeterminant	2	40.0	234	2	40.0	234	10	8.1	545
Natural (unmodified)	2	40.0	596	2	40.0	596	52	42.3	494
Minimally modified							13	10.6	6,120
Well shaped	1	20.0	477	1	20.0	477	48	39.0	3,745
Stylized									

Table D.4 Nonflaked lithic tools, Area 3, Grass Mesa--Continued

	Total		
	N	%	Mean wt (g)
Total tools:	483	100.0	2,219
Tool morpho use			
Indeterminate	44	9.1	1,412
Miscellaneous	101	20.9	739
Hammerstone	70	14.5	515
Mano fragment, nfs	6	1.2	465
One-hand mano	10	2.1	780
Two-hand mano	122	25.3	1,248
Metate fragment, nfs	20	4.1	3,601
Trough metate	94	19.5	6,974
Hafted item	10	2.1	851
Ornament	6	1.2	3
Blank type			
Indeterminate	7	1.4	270
Rounded cobble	9	1.9	307
Flattened cobble	45	9.3	2,479
Slab; nfs, fragment	1	.2	415
Thick slab	1	.2	32,800
Thin slab	6	1.2	6,273
Very thin slab	8	1.7	1,353
Completely modified item	4	.8	145
Data not available	402	83.2	2,173
Item condition			
Indeterminant	1	.2	500
Broken			
Unidentifiable	35	7.2	1,089
Identifiable	204	42.2	2,362
Complete/nearly complete	243	50.3	2,269
Production evaluation			
Indeterminant	52	10.8	1,504
Natural (unmodified)	206	42.7	1,006
Minimally modified	63	13.0	5,317
Well shaped	158	32.7	2,857
Stylized	4	.8	1

Table D.5 Worked nonhuman bone, Area 3, Grass Mesa Village

	Room 1		Room 2		Room 5		Room 6		Room 11		Pithse 1	
	N	%	N	%	N	%	N	%	N	%	N	%
Total tools:	1	100.0	3	100.0	1	100.0	2	100.0	1	100.0	13	100.0
Taxon												
Aves					1	100.0						
Mammalia, small											1	7.7
Mammalia, medium											2	15.4
Mammalia, large	1	100.0	1	33.3			2	100.0	1	100.0	7	53.8
Artiodatyla			2	66.7							1	7.7
Lagamorpha											1	7.7
Rodentia											1	7.7
Carnivora												
Tool morpho-use												
Indeterminate	1	100.0					2	100.0	1	100.0	10	76.9
Awl			2	66.7								
Piercing tool												
Spatula											2	15.4
Flaker												
Tubes					1	100.0						
Ornament			1	33.3							1	7.7
Blank type												
Indeterminate	1	100.0	2	66.7			2	100.0	1	100.0	7	53.8
Broken bone											6	46.2
Split bone			1	33.3								
Cut bone					1	100.0						
Production evaluation												
Indeterminate											1	7.7
Some evidence	1	100.0	1	33.3			2	100.0	1	100.0	9	69.2
Not shaped												
Minimally shaped					1						2	15.4
Moderately shaped			2	66.7							1	7.7
Well shaped												
Completely shaped												
Item condition												
Indeterminate			1	33.3							1	7.7
Fragmentary											2	15.4
Incomplete												
Broken												
Proximal present												
Medial present							2	100.0	1	100.0	6	46.2
Distal present	1	100.0									1	7.7
Proximal & medial present											1	7.7
Distal & medial present												
Complete/nearly complete			2	66.7	1	100.0					2	15.4

NOTE: Pithse - Pithouse.

Table D.5 Worked nonhuman bone, Area 3, Grass Mesa Village--Continued

	Pithse 3		Pithse 5		Pithse 8		Other		Site total	
	N	%	N	%	N	%	N	%	N	%
Total tools:	16	100.0	3	100.0	5	100.0	37	100.0	82	100.0
Taxon										
Aves	1	6.3							2	2.4
Mammalia, small							1	2.7	2	2.4
Mammalia, medium	2	12.5	1	33.3			1	2.7	6	7.3
Mammalia, large	9	56.3	2	66.7	3	60.0	23	62.2	49	59.8
Artiodatyla	3	18.8			2	40.0	10	27.0	18	22.0
Lagamorpha	1	6.3							2	2.4
Rodentia									1	1.2
Carnivora							2	5.4	2	2.4
Tool morpho-use										
Indeterminate	7	43.8	2	66.7	3	60.0	27	73.0	53	64.6
Awl	5	31.3			1	20.0	10	27.0	18	22.0
Piercing tool			1	33.3					1	1.2
Spatula	1	6.3							3	3.7
Flaker					1	20.0			1	1.2
Tubes	2	12.5							3	3.7
Ornament	1	6.3							3	3.7
Blank type										
Indeterminate	14	87.5	3	100.0	3	60.0	25	67.6	58	70.7
Broken bone	1	6.3			1	20.0	9	24.3	17	20.7
Split bone					1	20.0	2	5.4	4	4.9
Cut bone	1	6.3					1	2.7	3	3.7
Production evaluation										
Indeterminate	1	6.3					1	2.7	3	3.7
Some evidence	9	56.3	2	66.7	3	60.0	31	83.8	59	72.0
Not shaped	1	6.3							1	1.2
Minimally shaped	1	6.3			1	20.0	2	5.4	7	8.5
Moderately shaped	2	12.5					3	8.1	8	9.8
Well shaped	2	12.5			1	20.0			3	3.7
Completely shaped			1	33.3					1	1.2
Item condition										
Indeterminate							1	2.7	3	3.7
Fragmentary	2	12.5					2	5.4	6	7.3
Incomplete	1	6.3								
Broken										
Proximal present	2	12.5					3	8.1	5	6.1
Medial present	3	18.8	2	66.7			14	37.8	28	34.1
Distal present	2	12.5			2	40.0	8	21.6	14	17.1
Proximal & medial present							4	10.8	5	6.1
Distal & medial present	1	6.3			2	40.0	1	2.7	4	4.9
Complete/nearly complete	5	31.3	1	33.3	1	20.0	4	10.8	16	19.5

APPENDIX E

WORKED VEGETAL REMAINS FROM AREA 3, GRASS MESA VILLAGE

by

Linda P. Hart

Three items of worked vegetal material were recovered from Area 3 at Grass Mesa Village. The assemblage consists of four fragments of knotless netting (RV 11) from grid square 286S/396E, one piece of cordage (RV 24) found in bulk soil sample 17 from Level 11 in Pithouse 1, and four fragments of split yucca leaf (RV 30) from Feature 238 (a wall niche) in Pithouse 3.

The knotless netting is tightly constructed, creating a series of parallel rows that resemble a common knit stitch (fig. E.1). It was assembled using two-ply yucca fiber cordage with an S-spin and Z-twist. Kent (1983) describes this technique as looping. The fabric is produced by securing a row of loops to a stick or cord, then adding more rows by "...drawing the free end of the element through one of these loops and crossing it over itself as it moves on to form the next loop" (Kent 1983:47). Since no features diagnostic of function have survived, all that can be assumed is that the item was of a flexible nature, possibly a bag, sock, or legging. Kent suggests that these were the principal items for which looping was used in the Southwest (1983:48).

The cordage of Pitstructure 1 is disarticulated. Only single-ply fragments remain of what is suspected to have been two-ply cord. The diameter of the ply is approximately 2.0 mm. It has an S-spin, and the angle of the kinks present in these small pieces is evidence for a Z-twist.

The yucca leaf strips from Pithouse 3 have been classified as "basketry construction material." They appear to be disarticualted fragments from a woven item. Although the technology employed cannot be positively identified, plaiting is suspected. The mean width of the four strips is 2.75 mm.

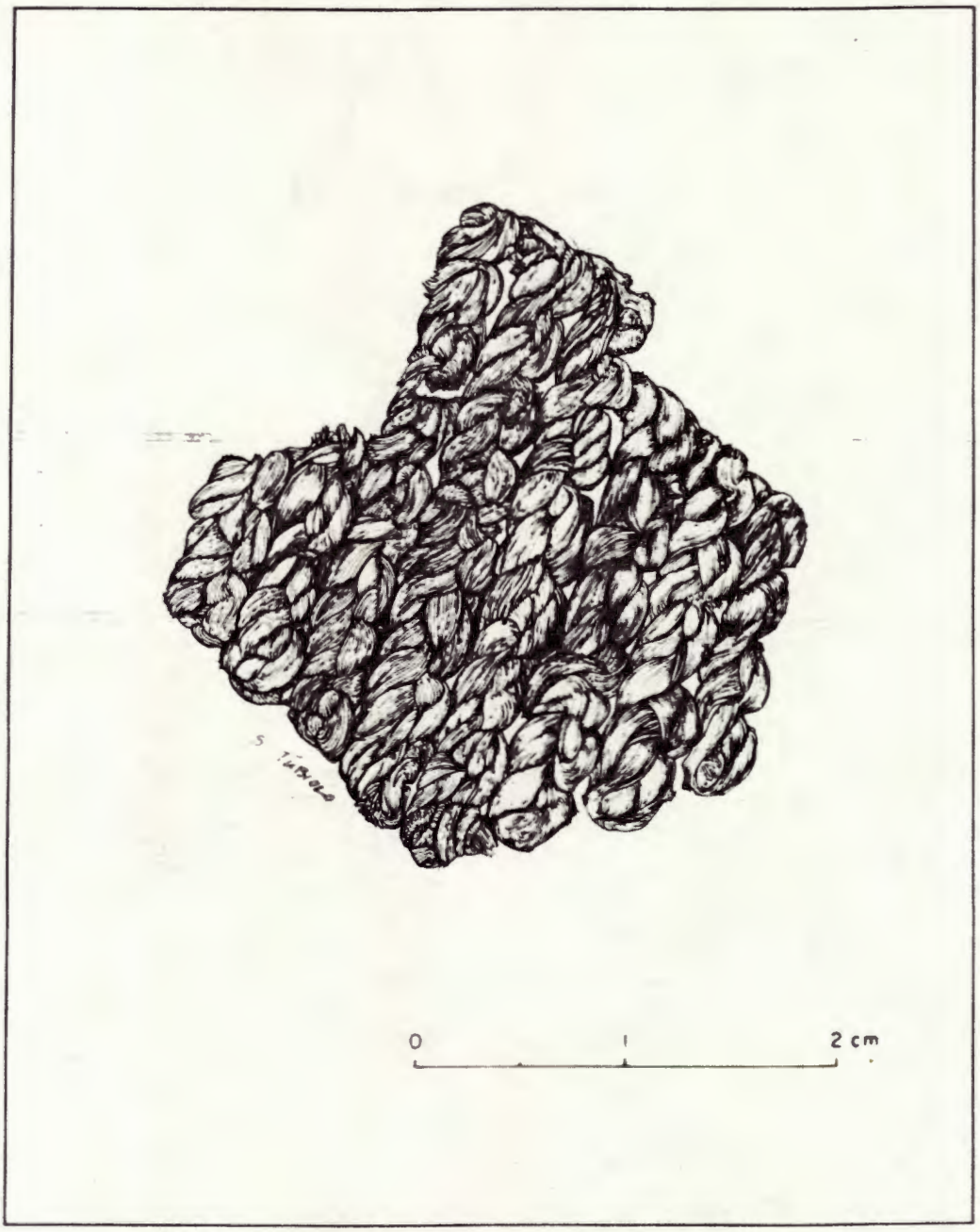

Figure E.1 Knotless netting from grid square 286S/396E, Grass Mesa Village.

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