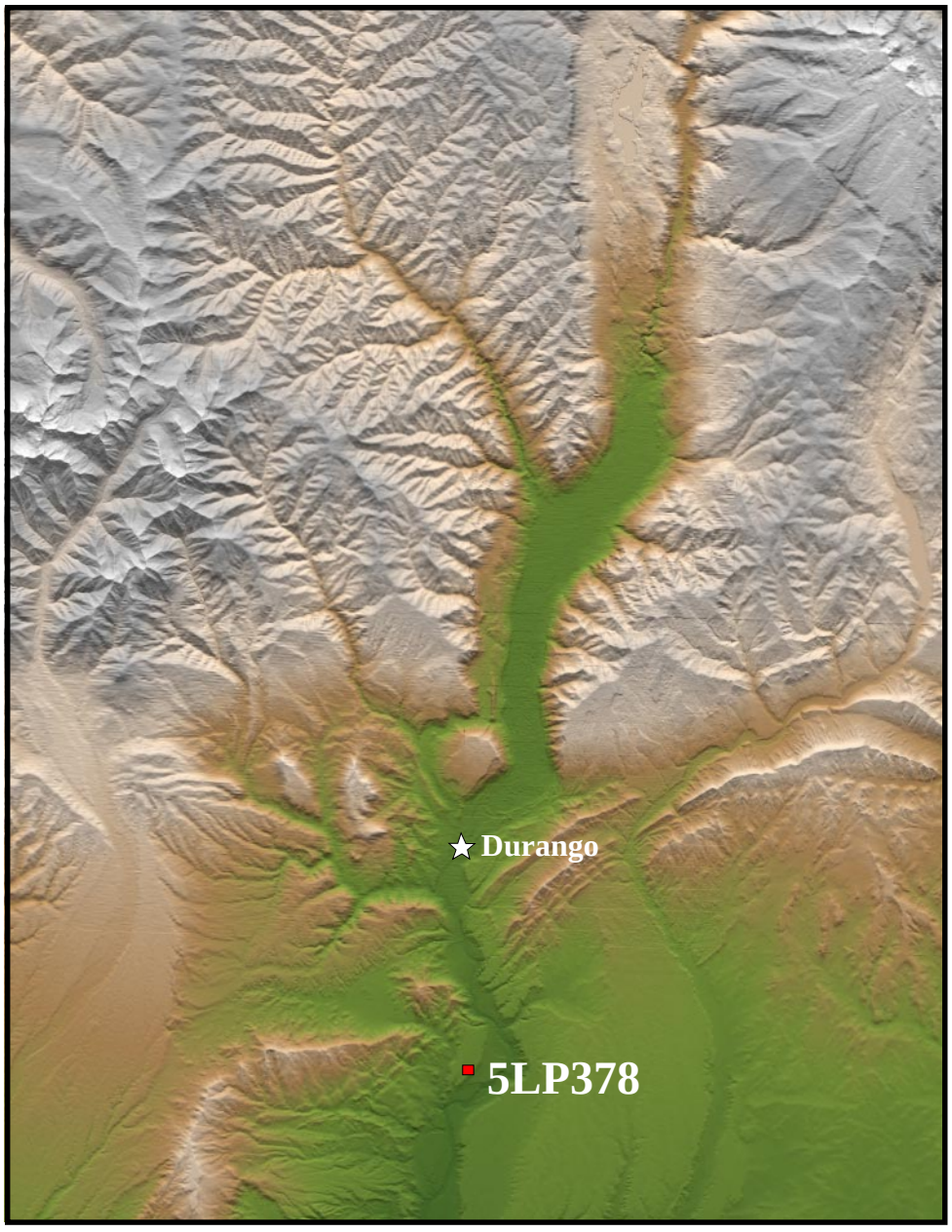
Data Recovery at 5LP378

An Ancestral Pueblo in
La Plata County, Colorado



Woods Canyon Archaeological Consultants, Inc.

Data Recovery at 5LP378
An ancestral Pueblo in
La Plata County, Colorado

Prepared for
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December 2000

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INTRODUCTION

This report presents the results of a data recovery project conducted at site 5LP378 in association with Northwest Pipeline Corporation's Durango Replacement Project. The replacement project and the site are located 5 miles south of the town of Durango in La Plata County, Colorado (see Figure 1).

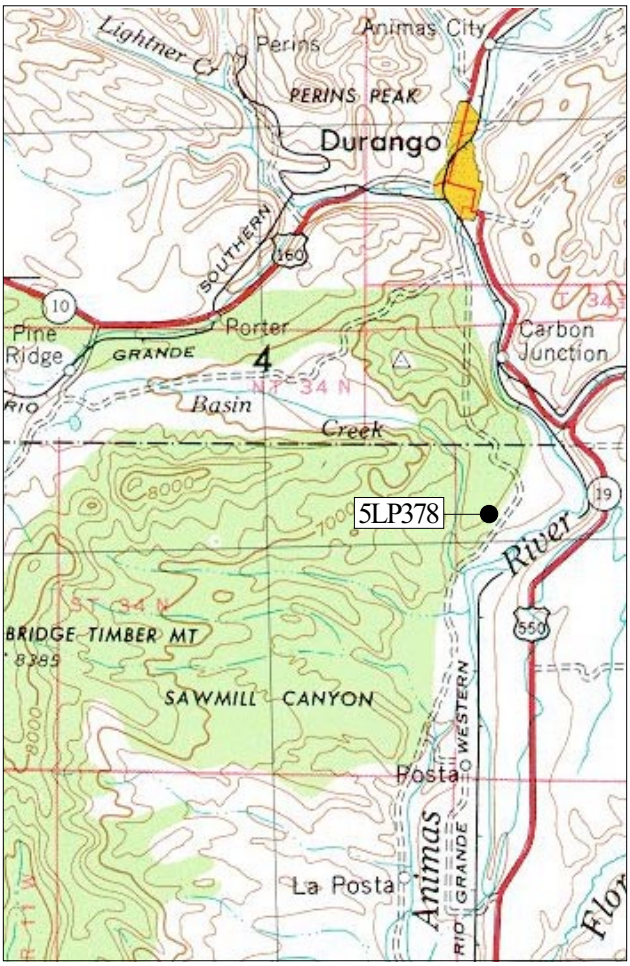

Figure 1. Map illustrating location of project area in relation to local political boundaries (After USGS Durango 1:250,000 map).

In association with the Durango Replacement Project, Northwest Pipeline Corporation applied for a Certificate of Convenience and Necessity from the Federal Energy Regulatory Commission (FERC). As a result of FERC's involvement, the Durango Replacement Project in Colorado is required by law to comply with a number of federal cultural resource protection statutes. These are the Archaeological and Historic Preservation Act of 1974 as amended, the National Historic Preservation Act, the National Environmental Protection Act, the Archaeological Resources Protection Act and the American Indian Religious Freedom Act.

At the request of Northwest Pipeline Corporation, Woods Canyon Archaeological Consultants, Inc. undertook cultural resource work in order to help the Durango Replacement Project achieve compliance with these cultural resource protection laws. To do this, Woods Canyon conducted a cultural resource survey of the proposed Replacement Project (Fetterman and Honeycutt 1996). This survey identified two archaeological sites, 5LP378 and 5LP203. Both of these sites are the remains of Anasazi Pueblo I habitations.

Both of these sites were recommended by Woods Canyon as eligible to the National Register of Historic Places under 36CFR800 criterion d, and the Colorado State Historic Preservation Office concurred with this recommendation in a letter of April 10, 1996 (Hartmann 1996).

The project avoided site 5LP203 but was to affect site 5LP378. In order to mitigate damages to the site, a data recovery plan was proposed (Fetterman and Honeycutt 1996) and was accepted by the Colorado State Historic Preservation Office. The purpose of the plan was to retrieve significant data from the site that otherwise would be lost due to construction, and therefore allow the project to have no adverse effect on this significant resource. The data recovery plan for this site is in accordance with the Advisory Council on Historic Preservation's Treatment of Archaeological Properties, A Handbook and the Secretary of the Department of Interior's Standards and Guidelines.

Colorado State Historic Society Archaeological Permit # 96-59 was issued to Woods Canyon Archaeological Consultants, Inc. on October 3, 1996 for archaeological excavation of site 5LP378. Excavation was started on October 31, 1996 under the direction of Jerry Fetterman and continued for 13 straight days until completion on November 12, 1996. The excavation crew was composed of Jerry Fetterman, Kelly McAndrews, David A. Breternitz, Gary Duncan, Jason Petit, and Mike Coffey. Visitors to the site include Paul Friedman of FERC, Linda Cherrington, John Miller, and Ted Stahl of Northwest Pipeline Corporation, and numerous local residents.

EFFECTIVE ENVIRONMENT

Topography and Geology

The project area is located on Blue Mesa, a 400-foot (120 meter) high gravel terrace on the northwest side of the Animas River (see Figure 2). This terrace was formed by the down-cutting of the Animas River into Pleistocene gravel deposits. Blue Mesa is overlain by a relatively thin covering of reddish-brown loess which was deposited during the Holocene Era. Elevation of the project area is 6,620 feet (2,017 meters). At its nearest point, the Animas River is 1,640 feet (500 meters) to the southeast.

Figure 2. Photograph illustrating location of site on Blue Mesa, looking south down the Animas River valley.

Vegetation and Fauna

Vegetation is composed primarily of open pinyon and juniper forest with a sagebrush and mixed grass understory. Other understory plants include rabbitbrush, prickly pear cactus, snakeweed, and introduced weeds such as Russian thistle. Cottonwood and willow trees are present in the distance along the river. Wildlife in the area include mule deer, coyote, cottontail and jack rabbit.

Climate

The climate in the project area can be characterized as a cold, middle-latitude semi-arid desert, typical of the steppe zones of the world (Trewartha 1954). In general, the summers are hot and the winters are cold. The temperature high extreme is about 100 degrees Fahrenheit, and the low is -31 degrees Fahrenheit. In the Durango area, the average length of the growing season ranges between 99 and 121 days. The actual length experienced at any one location will be highly dependent on local topography. Precipitation ranges between 13-15 inches a year, with this moisture coming from summer thunderstorms and winter snowstorms. Generally May and June are the driest months, and July through September are the wettest.

Historic and Contemporary Setting

The general project vicinity was utilized historically, and is utilized today, for oil and gas development, farming and ranching. Increasingly, it is also used for residential purposes by people who work in Durango.

The site itself is located in Animas Air Park, an industrial development centered around the Animas Airport. Since the early 1980's, this portion of Blue Mesa has been increasingly developed through the construction of gravel roads, buried utility lines, business outlets, houses and mobile homes.

Site 5LP378 consists of the remains of a Pueblo I habitation which once contained three surface roomblocks and at least two pithouses. As can be seen from Figure 3, over the past 40 years, the site has been affected by the construction of pipelines, powerlines and telephone lines, a graveled road, ground leveling activities, parking lots, and archaeological excavations. The portions of the site still extent are a pithouse located under the road and possibly a concentration of burned adobe under the parking lot.

EXISTING DATA & LITERATURE REVIEW

Cultural Overview

The culture history of southwestern Colorado starts as early as the Paleo-Indian period and continues throughout the Historic period. This culture history has been extensively reviewed and summarized in the Colorado Historical Society's *Southwest Colorado Prehistoric Context, Archaeological Background and Research Directions* (Eddy et al. 1984) and *Colorado Plateau County Historic Context* (Husband 1984). For a broad cultural overview, readers are encouraged to refer to these documents. The following several paragraphs present a brief summary of the cultural history of the project area.

The Animas River Valley was probably first occupied during the late Paleo-Indian or early Archaic period by groups of hunters and gatherers. Occupation of the area apparently continued, on a very limited and sporadic basis, through the middle and late Archaic periods. The Archaic people are believed to have hunted wild animals and gathered wild plant foods. The timing and location of this resource procurement is thought to have been related to seasonal availability and to the social and possibly personal preferences of the people doing the procurement.

By the late Archaic or Basketmaker II period, people were building shallow pithouses for use as homes. These were constructed in open settings and in caves. During this time the people also incorporated the cultivation of maize and the use of the bow and arrow into their lifestyle. The best-known examples of Basketmaker II sites in the Durango area are those excavated by Earl Morris at Falls Creek and Talus Slope Village (Morris and Burgh 1954).

As a result of this and other innovations, the Archaic hunting and gathering lifestyle was transformed into a sedentary agricultural lifestyle, as exemplified by the Anasazi Basketmaker III-Pueblo I culture. During this period (A.D. 700-800) a tremendous increase occurred in the human population of the Animas Valley. While some of this increase is probably a result of *in situ* population growth, much of it is believed to be the result of immigration of people into the area, perhaps from the south. Typically, these people lived in small to medium-sized groups and built single and multiple residence houses on the upper benches of the Animas River.

By A.D. 830, the upper Animas Valley was virtually abandoned by the Anasazi in favor of locations to the south and west. During the subsequent Pueblo II and Pueblo III periods the area was almost uninhabited, being used primarily for resource gathering. It was not until the arrival of the Ute Indians into the area that the upper Animas River Valley was again occupied by relatively large numbers of people.

By conservative estimates, the Utes arrived in southwestern Colorado sometime after A.D. 1500. (The exact date of their arrival is in dispute among archaeologists. It is possible that the Utes arrived in the area as early as the 1200's, but no direct archaeological evidence of this has been recovered.) By the late 1600's they occupied most of the state of Colorado and roamed at will on foot and horseback from the mountains to the deserts. They lived primarily by hunting large game and gathering wild plant foods. They did, however, grow some corn and squash, and traded (and raided) widely with other tribes. Their way of life was brought to a bitter end during the 1870-80's, when the encroaching Euro-Americans, and their army, entered Colorado in large numbers, and the Utes were forced onto reservations.

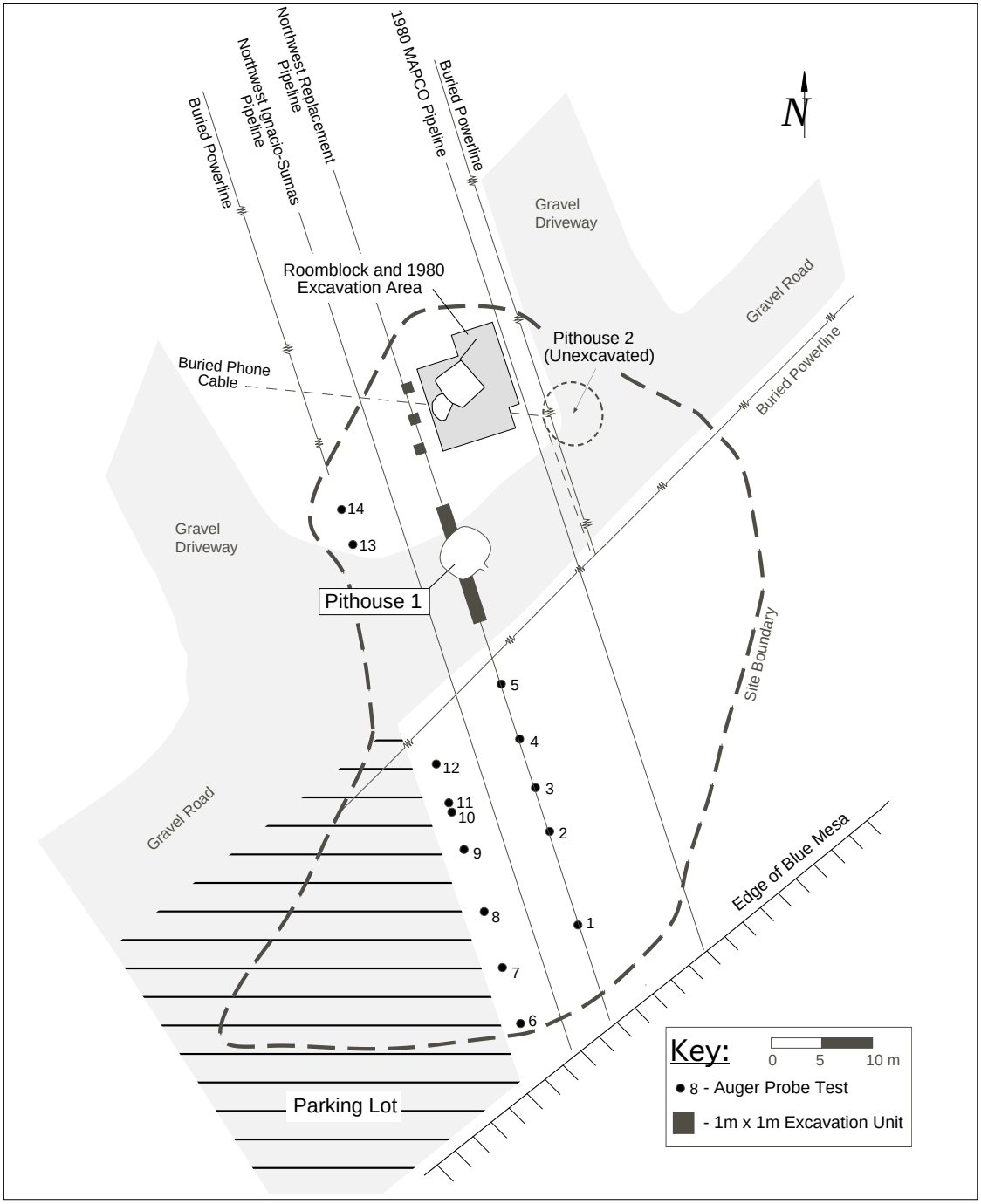

Figure 3. Overview of 5LP378 showing modern disturbances.

Cultural Setting Of Site 5LP379

Site 5LP378 is an Anasazi Pueblo I habitation situated on the southern end of Blue Mesa overlooking the Animas River Valley. During the A.D. 790's when 5LP378 was occupied, Blue Mesa was the locus of a large and vigorous Anasazi community. In fact, the site density on Blue Mesa "is unique for the Durango area; actually the density may well exceed the density of any set of roughly contemporaneous sites elsewhere in southwest Colorado" (Fuller 1988b:20).

Architecture

During this period, people lived in substantial subterranean pithouses and utilized surface structures for both domestic activities and the storage of surplus crops. In the Durango area, surface structures were made of posts and adobe with wall bases protected by upright cobbles. Pithouses were relatively deep and contained ventilator shafts and four post roof-support systems.

Site Structure and Settlement

The sites ranged from small single household habitations composed of several surface rooms and a single pithouse to multi-household villages with roomblocks containing 20 rooms and several pithouses. As shown in Figure 4, on Blue Mesa a community of at least 58 probable habitation units is located within an area of 366 acres.

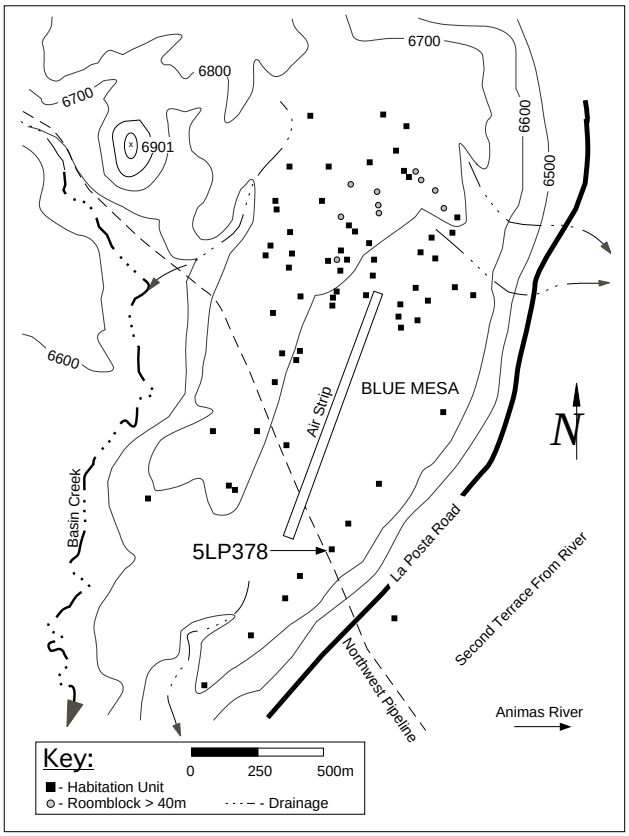

Figure 4. Archaeological Sites on Blue Mesa (after Hibbets 1975 and Fuller 1988b).

Material Culture

The material cultural of the Pueblo I people included pottery, trough-type metates, two-hand manos, and the bow and arrow. The pottery consisted primarily of plain and neckbanded grayware ceramic bowls and jars (Chapin and Moccasin Gray) and painted whiteware bowls (Piedra Black-on-white). In addition the people made numerous tools and articles of clothing from a variety of plant fibers and animal remains, including bone awls and needles, turkey feather and rabbit skin blankets, nets, snares, sandals and mats.

Subsistence

The Pueblo I people relied heavily on agricultural crops, especially corn, for subsistence. They did, however, supplement their diet with hunted and gathered plant and animal foods.

Environmental data from southwestern Colorado indicate that the climate during the period A.D. 750-800 provided a window of opportunity for dry land agriculture in the Durango area (Fuller 1988a:394). This period had relatively warm temperatures, adequate winter moisture, and long growing seasons which allowed for the maturation of corn crops. The shift to summer dominant moisture and relatively dry conditions in the A.D. 800's may have made the area less favorable for dryland farming.

Chronology

The vast majority of Pueblo I sites located and excavated in the Durango area date to the period A.D. 750-800. The latest known Pueblo I site in the Durango area is located on Blue Mesa approximately 1/4 mile to the northwest of 5LP378. The presence of very large Pueblo I sites on Blue Mesa (a post-800's phenomena elsewhere in southwestern Colorado) might indicate that more of the Pueblo I sites on Blue Mesa date after A.D. 800 (Fuller 1988:23).

Previous Archaeological Work

The general project area has been the focus of considerable archaeological work. The archaeological interest in this area is probably related to the high density of sites. Morris and Burgh (1954:1) state that "few localities in the San Juan drainage contain as great a concentration of archaeological remains as does the Animas Valley in the vicinity of Durango, Colorado."

The earliest known investigations in this area were done by a well-known Durango amateur archaeologist, I.F. "Zeke" Flora. Flora's main contribution to the archaeology of the Durango area was the gathering of dendrochronological specimens to establish a tree-ring sequence for the locality (Dean 1975:3-7). In his quest for these dateable specimens, he trenched no less than 35 sites. Unfortunately, Flora did not document much of his work and little is known about the sites from which the samples were taken.

Another Durango amateur archaeologist, Helen Sloan Daniels, directed inventories and excavations in the Durango area during the late 1930's for the Durango Public Library Museum Project. During this project, eight late Basketmaker III sites were partially excavated. These sites consisted of jacal surface roomblocks, pithouses, and trash middens. One site, Ignacio 7:31, was surrounded by a stockade of upright posts (Dean 1975).

In 1938 Earl Morris of the Carnegie Institute came to the Durango area to work on a Basketmaker II site, Falls Creek Rock Shelter, brought to his attention by Zeke Flora. Between 1938 and 1940 Earl Morris excavated two Basketmaker II sites and five Basketmaker III sites in the area north of Durango (Morris and Burgh 1954; Carlson 1963). The Basketmaker II sites, Falls Creek Shelter and Talus Village, produced evidence of occupation in the Durango area as early as the third century B.C. and examples of the shallow pithouses that the prehistoric people had constructed (Dean 1975). Morris' work on the Basketmaker III sites established that there had been a substantial prehistoric occupation in the northern Durango area during the latter part of the eighth century. Dendrochronological dates from the five sites indicated they date between A.D. 750 and 765.

In the mid-1950's, archaeological investigations were conducted along the Ignacio-Sumas pipeline, at that time owned by the El Paso Natural Gas Company. Excavations of some sites along the pipeline (but not apparently 5LP378) were undertaken by Albert Mohr and Tish Sample in 1955 under the direction of the National Park Service. Notes and reports are still in the possession of Dr. Mohr, with artifacts in storage at the Anasazi Heritage Center.

In 1966, the University of Colorado conducted investigations on several Basketmaker II sites north of Durango. On one of these sites, a cluster of tree ring samples was recovered from the floor of a circular or oval living surface (Biggs 1967). The samples were found to date between A.D. 350-370. This living surface was very similar to those found by Morris at Talus Village and Falls Creek Shelter.

Between 1965 and 1969, Homer Root, curator for the Center of Southwest Studies at Fort Lewis College, conducted excavations on several Basketmaker III sites in Ridges Basin, south of Durango. "During this period a total of five deep pit structures, two shallow circular structures, 51 surface structures, and numerous trash middens were excavated" (Bonan 1980:iii).

During 1967 and 1968, Dr. John C. Ives of Fort Lewis College also undertook excavations in the Ridges Basin area. Four Pueblo I sites in the northeastern portion of Ridges Basin were excavated. One of the sites produced evidence of violence during the ninth century (Ives 1979).

In 1974 and 1975, Fort Lewis College students under the direction of Dr. Ives excavated two sites on Blue Mesa. One site yielded a small pithouse with associated surface structures dating to the Pueblo I period. The other yielded a large pithouse and room area dating from the late Basketmaker III through Pueblo I period. In an effort to learn more about Blue Mesa, an archaeological inventory of the mesa was conducted by Fort Lewis College students (Hibbets 1975). Results of this inventory indicate that during the early Pueblo I period, a large population occupied Blue Mesa. Of the 46 archaeological sites located, the majority were Piedra Phase Pueblo I habitation sites. Only one site was positively identified as dating to only the Basketmaker III period.

Over the past 20 years, an area known as Bodo Industrial Park (south of Durango along the Animas River) has been the focus of several archaeological projects. An archaeological inventory recorded over 20 Anasazi habitation sites (Applegarth 1974). Salvage work in this area has resulted in the excavation of several Anasazi habitation sites dating to the late eighth century A.D. (Hibbets 1976; Gooding 1980; Curtis 1996).

Ridges Basin has also been the focus of several archaeological projects over the past 20 years, due primarily to the fact that it is the location of the reservoir for the proposed Animas-La Plata Project. An archaeological inventory of the reservoir area was first done in 1975 by the University of Colorado (Leidy 1976). An intensive inventory of the Ridges Basin area was then conducted in 1980 by the Office of Contract Archaeology, University of New Mexico (Ware 1981; Winter et al., 1986). A total of 196 sites was recorded, including 84 Anasazi sites, several Archaic sites, and several Pueblo IV, Pueblo V, and Shoshoni sites. In the early 1980's Fort Lewis College conducted excavations at several Anasazi sites in Ridges Basin, under the direction of Dr. Philip Duke.

In 1980 the University of Colorado conducted a survey and excavation project for MAPCO's Rocky Mountain Hydrocarbons Pipeline. Of the 19 sites located along this portion of the pipeline, 11 were Anasazi, two were historic and six were of indeterminate prehistoric age. Of the 11 Anasazi sites, four were habitations, and all four of these were located west of the Animas River on or near Blue Mesa (Fetterman and Honeycutt 1982).

In 1985 and 1986, CASA conducted archaeological excavations at 11 sites within the Bodo Canyon area, south of Durango, in association with uranium mill tailings disposal activities on the part of the U.S. Department of Energy. Excavations resulted in the definition of site components dating to the Late Archaic, Basketmaker II and Basketmaker III-Pueblo I periods (Fuller 1988a).

In 1987, a cultural resource survey of 806 acres was conducted in the immediate vicinity of 5LP378 (Fuller 1988b). This survey was composed of two tracts, one of 366 acres located on Blue Mesa just north of the Animas Air Park, and the other of 440 acres on the terrace immediately below Blue Mesa, just north of the Animas River. The Blue Mesa tract was found to contain 46 sites, most of these dating to the Anasazi period between approximately A.D. 725 and 850. The lower terrace tract was found to contain only three sites, two of which were Anasazi in age.

History of Archaeological Research at 5LP378

The site was first recorded in 1975 in association with the Fort Lewis College survey of Blue Mesa (Hibbets 1975). At this time the site contained two visible pithouse depressions and three burned adobe structure mounds. Four years later the site was relocated in association with the MAPCO project (Fetterman and Honeycutt 1980). During re-recording of the site at that time, the adobe mounds were still visible, but the pithouse depressions were not, apparently as the result of then-recent road construction.

The two pithouses are presently located under the Animas Air Park Road (see Figure 2). The eastern pithouse, Pithouse 2, is situated just to the east of the three surface rooms excavated on the MAPCO Project in 1980. The western pithouse, Pithouse 1, is situated to the south of both Pithouse 2 and the three surface rooms. Pithouse 1 may have been associated with surface rooms which are suspected to have been destroyed during the 1954 construction of the Ignacio-Sumas pipeline.

In 1980, in association with, and prior to, the construction of the MAPCO pipeline, Woods Canyon investigated the portion of the site within MAPCO's right-of-way (Gerwitz 1982). Here were located the remains of a surface adobe roomblock and Pithouse 2. Because the roomblock would be destroyed by construction, it was excavated; because the pithouse would not be affected, it was not excavated. Excavation on the site at that time represented only 1% of the site surface area. Excavations indicated that the site was occupied during the A.D. 780's, the period of peak population in the Durango area during prehistoric times. The surface rooms were built using upright river cobbles for the wall foundations, and posts and adobe for the superstructure. The remains of three surface rooms were identified by the excavation; two of these appear to have functioned as habitation rooms and the other functioned as a storage room.

In 1996, in association with the Durango Replacement Project, Woods Canyon revisited the site. At this time, the portion of the site in MAPCO's right-of-way had been partially revegetated, partially covered by a new gravel driveway and partially covered with house construction debris. Since Northwest Pipeline Corporation planned to construct its new line between the existing Northwest and MAPCO pipelines in the site, a decision was made to test to determine if intact remains existed on the site in the proposed area of disturbance (Fetterman and Honeycutt 1996:8). Testing in the suspected roomblock area was done in the form of hand-excavating 1m by 1m test units; this testing revealed that any surface rooms which once existed in the Northwest Pipeline right-of-way had been destroyed by previous (1954) pipeline construction. Testing in the suspected pithouse area was done in the form of backhoe-excavating a 0.5m by 12.0m trench; this testing revealed that an intact, partially burned, pithouse (Pithouse 1) was present under the graveled road.

RESEARCH DESIGN

Research Orientation For The Data Recovery Plan

General Theoretical Approach

The general theoretical approach which underlies the research on this project is the belief that variation in organizational complexity can best be explained by a combination of factors which represent both social and least-cost influences (after Lipe 1986). This approach welcomes evidence of apparently inconsistent behaviors and outside influences, including warfare, and shies away from the tendency to explain everything in terms of environmental determinism. There is a slight and inherent bias in this approach to assume that prehistoric people maintained a greater, rather than lesser, degree of contact with non-local populations. The goal of this project is to explain, as fully as possible with the data recovered, how the prehistoric occupants of the sites adapted to certain situations and conditions, organized themselves socially and economically, and how and why they succeeded or failed.

Specific Research Domains

To organize the research and maximize the data gathered, five specific research domains have been chosen. These five domains are: chronology, site structure, abandonment, resource utilization, and intra- and inter-regional exchange.

Chronology

Hypothesis. Dendrochronological and ceramic evidence recovered from the MAPCO excavations indicates that the surface rooms were built prior to A.D. 800, probably in the 780's. It is therefore hypothesized that Pithouse 1 is contemporaneous with the surface rooms and dates to the A.D. 780's.

Data Needed for Testing. Absolute chronometric data from dendrochronological samples are necessary. Relative chronometric data from the ceramic assemblage are also necessary. Radiocarbon and/or archaeomagnetic samples will be collected only as appropriate.

Excavation Strategy. Excavate the entire structure in order to recover all dendrochronological samples. Collect all artifacts in order to ensure the largest possible ceramic assemblage. Excavate all features in order to identify and evaluate possible radiocarbon and archaeomagnetic samples.

Site Structure

Hypothesis. As previously stated, it is suspected that surface rooms were destroyed during the 1954 construction of the Ignacio-Sumas pipeline. It is also suspected that Pithouse 1 was associated with these destroyed rooms. Therefore, it is hypothesized that when excavated, the long axis of Pithouse 1 will be found to have an east-west orientation, pointing to the now-destroyed roomblock.

Data Needed for Testing. Architectural and feature data in the form of wall outlines, ventilator shaft and tunnel, and central hearth are necessary to determine the long axis of the pithouse.

Excavation Strategy. Excavate the structure and all features and map in detail to determine the orientation of the pithouse relative to the known and suspected room locations.

Abandonment

Hypothesis. Data from the three excavated surface rooms and the one tested pithouse indicate that all four structures were burned at the time of site abandonment. However, the limited testing data suggest that the pithouse fire was not catastrophic. It is therefore hypothesized that when the site was abandoned, the people first dismantled the roof, removed selected building beams, burned the remainder, and moved away; in other words, it is hypothesized that the people were not driven from their home by a catastrophic, unintentionally caused fire.

Data Needed for Testing. Data on the quantity, size and location of beams and burned adobe are needed. The presence of complex *in situ* floor artifact assemblages will be considered refuting evidence for this hypothesis.

Excavation Strategy. Profile and record the fill sequence of Pithouse 1. Document the location and condition of all roofing material in the fill and on the floor. Excavate all features and examine floor and walls for evidence of remodeling. Point locate all floor artifacts.

Resource Utilization

Hypothesis. Analysis of the materials from the 1980 excavation revealed that the Pueblo I inhabitants used a wide variety of mostly local resources. The cobbles which are abundant just below the site were used both for building walls and for making stone tools. The faunal materials (cottontail rabbit, prairie dog, mule deer, etc.) indicate that the people also hunted and ate locally available animals.

Although no direct evidence of corn agriculture was recovered from the 1980 excavation, indirect evidence (e.g., surface storage room, trough metate) suggests that the inhabitants did derive at least some portion of their diet from corn. Therefore it is hypothesized that the pithouse belonged to a family of corn farmers who also utilized wild plant and animal foods in their diet.

Data Needed for Testing. Macro- or microbotanical data in the form of corn kernels, racemes, husks or pollen are required. Additional data in the form of large storage pits would be considered supporting data for this hypothesis. The presence of large quantities of wild plant or animal food remains would be considered supporting evidence for this hypothesis.

Excavation Strategy. Sample all appropriate features (hearths, cists, pits, bins) for macro- and micro-botanical remains. Collect all ground stone for analysis and possible pollen wash. Collect all faunal material for species identification.

Intra-and Inter-Regional Exchange

Hypothesis. The redware ceramics recovered from the surface rooms indicate that this family engaged in some form of inter-regional exchange. It is hypothesized that the occupants of Pithouse 1 also engaged in inter-regional exchange.

Data Needed for Testing. The presence of non-local ceramic, lithic, botanical or faunal remains would be considered supporting evidence for this hypothesis.

Excavation Strategies. Collect all artifactual, botanical and faunal materials for analysis and identification of possible non-local items.

METHODOLOGY

Excavation Methods

To address the above research topics and mitigate damages to the site, it was decided to excavate Pithouse 1 in its entirety.

Since the pithouse was located in an existing road, it was necessary to first construct a temporary by-pass road around the pithouse in order to protect both the archaeologists and the public during the excavation. Also prior to the start of excavation, a mapping control point was established in the form of a permanent datum. This point was used to maintain horizontal and vertical control of the excavation.

The pithouse test trench was relocated through visual inspection of the road and through the use of mapping notes taken during the March 1996 testing. A backhoe with a flat blade was first used to remove the dirt from the already excavated trench. The trench was then hand excavated and the trench wall cleaned in order to complete and draw the stratigaphic profile.

Based on the interpretation of the profile, the backhoe was then used to remove the upper fill of the structure and the gravel road that covered much of the structure (See Figure 5). By carefully excavating with the backhoe and checking soil resources by hand it was possible to define the east and north upper walls and a portion of the west wall. Mechanical excavation was stopped once the upper fill was removed and the pit walls were stepped back to ensure archaeological excavator safety.

Figure 5. Photograph of backhoe removing road gravel and upper structure fill.

The remaining fill of the structure was excavated by hand. All deposits within 20 cm of surfaces were screened through 1/4" mesh and the remaining deposits were visually screened for artifacts. Hand excavation was carried out with either pick mattock, shovel, entrencher, trowel, brush, or dental pick depending on the complexity and fragility of the resource.

The structure was divided horizontally in quarters and excavation proceeded by cultural and stratigraphic levels within each quarter. All features were horizontally defined, sectioned, excavated and sampled as appropriate. Bulk soil, pollen, carbon-14, dendrochronological and macrobotanical samples were collected as appropriate.

Information recovered during excavation was recorded on Woods Canyon's provenience description, feature, point location, and sample forms and on photograph, artifact, and sample inventory logs. Progress of the excavation was recorded through the daily use of the above-mentioned forms, supplemental information sheets, field notes, color photographs, drawings, and plan and profile maps. Artifacts collected during excavation were separated according to type, bagged, labeled, and inventoried.

Laboratory and Analysis Methods

Following excavation, all recovered cultural materials were brought back to Woods Canyon's laboratory for processing and analysis. The field inventory forms were compared to the laboratory inventory forms for discrepancies, any discrepancies were corrected and information on the inventoried materials was entered into a computer data base for artifact tracking.

Initial laboratory processing of materials consisted of washing artifacts, organizing material by material classes, and labeling and bagging materials according to Anasazi Heritage Center curatorial standards. Samples collected for special analysis (e.g., dendrochronological, pollen, and faunal) were separated into types and sent to the appropriate analysts. Table 1 presents a list of the analysts used on the Durango Replacement Project

Table 1. Analysts used on the Durango Replacement Project

Type of Analysis	Analyst
Lithic	Woods Canyon
Ceramic	Woods Canyon and Mary Errickson
Faunal	John Beasley
Macrobotanical/ microbotanical	PaleoResearch Laboratiories
Pollen	PaleoResearch Laboratiories
Dendrochronological	University of Arizona

Analysis of the various artifact and ecofact classes was oriented toward obtaining information critical to addressing the specific research questions discussed above. This laboratory analysis primarily addressed the first four research domains (chronology, site structure, resource utilization and intra- and inter-regional exchange).

Human Remains

Human remains were not encountered during the mitigation work at 5LP378.

Native American Consultation

Northwest Pipeline Corporation sent letters to the Southern Ute, Ute Mountain Ute, Navajo, Hopi, and Zuni tribes detailing their plans to mitigate site 5LP378 and asking for their comments or concerns. According to Northwest Pipeline Corporation, no comments were received.

Curation

Site 5LP378 is located on private land and at the request of the landowner, John Macmorine, the artifact collection has been returned to him**.**

RESULTS OF EXCAVATIONS

Introduction

Excavations in 1996 revealed a Pueblo I pithouse (Pithouse 1) which contained two use surfaces: the Lower Use Surface represented the pithouse's original construction and occupation and the Upper Use Surface represented the pithouse's reuse. The original pithouse was a deep, subrectangular structure that was built around A.D.800. This pithouse was used for a short time (Lower Use Surface) and then abandoned. Sometime following abandonment, after 20-30 cm of soil had accumulated, the pit was briefly reoccupied (Upper Use Surface), and then abandoned again.

Pithouse 1: Lower Use Surface

Pithouse 1 was a subrectangular pithouse that measured 5.0 meters east-west by 4.3 meters north-south by 3.3 meters deep. (The intact portion of this pithouse consisted of the lower walls and the floor; the upper walls had been prehistorically destroyed by post-occupational erosion.) Located on the floor were a hearth, four postholes containing post remnants, a sipapu, a ventilator, and a bifurcated deflector (see Figure 6).

Architecture

Prehistorically, the pithouse was built by first excavating a slightly bell-shaped pit into the sterile loess soil. The walls of the structure were of unmodified earth; no evidence of plaster was found on them. From the floor they once rose to approximately 2.3 meters in height but were preserved to only 0.9 meters in height. The floor of the pithouse was created on top of a stratum of calcium carbonate, as indicated by numerous caliche spots and veins in the reddish-brown loam. In the southeast quadrant of the pithouse a thin (1-5 cm) layer of brown silty clay was applied to level the floor.

To roof the pithouse the builders used a four-post system. First, near each of the four corners of the structure they excavated a cylindrical posthole, 15-18 cm diameter and 60-70 cm in depth (see Figure 7**).** Second, into each posthole they inserted a vertical juniper post. Third, they probably tied the tops of the four posts together with a rectangular pole frame, resting horizontally on the uprights. Finally, they probably covered this framework with smaller poles, juniper bark, and dirt. When viewed from the outside, the roof was probably either flat or just slightly elevated above the prehistoric ground surface.

The pithouse was ventilated by the use of a tunnel, excavated into the southern wall, and a shaft, excavated from the southern end of the tunnel up to the prehistoric ground surface. To direct the flow of air into the structure, a bifurcated deflector was built on the floor, immediately in front of the ventilator tunnel. This deflector, made of posts and adobe, funneled outside air through two sealable circular holes. The long axis of the pithouse, as defined by a line drawn through the ventilator tunnel, hearth and sipapu, orients the pithouse in northwest to southeasterly direction.

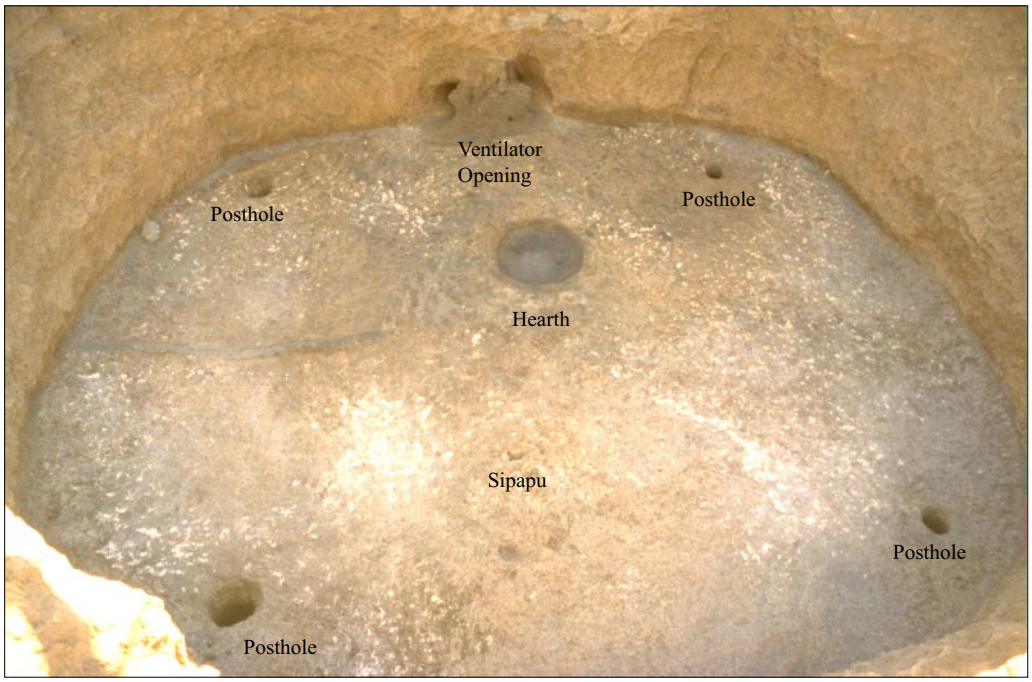

Figure 6. Photograph of Pithouse 1, Lower Use Surface.

Stratigraphy

Eight strata were identified in the fill of Pithouse 1. These strata are summarized in Table 2 and illustrated in Figure 7.

Table 2. Summary of Pithouse 1 Strata.

Stratum Number	Description	Interpretation
1	Dark reddish gray (5YR 4/2) Gravel	Post-occupational road construction
2	Reddish brown (5YR 4/3) clayey loam with peds formed from soaking with water	Post-occupational road construction
3	Reddish brown (5YR 4/4) clayey loam	Post-occupational wind and water deposit
4	Mottled dark gray (5YR 3/3) clayey loam with flecks of charcoal.	Post-occupational wind and water deposit
5	Dark reddish brown (5YR 3/4) clay loam with lots of burned adobe and charcoal inclusions	Secondary cultural deposit. Surface rooms that either eroded or were pushed into the pithouse
6	Yellowish red to reddish brown (5YR4/3 to 5YR4/6) clay loam with occasional pockets of charcoal or burned adobe (primarily on the north half) and an occasional artifact.	Post-occupational wind and waterlain deposit
7	Grayish black (5YR 4/1) ash with burned sage and juniper bark.	Use Surface 1
8	Reddish brown (5YR4/4) clay loam with rare flecks of charcoal and artifacts	Post-occupational wind and waterlain deposit; partial roof collapse
9	Reddish yellow (5YR 6/6) clay with rare flecks of charcoal and blackened surfaces	Post-occupational wall collapse

The lower strata above the floor (Strata 8 and 9) are post-occupational deposits. They are believed to be associated with wall collapse and a partial roof collapse. It is possible that at abandonment of the pithouse, the roof was partially dismantled with the many of the beams being taken for use elsewhere and the soil covering being deposited on the pithouse floor.

Artifacts recovered from the fill

Much of the upper fill of the pithouse (Strata 1-6) was removed by mechanical means. This process was closely monitored and when artifacts were encountered or observed in the backdirt they were retrieved. Flaked, non-flaked, ceramic and non-human bone artifacts were recovered from these strata. Flaked lithics consisted of 17 pieces of debitage (1 chert, 3 igneous, 1 siltstone, 3 shale, 6 quartzite, 3 quartz), 1 igneous retouched flake, 1 igneous core, 1 limestone uniface, 1 chert biface fragment, and 1 limestone chopper. Non-flaked artifacts consisted of 1 sandstone ground stone fragment, 1 quartzitic sandstone ground stone fragment, 1 quartzitic sandstone mano fragment, 1 sandstone one-hand mano, 3 pieces of sandstone paintstone, and 3 manuports (1 limestone cobble, 1 igneous cobble, 1 shale slab).

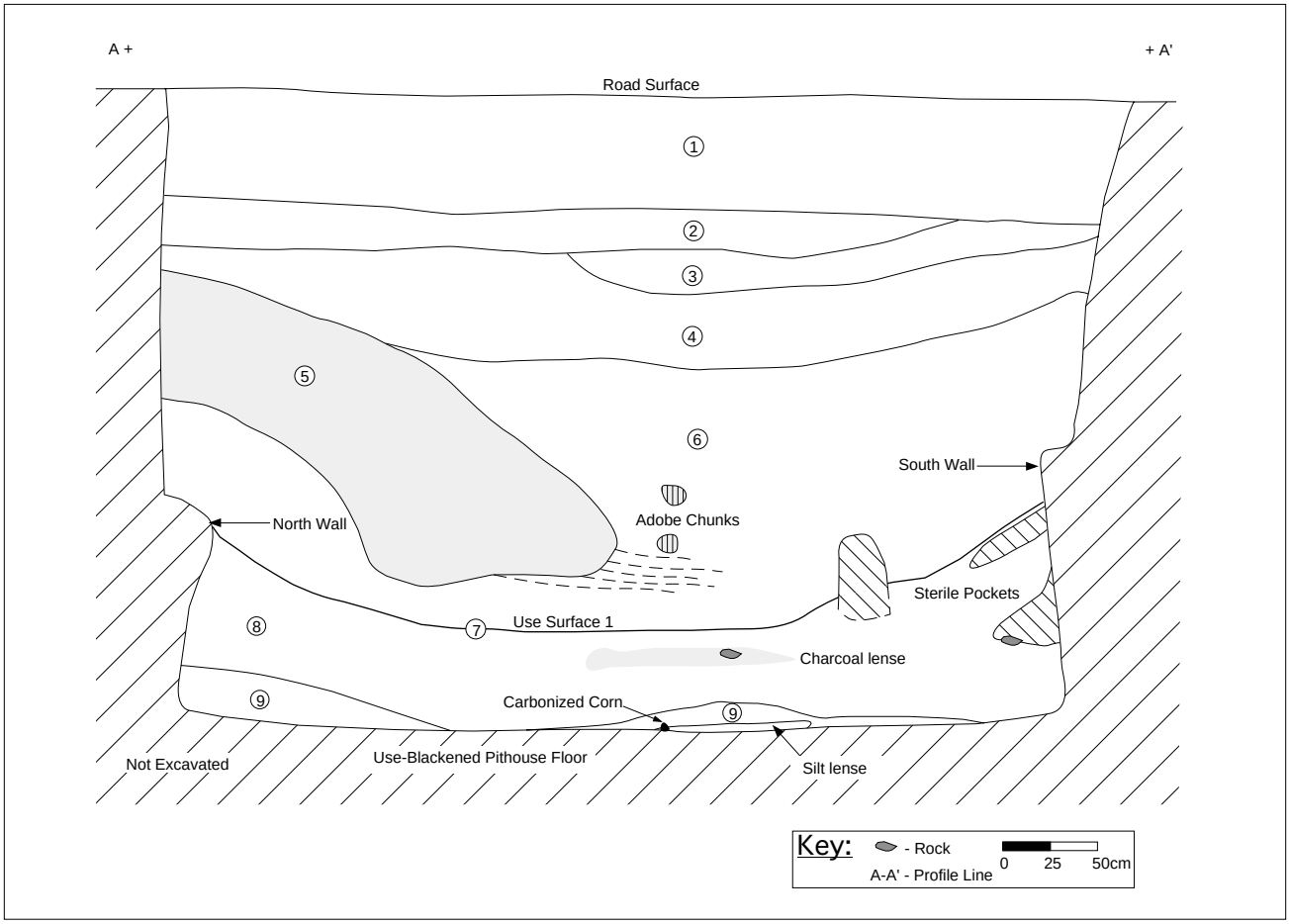

Figure 7. Stratigraphic profile of Pithouse 1.

Ceramics consisted of Mesa Verde Region sherds as follows: 2 Chapin Gray Jar, 119 Plain Gray Jar, 1 Chapin Gray bowl, 3 Plain Gray bowl, 1 Piedra Black-on-white bowl, and 14 Indeterminate Whiteware bowl sherds. Non-human bone consisted of 15 skull and leg bone fragments from a juvenile *Canis spp* or coyote-sized mammal.

The artifacts recovered from Stratum 7 are discussed in the section entitled "Pithouse 1: Upper Use Surface".

Stratum 8 was removed by hand excavation and screened through 1/4" mesh. Flaked, non-flaked, ceramic and non-human bone artifacts were recovered from this stratum.

Flaked lithics consisted of 10 pieces of debitage (4 chert, 1 igneous, 4 siltstone, 1 shale), 1 chert utilized flake, 1 igneous chopper and 1 chert stemmed projectile point. Non-flaked lithics consisted of 1 shale ground stone fragment/possible ornament fragment, 1 sandstone shaped slab fragment. Ceramics consisted of 75 Mesa Verde Region sherds as follows: 2 Chapin Gray jar, 71 Plain Gray jar, 1 Piedra Black-on-white bowl, and 1 Indeterminate Whiteware bowl sherd. Non-human bone consisted of 4 pieces of unidentified bone, 2 of which are probably bird, 1 of which is small mammal, and 1 of which is probably *Lepus californicus*.

Floor

The floor was composed of use-compacted native soil, with the exception of the southeast quarter of the pithouse, where a thin layer of plaster had been used to level the floor. The floor was identified by the termination of Stratum 8 or 9, the presence of light charcoal staining, and/or the presence of a thin veneer of ash. As can be seen from Figure 10, the floor contained a central hearth, four postholes, a sipapu, a deflector, and a ventilator tunnel. On its surface were located 101 artifacts.

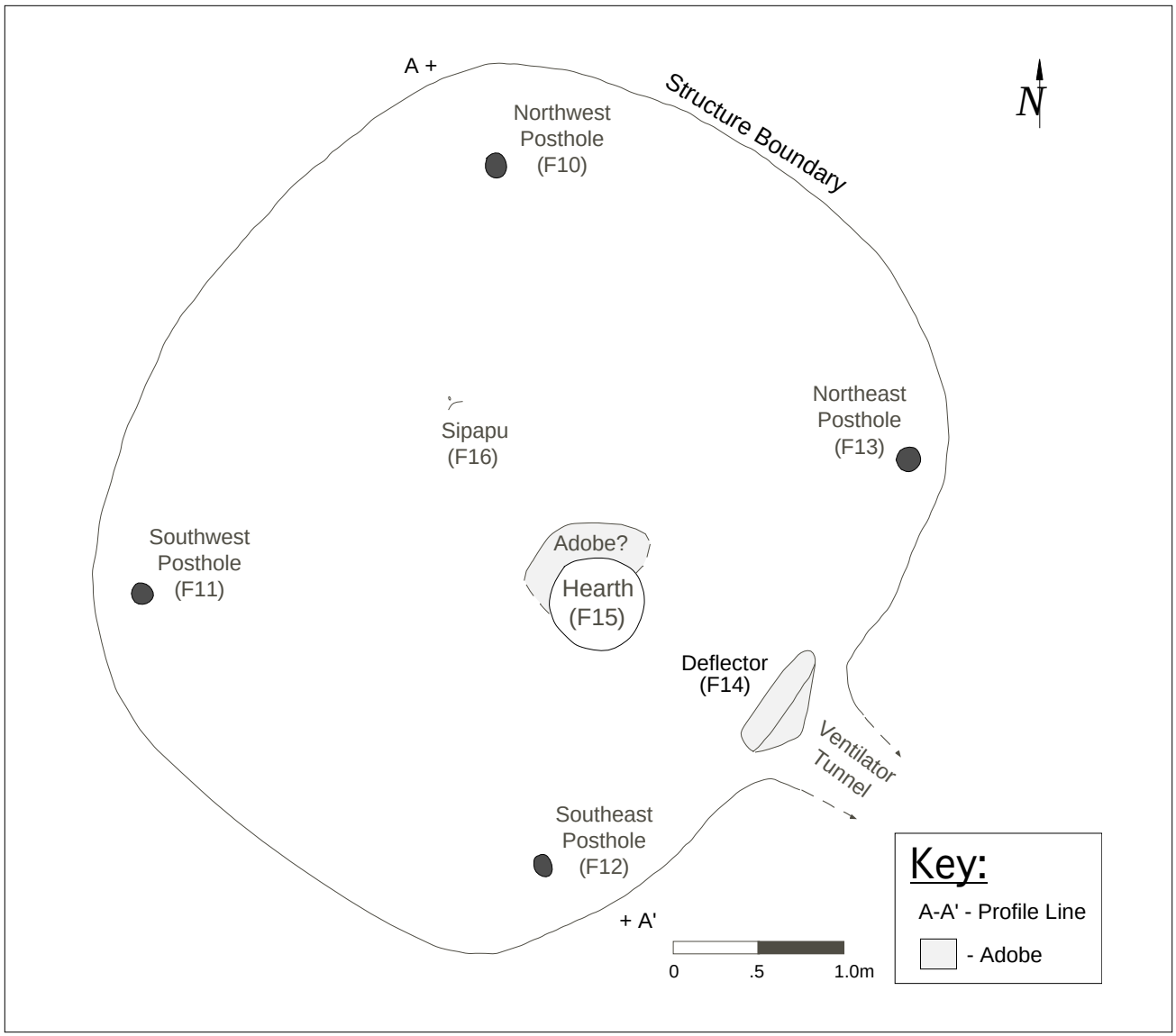

Figure 8. Plan map of Pithouse 1.

Features

Central Hearth (Feature 15). The central hearth consisted of a circular pit 45-47 cm in diameter excavated approximately 5 cm into the pithouse floor (see Figure 9). The pit had a flat bottom and sloping sides, both of which were oxidized. Along the north side of the hearth a rim was built of orange-red adobe. This rim was 18 cm wide and was built up 2-3 cm above the floor surface. The rim itself, as well as the floor on the eastern side of the hearth, were oxidized, suggesting that this area was used to rest hot rocks and vessels.

Figure 9. Photograph of the central hearth.

The hearth was filled with ash. Within this ash were pieces of charcoal, plant and seed parts, and faunal materials. The charcoal indicated that juniper, sagebrush, mountain mahogany, pine, and oak wood were burned as fuel. The plant and seed parts indicated that corn, squash or pumpkin, hedgehog cactus, saltbush, and buffaloberry were cooked and eaten, as well as some type of Umbel and fruit or berry resources or succulent plant parts (such as cactus pads). The faunal materials indicated that animals (of undetermined species) were also cooked and eaten. No artifacts were present in the hearth fill.

Deflector (Feature 14). South of the hearth, immediately in front of the opening of the ventilator tunnel, was a deflector made of upright posts and adobe. The deflector covered the opening of the tunnel (See Figure 10) and directed air flow through two circular holes near the floor level on either side of the deflector. The holes were approximately 20 cm in diameter and were built incorporating portions of the pithouse wall.

The exact configuration of the deflector is unknown, as much of adobe had been eroded. It appears, however, that each opening could have been closed by placing a rock in front of it. An unmodified rock (PL 64) was found to the southwest of the hearth and it fit snuggly into the western opening. This type of deflector is known as a bifurcated deflector and is relatively well-documented in Pueblo I structures in the Animas drainage.

Figure 10. Photograph of Deflector facing the bifurcated ventilator tunnel opening.

One of the upright posts used to build the deflector was identified as ponderosa pine. All three of the upright posts used in constructing the deflector were charred on the outside and rotted on the inside (see Figure 11). Since all three were encased in unburned adobe it is surmised that the posts were intentionally charred prior to their incorporation into the deflector, perhaps to preserve them more effectively. No other artifacts were associated with the feature.

Figure 11. Photograph of posts within the encasing adobe of the Deflector.

Ventilator Tunnel. The ventilator tunnel was excavated into the southern wall of the structure. Behind the deflector, the tunnel was approximately 50 cm in diameter and extended at least 40 cm back behind the wall. Due to safety reasons (the tunnel extended under a busy road) it was decided not to further excavate the tunnel.

Sipapu (Feature 16). Approximately 1 meter northeast of the central hearth was a sipapu. This sipapu was composed of at least one crescent-shaped hole and possibly two smaller circular holes (See Figure 12).

Figure 12. Photograph of Sipapu.

The crescent-shaped hole was V-shaped in profile and measured 9 cm by 7 cm by 10 cm in depth. It was filled with clean sand. A pollen sample taken from this sand contained *Zea mays*, *Cleome*, and Cheno-am pollen. This sample was interpreted as being the result of general economic activity on the floor of the structure, and not indicative of specific ritual activity. No artifacts were present in the sipapu.

Immediately adjacent to one end of the crescent-shaped hole were two smaller circular holes, one of which contained rotted wood. At first it was believed that these smaller holes were *pahos*, placed next to the sipapu for the purpose of receiving prayer sticks. However, vegetal analysis showed the rotted wood to be juniper root. Evidence is therefore inconclusive as to whether or not these two holes are culturally derived and actually part of the sipapu.

Roof-support Postholes (Features 10, 11, 12, 13). A roof-support posthole was found near each of the four corners of the structure. Within each posthole were the remains of rotted wood, indicating that the posts were not robbed at the time of pithouse abandonment. The postholes averaged 13 cm in diameter and were narrower at the floor than at the posthole bases. The holes averaged 66 cm in depth, the length of reach for an average person. Data from the postholes is presented below in Table 3.

Table 3. Posthole data from Pithouse 1

Feature No.	L (cm)	W (cm)	D (cm)	Descriptions
10	13-17	13-17	68	Circular, arm length slightly bell-shaped pit excavated in the floor. Fill was a sandy deposit, a partially burned and rotted post and several artifacts within the top 10 cm. The artifacts, (probably displaced floor artifacts), consist of two retouched chert flakes, one chert and one siltstone debitage flake, a small mammal long bone fragment, a fragment of a possible fish bone, and three teeth of a jackrabbit that were cut in half.
11	13	12	67	Circular, arm length slightly bell-shaped pit excavated in the floor. Contents of the feature include a sandy deposit, partially burned and rotted post and a very small flake of chert.
12	14-19	14-19	71	Circular, arm length slightly bell-shaped pit excavated into the floor. The feature was filled with a sandy deposit containing abundant fragments of unburned wood and two small flakes of chert.
13	13	11	58	Cylindrical shaped pit with an expanded bottom excavated into the floor of the pithouse. The feature was filled with sand containing decayed wood in the upper 10 cm.

Floor Artifacts

A total of 101 artifacts were point-located on the floor of the structure (see Figure 13 and Table 4). As can be seen in the figure, these floor artifacts were primarily lithics and ceramics, concentrated in the eastern half of the structure.

Artifacts in the fill from 5 cm above the floor to the floor are considered potentially displaced floor artifacts. Flaked lithics consisted of nine pieces of debitage (5 chert, 2 siltstone, 3 quartzite), and 1 chert utilized flake. Non-flaked lithics consisted of 1 unmodified pebble, 1 possible mineral concretion, 1 piece of conglomerate, 1 piece of shatter from a quartzite cobble and 1 piece of fire-cracked rock. Ceramics consisted of 1 burned adobe spindle whorl, and 10 Plain Gray jar and 2 Plain Gray bowl sherds. Non-human bone of obviously cultural derivation consisted of 1 large mammal long bone fragment (possibly utilized), and 1 large bird femur fragment. Non-human bone of probably non-cultural derivation consisted of 9 bone or bone fragments of *Neotoma spp*, stained black, 1 bone fragment of (cf) *Spermopholis variegatus*, stained and root etched, and 1 skull fragment of *Perognathus*. Vegetal materials consisted of *Populus* charcoal and three uncharred *Picea* cone fragments.

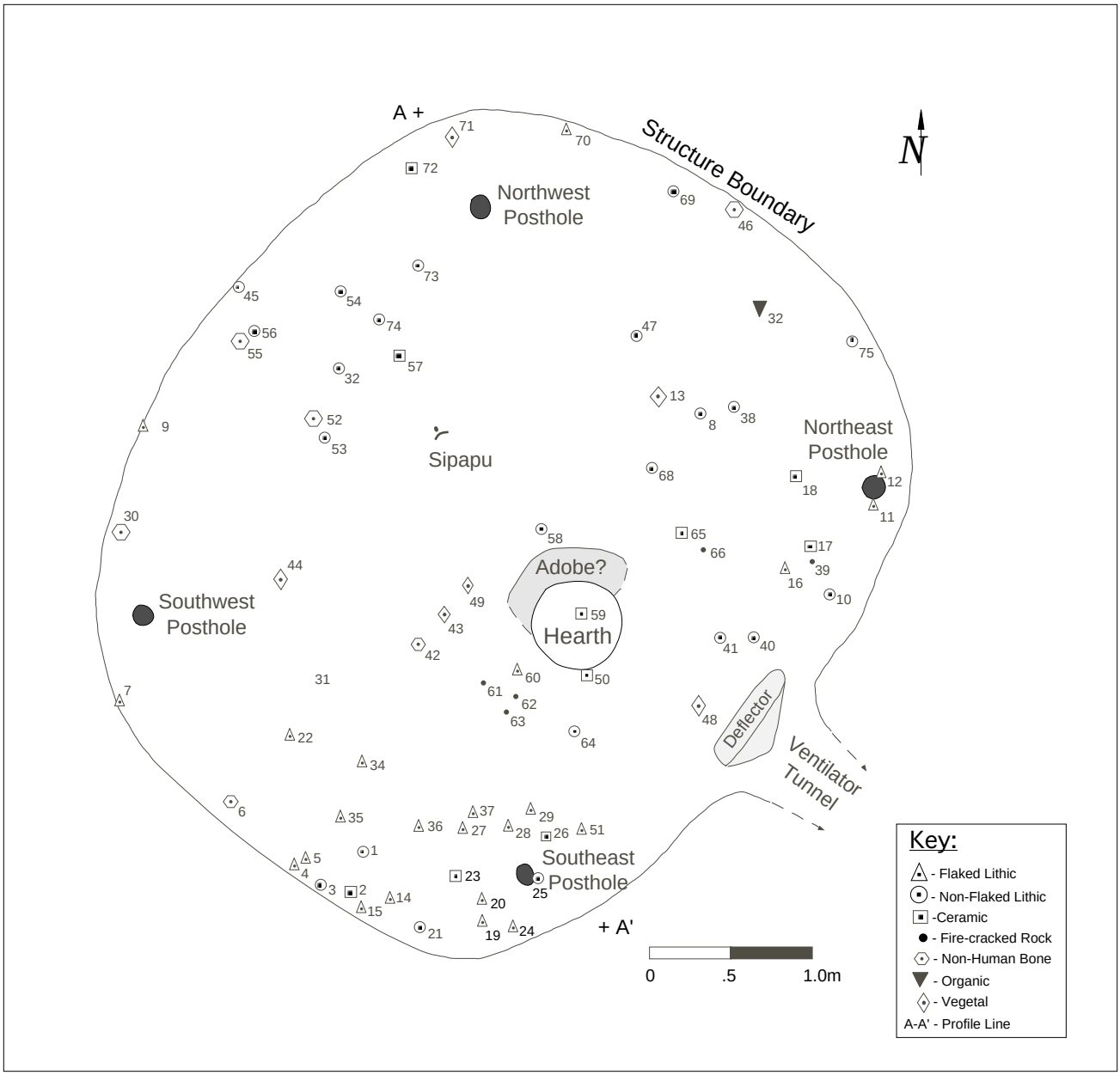

Figure 13. Planview of Pithouse 1 showing location of floor artifacts.

Activity Areas

By combining the data from the features and floor artifacts, several activity areas can be defined. Figure 16 presents a drawing depicting the location of these activity areas.

Vegetal food grinding. By plotting the location of all non-flaked lithics, it can be seen that 8/10 ground stone tools were located in the northern portion of the pithouse. This indicates that vegetal food grinding occurred in this area. This is supported by the presence of among other things, corn pollen from under PL 32, a metate. Interestingly, no non-flaked lithics were recovered from this portion of the pithouse. The presence of the maul here suggests it was used in food preparation or used for the maintenance of the groundstone tools.

Flintknapping. By plotting the location of all flaked lithics, it can be seen that virutally all of the debitage, one of the cores, and the projectile point were found in the southern end of the pithouse. Flaked lithics were sparsely present in the rest of the pithouse. Interestingly, the other two cores were found clustered in the eastern end of the pithouse by the post, and no hammerstones were found at all.

The flintknapping represents the reduction of chert and quartzite small cobbles, probably for the production of flakes for use. The flaked lithics in this portion of the structure include exhausted cores, angular shatter and few complete flakes. It doesn't appear that this was the

Table 4. Artifacts recovered from the lower floor of Pithouse 1

Art. #	Description
1	1 igneous fire-cracked rock
2	1 Plain Gray jar sherd
3	1 piece of galena
4	1 flake of Morrison silicified sediment
5	1 flake of finely grained reddish quartzite
6	1 left tibia fragment-Lepus californicus
7	1 flake of pink chert
8	1 complete trough-type two-hand mano made of an igneous rock. Well-used. Extremely burned
9	1 interior flake of pink quartzite
10	1 ovalish light quartzite cobble that might be ground. Deposit on one surface is probably hematite
11	1 purple and green siltstone, possibly from the Hermosa Group , multidirectional core
12	1 finely grained pink and black quartzite multidirectional core
13	1 beam fragment
14	1 small triangular point with slightly flared stem and corner notches. Pinkish chert, probably Washington Pass chert
15	1 flake of chert
16	1 fragment of grainy, poorly cemented white quartz cobble
17	4 sherds from a single plain gray jar
18	2 sherds from a single plain gray jar, fit sherds from PL17
19	3 flakes of chert
20	1 flake of chert
21	1 igneous flattened cobble, 3/4 present, ground on both sides, pitted on one side. Possible anvil stone broken during use. Burned.
22	1 spent multidirectional core from a chert cobble
23	1 sherd of a plain gray jar
24	1 flake of chert
25	1 central shaft fragment of a left tibia of a medium-sized Jackrabbit
26	1 sherd of a plan gray jar
27	1 flake of pink finely grained siltstone or shale
28	1 flake of pink finely grained siltstone or shale, 1 flake of fine-grained brown quartzite
29	6 sherds of a plain gray jar
30	1 burned large mammal long bone fragment
31	1 flake (not collected or analyzed)
32	1 groundstone metate (not collected or analyzed)
33	1 pollen sample from under PL 32. Windborne and/or non-economic: *Pinus*, *Juniperus*, *Quercus*, *Abies*, *Picea*, *Pseudotsuga*, *Artemisia*, Asteraceae, Cheno-am, Liguliflorae, *Sarcobatus*, Poaceae, *Polygonum*. Possibly economic: *Cylindropuntia*, *Opuntia*, *Zea mays*.
34	1 flake of chert
35	1 shatter of Morrison silicified sediment
36	1 flake of red to brown quartzite
37	1 shatter from a quartzite cobble
38	1 flattened cobble of white quartzite, opposite sides ground, one edge burned, probably a mano or hide polisher
39	1 piece of fire-cracked rock
40	1 small flattened igneous cobble. It is ground on one side and might have been used as a hide polisher

locus of tool manufacture for the only formalized flaked lithic tool found in this portion of the structure: it (a projectile point) was made a non-local material, Washington Pass Chert, a material not seen in the debitage assemblage.

Cooking. By plotting the location of corn and fire cracked rock, it can be interpreted that the area immediately to the west of the hearth was a locus for cooking activities. The presence of oxidized portions of the floor adjacent to the hearth in this area suggests that rocks were heated in the hearth and then placed on the floor.

Ritual. Ritual activities are interpreted to have occurred in the northern half of the structure in association with the sipaupu. The finding of three uncharred spruce cone fragments in the floor fill north of the sipaupu might also be an indication of ritual.

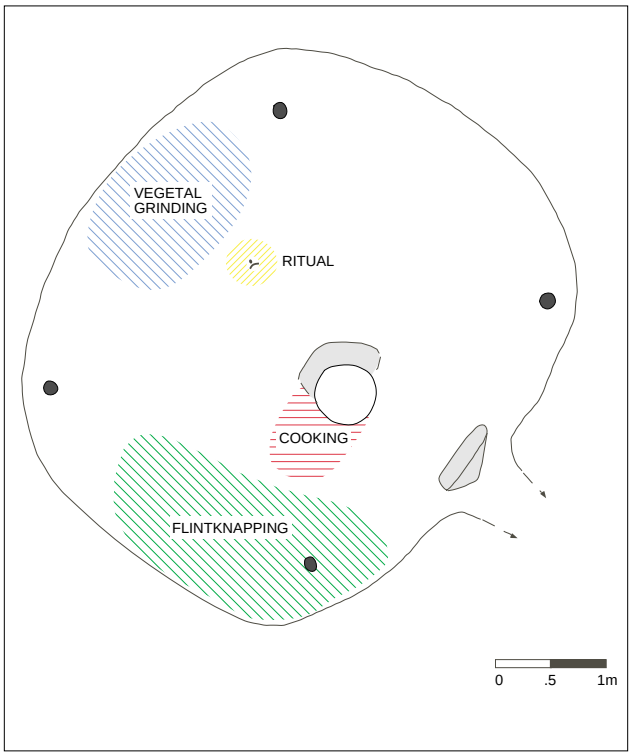

Figure 14. Planview of Pithouse 1 showing location of all activities.

Interpretation

Pithouse 1 is interpreted as a domestic structure that was leisurely abandoned. While the inhabitants left behind some of their everyday tools, it appears that they took with them common household items such as ceramic vessels and metates.

PITHOUSE 1:
UPPER USE SURFACE

The Upper Use Surface was located at the break between Strata 7 and 8, approximately 0.5 meters above the Lower Use Surface or original structure floor (see Figure 8). This surface represents the opportunistic use of the pithouse after the pit had partially filled.

Architecture

This surface was basin-shaped in cross-section and had been prehistorically created by simply use-compacting the existing fill of the original pithouse. No attempt had been made prehistorically to level the floor.

The Upper Use Surface reutilized the existing walls and roof support posts of the original pithouse. At the time of use of the Upper Surface, these walls were probably about 1.7 to 1.8 meters high. It is not known, how much of the original roof was intact at the time of the pithouse reuse. Evidence suggests that part of it may be intact but it is believed that much of its' earthen cover had eroded off the roof and into the pit forming the fill which the upper surface was built upon.

Stratigraphy

The stratigraphy above the the Upper Surface is described in detail in Table 2 and is illustrated in Figure 8. The fill directly overlying the Upper Surface was comprised of fine white-gray ash with carbon from juniper/sage resting atop the surface. This deposit is the remains of the fire that consumed the structure at the time of abandonment. It is not clear whether the carbonized juniper or sage located on the floor is from a mat or floor covering or is from brush which once might have covered the

Above this ash was a mixed matrix of slumped reddish brown clay loam and dark reddish brown clay loam. This deposit contained carbon and adobe inclusions, which were more abundant in the northern half of the structure. This deposit is not believed to be related to the burning of the structure but rather to either have been wall slump or materials eroded into the structure from surface rooms to the north.

Artifacts recovered from fill

Data on the artifacts recovered from the fill above the ash layer (Stratums 1-6) is presented in the Lower Surface section presented previously. Data on artifacts found in the ash layer (Stratum 7) is presented below

Floor

The use surface was a use compacted loam. It was burned in many areas and covered by a thin layer of ash, charcoal and carbonized juniper or sage bark. The bark may have been the remains of either floor matting or roofing material.

Figure 15. Photograph of Upper Use Surface.

Features

No formal features were identified on the use surface. However, the four posts that once held the roof of the pithouse protruded through the use surface.

Roof-support Posts (Features 10, 11, 12, 13). Near each of the four corners of the upper use surface were found the remains of a roof support post. The four support posts rose from the lower surface to an undetermined height above the upper surface. These posts might have been reutilized as part of a simple roof associated with the upper surface, but no firm evidence of that was recovered. When the upper surface burned, the exposed portions of these posts burned too, but below the upper surface, they merely rotted in place, all the way back down to their original postholes. These posts averaged 17 cm in diameter. The northeastern post was of Pinyon pine and the other three were of Juniper.

Artifacts

A total of 35 artifacts and two pollen samples were recovered from the upper surface (see Table 5 and Figure 16) and eight Plain gray jar sherds were recovered from the ash lens. As can be seen from the table, the artifacts were ceramic and ground stone items. The ceramics were probably all from a single partial vessel and are similar to the ceramics recovered from the original pithouse floor. The pollen samples yielded high concentrations of rabbitbrush pollen.

Interpretation

Given all the evidence, it appears that shortly after the initial abandonment of the pithouse, the roof of the structure collapsed or was partially filling the pit with dirt from the roof. Taking advantage of the relative

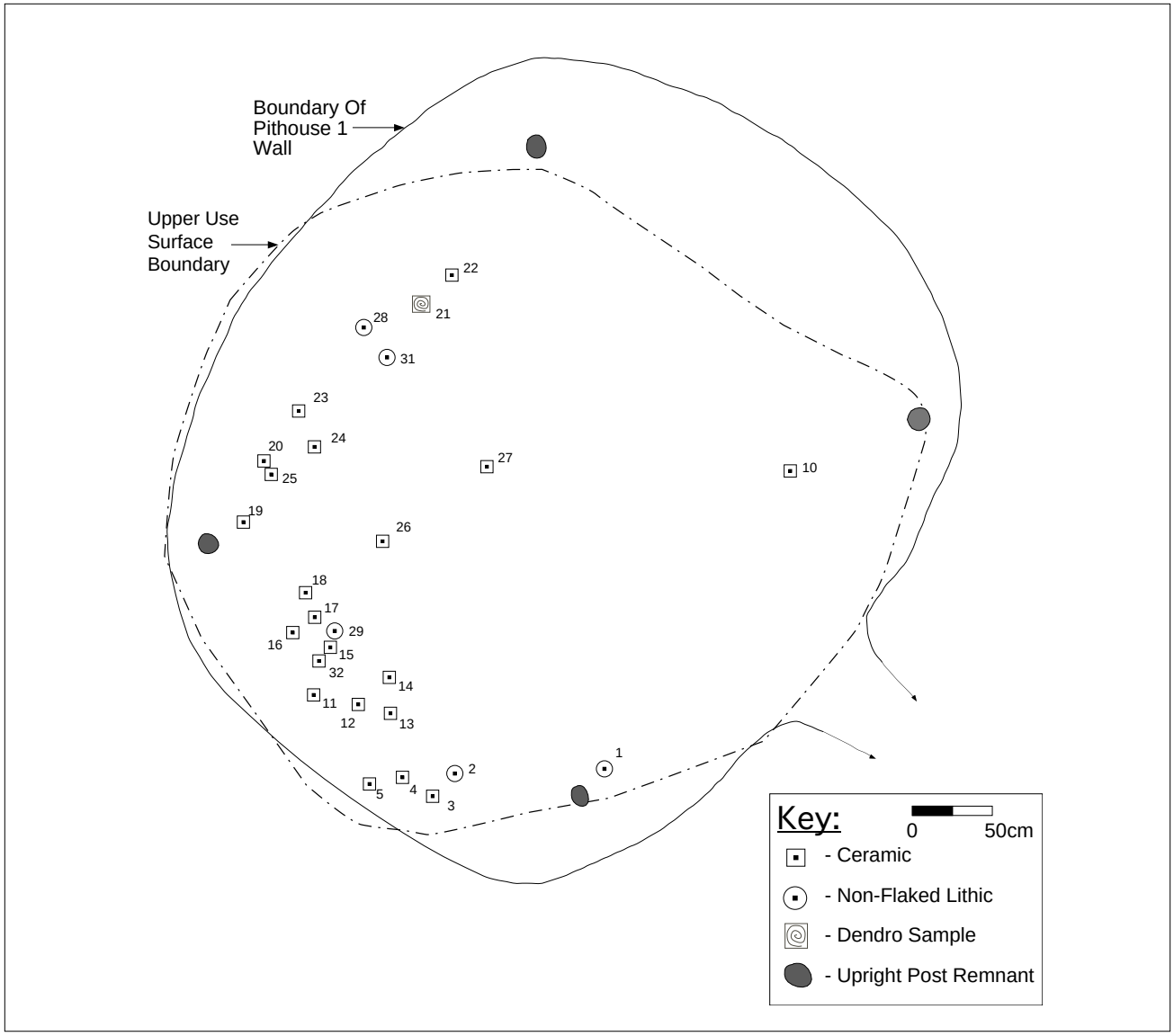

Figure 16. Planview of Pithouse 1 showing locations of Upper Use Surface artifacts.

Table 5. Artifacts recovered from the upper floor of Pithouse 1

Artifact #	Comments
1	1 maroon siltstone (or Hermosa shale?) ground stone tabular fragment ground entirely on one side with approximately 2 dozen shallow parallel striations. Possibly a metate or palette fragment.
2	1 igneous multi-purpose mano/chopper fragment. Ground on both surfaces and battered along one edge. Possibly used in trough metate. Burned.
3	1 MV Plain Gray jar sherd
4	1 MV Plain Gray jar sherd
5	1 MV Plain Gray jar sherd
6	1 MV Plain Gray jar sherd
7	1 MV Plain Gray jar sherd
8	2 MV Plain Gray jar sherds, one has handle attachment spot
9	1 MV Plain Gray jar sherd
10	1 MV Plain Gray jar sherd
11	1 MV Plain Gray jar sherd
12	1 MV Plain Gray jar sherd
13	1 MV Plain Gray jar sherd
14	1 MV Plain Gray jar sherd
15	2 MV Plain Gray jar sherds, pieces refit, neck portion of a large jar
16	1 MV Plain Gray jar sherd
17	1 MV Plain Gray jar sherd
18	2 MV Plain Gray jar sherds pieces refit
19	2 MV Plain Gray jar sherds fragment of lg. jar body, pieces refit
20	1 MV Plain Gray jar sherds possibly a bowl sherd, smoothed on both surfaces
21	1 dendrochronological sample
22	1 MV Plain Gray jar sherd
23	1 MV Plain Gray jar sherd
24	2 MV Plain Gray jar sherds, two incision marks might be incidental, might be a portion of a design
25	1 MV Plain Gray jar sherd
26	2 MV Plain Gray jar sherds
27	1 MV Plain Gray jar sherd
28	1 large igneous cobble multi-purpose mano-hammerstone. Plano-convex, ground on both surfaces. Broken in 2 pieces but complete. Burned.
29	1 complete igneous two-hand mano. Large cobble ground on at least one surface, possibly battered along a number of margins, natural shape of the item create thumb notch.
30	1 pollen sample under PL 29: pine, corn, sagebrush, sunflower family
31	1 fragmentary quartzitic sandstone slab metate fragment with edges ground to shape, one ground surface is pecked as well and equals item dimensions, dense, heavy material, burned
32	1 ceramic (missing)
33	1 pollen sample under PL 31: pine, corn, sunflower family

protection of the partially filled and roofed (?) pit afforded, the pit was reoccupied by one or several Pueblo I people on a temporary basis.

The artifact assemblage indicates that vegetal food grinding, including corn, was the major activity conducted here. The partial vessel may have been used to hold either the unground corn kernels or the ground corn meal. Noticeably absent are any flaked lithics indicating that flintknapping does not appear to have been an activity here. (Even though Artifact 28 was a mano/hammerstone, the sheer size and weight of the tool indicates it was used to roughen up metates, not remove flakes from cores.)

Based on the rabbitbrush pollen and the insubstantial nature of the reoccupation surface, it appears these people stayed for a maximum of several months during the late summer or early fall. When they left, they may have intentionally burned their shelter.

Material Culture Description

Flaked Lithic Materials

Unmodified Debitage

A total of 69 pieces of unmodified debitage was recovered during the 1996 excavations at 5LP378. This total is comprised of 63 flakes and 6 pieces of shatter or angular debris. The raw materials present were, in order of frequency, chert, quartzite, siltstone, undifferentiated igneous, shale, Morrison silicified sediment and silicified wood.

Although it is likely that tool production was occurring at the site, and the material types represented are relatively finely-grained and known to be of excellent quality for tool manufacture, evidence for biface thinning within Pithouse 1 is scant. Most of the flakes recovered (60 of 63) are classified as core flakes due to the fact that they weigh more than 0.3 grams. Twelve of the flakes are from cobbles, with evidence of cortex remaining and 18 of the flakes weigh more than 10 grams. This indicates that the structure may have been a primary reduction site.

The total number of angular debris pieces is a combination of two recognized types: unutilized angular debris and angular cobble debris. The unutilized angular debris is that which is from tool manufacture, commonly referred to as shatter. The angular cobble debris is not from obvious tool manufacture and the nature is not known. The six pieces of angular debris are comprised of five pieces of quartzite and one piece of Morrison silicified sediment. Of these, three pieces are from quartzite cobbles.

Most of the recovered raw materials could be locally acquired from either river cobbles or bedrock sources. The near absence of non-local materials suggests that these

local sources provided suitable raw materials for the inhabitant's lithic requirements. The material for the projectile point of Washington Pass chert may have been either traded for or procured on a trip to that region.

Tools

Sixteen flaked lithic tools were recovered during 1996 excavations. A variety of material and tool types are represented in the assemblage. Formally retouched tools, modified flakes, choppers, and cores are included in this category.

Biface. The single biface fragment recovered was the midsection of a relatively large, late stage biface of tan chert (Artifact #303.1). No evidence of use was observed.

Table 6. 5LP378 Biface

Material	L (cm)	W (cm)	Th (cm)	Comments
chert	>2.5	2.9	0.7	midsection fragment of tan-gray chert late stage biface, relatively large

Projectile Points. Two small, nearly complete, projectile points were collected (see Figure 19**).** The Washington Pass chert point (Artifact #323.14) is triangular with a slightly flared stem and corner notches; the tang tips and one side of the stem are broken. The other point (Artifact #318.3) is a stemmed point of white to gray chert, retouched along one lateral edge, with one broken tang. Dimensions are presented in Table 7.

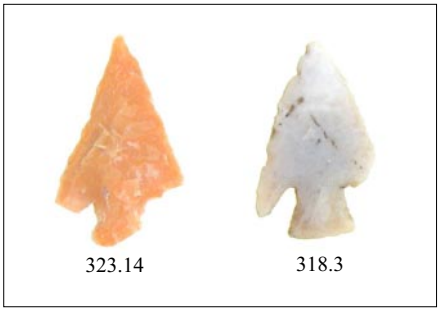

Figure 17. Photograph of projectile points from 5LP378, actual size.

Table 7. 5LP378 Projectile point attributes

Artifact No.	Material	Style	L (cm)	W (cm)	Th (cm)	Comments
323.14	Washington Pass chert	stemmed	2.4	1.5	0.5	small triangular point with slightly flared stem and corner notches, relatively well-made with parallel flake scars, tang tips broken and stem broken on one edge, 90% complete
318.3	chert	stemmed	2.2	1.4	0.2	small stemmed point of white to gray chert, long tang (one is broken) makes it almost corner notched, one side is retouched only around the edges, very formalized shape, but minimum time invested

Uniface. One complete limestone uniface was recovered. It exhibited unidirectional retouching around two sides and slight use attrition. The pointed aspects had been either ground or abraded smooth.

Table 8. 5LP378 Uniface

Material	L (cm)	W (cm)	Th (cm)	Comments
limestone	6.0	5.3	2.0	gray very finely grained chunk, with unidirectional retouch around two sides and some attrition from use, pointed aspects are abraded or battered smooth

Choppers. Two choppers are present in the assemblage. One is a complete limestone cobble chopper with some use wear present. The other is a split, igneous cobble that is battered on one end. Table 9 presents their dimensions.

Table 9. 5LP378 Chopper Tools

Material	L (cm)	W (cm)	Th (cm)	Comments
igneous	8.2	6.6	3.4	split cobble, battered on "sharp" end
limestone	15	10.5	8.4	cobble with a few flakes removed to make it an expedient chopper, not much use wear present

Cores. Four complete core tools were recovered during excavation. They were siltstone, quartzite, chert and igneous. All were multidirectional cores and three showed evidence of platform preparation in the form of battering or grinding.

Table 10. 5LP378 Core Tools

Material	L (cm)	W (cm)	Th (cm)	Comments
siltstone	10.7	9.0	7.1	purple and green (Hermosa Group?) siltstone multidirectional core with numerous flakes removed and some possible battering or platform preparation at one end
quartzite	9.1	7.9	7.0	fine-grained pink and black multi-directional core with numerous flakes removed and evidence of platform preparation as battering and grinding
chert	3.6	3.3	2.8	remnant of spent, multidirectional core from a cobble
igneous	12.6	10.7	5.6	fragment of large gray cobble with <30% quartz inclusions (coarse material), flakes removed in multidirectional manner, platforms battered for preparation

Shaped Slabs. One shaped sandstone slab fragment was recovered. The dimensions are presented in Table 11.

Table 11. 5LP378 Shaped Slab

Material	L (cm)	W (cm)	Th (cm)	Comments
sandstone	>12.5	9.9	2.4	fragment flaked to shape around the edge, not ground

Modified Flakes. Five modified flakes are present in the assemblage. Three are unidirectionally retouched flakes and two are utilized flakes with unidirectional utilization. Their dimensions and analysis comments are presented in Table 12.

Table 12. 5LP378 Modified Debitage

Material	Type	L (cm)	W (cm)	Th (cm)	Comments
igneous	retouched flake	9.8	9.8	2.6	large cobble flake with unidirectional retouch along one lateral edge, use wear apparent on that edge, probably from chopping and scraping
chert	retouched flake	1.0	2.5	0.3	small, irregularly shaped flake with unidirectional retouch along the distal edge
chert	retouched flake	3.2	2.0		fine dark chert with unidirectional retouch along one lateral edge and bidirectional utilization wear along the opposite lateral edge
chert	utilized flake	2.2	2.0	0.5	small gray-brown interior flake, tiny attrition flakes along one lateral edge from utilization
chert	utilized flake	3.9	2.4	0.5	mottled gray chert with some possible unidirectional utilization on the ventral side of one lateral edge

Summary

It is apparent that the inhabitants of 5LP378 were utilizing locally available materials and creating expedient tools. Quartzite, chert and siltstone were the most commonly used materials. The nature of the geology in the area makes diverse material types widely available. Few formal tools were recovered, no hammerstones were present, and the lithic reduction sequence indicates that final stage lithic tool production did not occur in Pithouse 1.

Non-Flaked Lithics

The non-flaked lithic assemblage from the 1996 excavations was limited to 36 items. These consist of five manos, four paint stones, one maul, one slab metate, 17 pieces of indeterminate ground stone, and eight pieces of fire-cracked rock. A definitive preference for locally available river cobbles of quartzite, quartzitic sandstone and igneous materials is shown through the fact that 26 of the 36 items are of these three materials. The remaining ten are of shale, sandstone, conglomerate, or galena. Vegetal processing can be inferred from the presence of the manos and metate, pigment or paint processing from the presence of pigment stones, galena, and a hematite-covered cobble, and food cooking from the presence of fire-cracked rock.

Manos. Five manos were recovered during excavation. Four are two-handed manos and one is a one-handed mano that may actually have been used as a hide polisher, based on the fine-grained nature of the material and polishing over nearly the entire item. Of these, three were complete. Three of the manos were igneous river cobbles, one was quartzitic sandstone, and one was sandstone. The item dimensions are specified in Table 13 below.

Table 13. 5LP378 Manos

Material	Type	L (cm)	W (cm)	Th (cm)	Comments
igneous	trough-type two-hand mano	18.3	12	3.4	classic trough-type mano, ground and pecked to shape on every aspect, might be Granodiorite, is extremely burned
igneous	mano-hammerstone	23.0	11.0	7.6	large plano-convex cobble, ground on both surfaces, slightly battered on one end. one flake removed on side. broken in 2 pieces but complete. burned.
igneous	mano-chopper	>16.2	>13.8	4.4	multi-purpose split cobble tool. battered from chopping on one edge. grinding on one side measures > 12.4 cm by >13.4 cm, ground curved end suggests use in a trough metate. grinding on other surface is only on high spots. item is burned.
quartzitic sandstone	mano	>12	12.5	3.6	irregularly shaped fragment of groundstone, probably a broken 2-handed mano that was utilized both before and after it broke, ground on one side only
sandstone	one-hand mano	12	11	3.0	flattened cobble, nearly entire item ground, appears to have been utilized to grind soft material or polish hides, nearly wedge shaped in cross-section
igneous	two-hand mano	21	9.5	7.5	Large cobble ground on at least one surface, possibly battered along margins, natural thumb notch

Paintstones. Four possible paint or pigment stones are present in the assemblage. Of these, two are complete, one is fragmentary and on one, portion cannot be determined. Three are pink, very poorly cemented, finely grained and powdery (see Figure 18). These may be shales from the nearby Hermosa Formation that were used for pigment. Two of these three appear to have been ground; the third may not have been modified. The fouth paint stone is an unmodified piece of galena; (this is the piece upon which completeness could not be determined). Table 14 presents the dimensions and item descriptions.

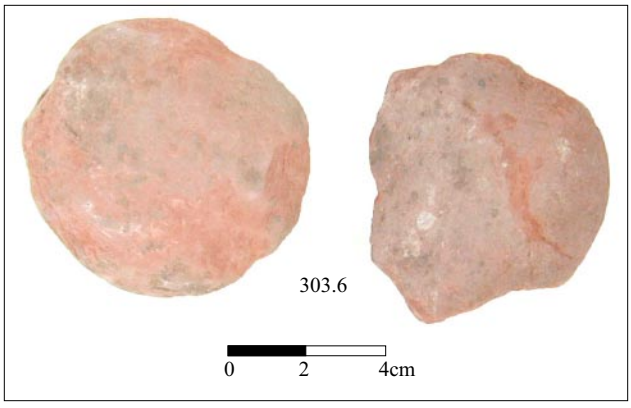

Figure 18. Photograph of paintstones.

Table 14. 5LP378 Paint Stones

Material	L (cm)	W (cm)	Th (cm)	Comments
mineral	1.2	0.6	0.6	possibly galena for production of paint, appears to be unmodified
sandstone	6.6	5.8	3.1	very fine-grained and poorly cemented pink (Hermosa Formation?) sandstone, possibly ground on one side, turns to powder with the slightest abrasion
sandstone	6.9	6.5	3.6	very fine-grained and poorly cemented pink (Hermosa Formation?) sandstone, possibly ground but eroded, turns to powder with the slightest abrasion
sandstone	15.5	12.2	8.1	large chunk of extremely fine-grained poorly cemented and powdery sandstone, (or shale from Hermosa Formation?) possibly utilized as pigment, not clearly modified, (possibly a few flakes removed)

Maul. One complete quartzite maul with a deeply pecked central groove was recovered from the structure floor. No evidence of use on hard objects is present on the maul. It is illustrated in Figure 19.

Figure 19. Photograph of grooved maul from 5LP378.

Table 15. 5LP378 Grooved Maul

Material	L (cm)	W (cm)	Th (cm)	Comments
quartzite	14.0	12.0	7.2	oval coarsely grained cobble with a deeply pecked center groove that extends completely around it, groove is 2.0-2.5 cm wide and .2-.6 cm deep, no evidence of battering on the ends from use, very heavy

Slab Metate. The single metate recovered during excavation was a ground fragment of quartzitic sandstone with pecking and grinding over one entire surface. The edges of the item were ground to shape. The dimensions are presented in Table 16.

Table 16. 5LP378 Metate Fragment

Material	L (cm)	W (cm)	Th (cm)	Comments
quartzitic sandstone	>22.0	>18	4.6	fragment with edges ground to shape, one ground surface is pecked as well and equals item dimensions, dense, heavy material, burned

Indeterminate Non-Flaked Lithic Items. Seventeen pieces of non-flaked stone that cannot be readily classified are present in the non-flaked lithic assemblage. Six are quartzite, four are igneous, three are quartzitic sandstone, two are sandstone, one is a conglomerate, and one is shale. All of the materials are locally available. Two of the items are battered, one is hematite-stained and one may be an ornament fragment. Most of these items are cobble fragments, and are simply too smooth naturally to determine without a doubt whether or not they were utilized. Details for each piece are presented in Table 17.

Table 17. Indeterminate Non Flaked Lithic Items

Material	L (cm)	W (cm)	Th (cm)	Comments
quartzite	>11.4	>8.2	8.1	fragment of large gray cobble, ground on opposite sides and battered around the margin of one broken edge, ground surfaces measure >6.8 by >3.4 cm and >9.9 by >5.2 cm
igneous	17.5	11	5.4	green coarsely grained flattened cobble, possibly diorite, burned and broken, over 1/2 present, ground on opposite sides, ground surfaces each measure 16.5 by 9.0 cm
quartzite	17.8	11.2	5.4	irregularly shaped piece of burned quartzite, prominences ground on one side
quartzitic sandstone	>14.5	>10	7.2	thick fragment, lightly ground on one entire surface, unshaped and burned
igneous	10.5	7.2	2.9	small flattened cobble with feldspars common throughout, ground on one side and possibly used as a hide polisher, ground surface measures 6.7 by 6.6 cm
quartzite	11.5	10.7	5.2	flattened cobble of white quartzite with mica inclusions, opposite sides ground on prominences, one edge burned, probably a mano or hide polisher
quartzitic sandstone	15.2	14.7	2.7	spalled slab from cobble with some fossiliferous inclusions, ground lightly on prominences of one side
quartzite	8.4	6.0	4.8	oval light quartzite cobble, possibly ground, unwashed due to the presence of pigment which is probably hematite
shale	2.9	>2.4	0.5	small flattened pebble of fine pink siltstone or shale, ground on one side where not spalled or eroded, and ground slightly on two edges, possibly an ornament fragment
conglomerate	>8.1	8.2	7.6	possibly Burro Canyon conglomerate fragment, opposite sides are ground on prominences, the entire item is burned
sandstone	>9.2	>7.5	1.9	ground on prominences on opposite sides, one edge might be ground and pecked to shape, function not clear
igneous	>3.6	>2.6	0.4	tabular piece of igneous rock, prominences ground on one side
quartzite	>14	>8.9	5.4	large fragment of pink cobble, ground flat on one surface, ground area measures 11.2 by 6.9 cm
siltstone	>11.9	>5.6	1.6	maroon finely grained siltstone (or Hermosa shale?) tabular fragment. ground flat on one entire side, approx. 2 dozen shallow parallel striations on ground surface. possibly a metate or palette fragment.
quartzite	>25.0	>15.0	8.5	large quartzite cobble fragment, ground and pecked on opposite sides over almost entire item, burned and not complete, appears to have been used both before and after it was broken based on edge rounding and wear patterns
quartzitic sandstone	16.5	>13.5	3.4	Irregular, unshaped fragment possibly ground on opposite sides

Ceramic Materials

Typology

A total of 285 sherds, including many that refit, were recovered from 5LP378 in 1996. All of the ceramics recovered indicate a Pueblo I occupation. Of the 285 sherds, 94% are plain gray. The remaining 6% consist of two Piedra Black-on-white and 16 untyped Mesa Verde region white wares. Although the majority of the graywares were not rim sherds, and could not be typed definitively, it is likely that they were primarily Chapin and Moccasin Gray.

The temper from all the ceramics from the site were not examined during this analysis. However, based on the findings of the 1980 ceramic analysis (Lucius 1982) and an examination of several of the sherds, it is assumed that the ceramics contained a quartzite temper (or quartz/ feldspar by some analysis). During the 1982 analysis this temper was interpretated as being a signature of a manufacturing loci "the Animas Tract" within the Mesa Verde Culture Category. Recent work, however, has assigned this ceramic temper to the Upper San Juan Ceramic Tradition.

Vessel Form and Function

Of the 285 sherds recovered, 260 (92%) were jar sherds and only 25 (8%) were bowl sherds. This overwhelming percentage of jar sherds is indicative of cooking and storage activities, and may also indicate seasonal habitation or limited activity at the site. Long-term habitations tend to yield more diverse vessel forms resulting from a variety of tasks performed throughout the year.

Fired Adobe

A single complete item made from fired adobe or untempered clay was found in the lower floor fill of Pitstructure 1. The circular item pictured in Figure 22 measured 2.6 cm in diameter and was 0.9 cm thick, with a biconvex cross-section. A small hole 0.6 cm in diamter in the center of the disk appears to have been pierced prior to firing. The item was shaped by pinching the adobe or untempered clay flat rather than by grinding the edges after it was fired. This item is interpreted as a spindle whorl that was used in spinning fibers for weaving.

Faunal Remains

Thirty-six pieces of faunal bone are present in the assemblage from 5LP378. As shown in Table 18, the bones represent large mammal, deer/sheep/pronghorn, mountain sheep, a large bird, a dog or coyote, and four species of rodent. All of these species are native to the area and are commonly associated with Anasazi sites. These animals were probably utilized as food, bone, sinew, and hide sources; if the *Canis sp*. was a dog, it may also have been a companion, possibly used in hunting other animals.

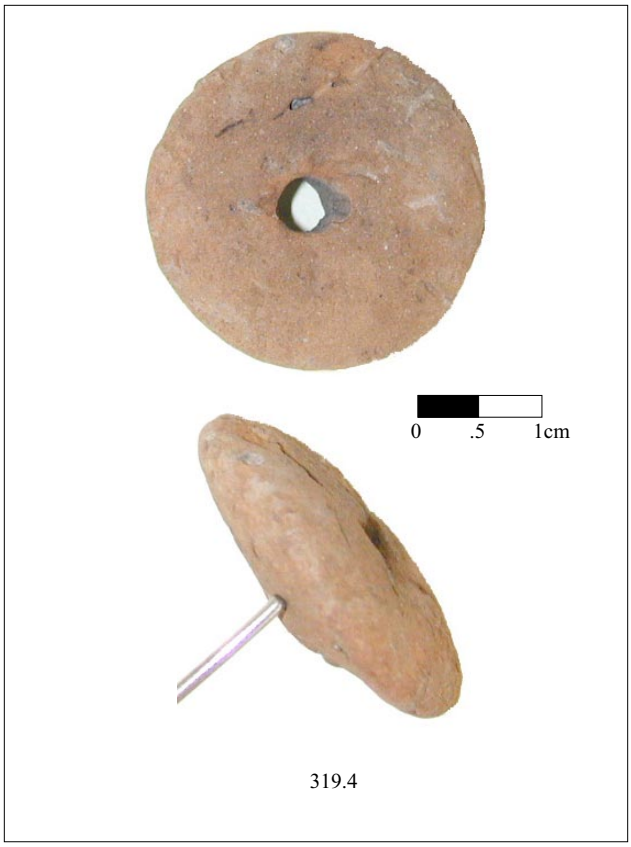

Figure 20. Photograph of fired adobe spindle whorl showing plan view (top) and side view (bottom).

The 36 bones may be the remains of as few as eight individual animals: one mountain sheep, one dog or coyote, one large bird, one wood rat, one mouse, two jackrabbits, and one ground squirrel. Of these eight animals, only five (mountain sheep, dog or coyote, large bird, two jackrabbits) were present in the pithouse as a result of human activity. This represents a limited amount of animal protein consumed by the human occupants of the site. The relative paucity of bone may be the result of one or more factors: a relatively short occupation of the site; poor hunting conditions; a primarily vegetarian diet; bone disposal occurred outside the excavated portion of the site.

Table 18. 5LP378 Faunal Remains

Taxon	Bone Count
artiodactyl	1
Ovus canadensis	1
Canis spp.	9
large mammal	3
large bird	2
Neotoma spp.	10
Perognathus spp.	1
Lepus californicus	7
small mammal	1
Cf. *Spermopholis variegatus*	1

Vegetal Remains

Vegetal remains, in the form of pollen or vegetal material, represented plant species found within a 2-mile radius of the site. As seen in Table 19, arboreal species consisted of cottonwood, pine, juniper, oak, spruce, fir and ponderosa pine. Shrubby species consisted of sagebrush, rabbitbrush, saltbush, and greasewood.

Table 19. Vegetal remains from 5LP378

Scientific Name	Common Name	Type of Sample	Plant Part	Charred (Y or N)
ARBOREAL				
Juniperus	Juniper	Pollen		
		Veg	Root	N
			Charcoal	y
Pinaceae	Pine family	Pollen		
Abies	Fir	Pollen		
Picea	Spruce	Pollen		
cf. Picea			Cone	N
Pinus	Pine	Pollen		
			Bark scale	Y
Pinus edulis/ponderosa			Charcoal	Y
Pseudotsuga	Douglas fir	Pollen		
Quercus	Oak	Pollen		
			Charcoal	y
Populus	Cottonwood, aspen	Veg	Charcoal	Y
NON-ARBOREAL				
Apiaceae	*Parsley/carrot family*			
Asteraceae	Sunflower family			
Artemisia	Sagebrush		Charcoal	Y
Low-spine	Includes ragweed, cocklebur			
High-spine	Includes aster, rabbitbrush, snakeweed, sunflower			
Liguliflorae	Includes dandelion and chicory			
Atriplex	Saltbush		Fruit	Y
Cactaceae	Cactus family		Areole, Spine	Y
Cylindropuntia	Cholla cactus			
Echinocereus	Hedgehog cactus		Seed	Y
Mammillaria-type	Pincushion cactus			
Opuntia	Prickly pear cactus			
Cheno-ams	Includes amaranth and pigweed family			
Chenopodium	Goosefoot			
Sarcobatus	Greasewood			
Cleome	Beeweed			
Cercocarpus	Mountain mahogany		Charcoal	y
Cucurbita	Squash, pumpkin, gourd		Seed embryo	Y
Ephedra nevadensis-type	Mormon tea			
Onagraceae	Evening primrose family			
Poaceae	Grass family			
Polygonaceae	Buckwheat family			
Eriogonum	Wild buckwheat			
Polygonum aviculare-type	Knotweed			

Dating

Absolute

Dendrochronological

Thirteen tree-ring samples were submitted to the Laboratory of Tree-Ring Research for dating from Pithouse 1. Of those, only four were dateable. "Three of the four dated samples form a loose cluster in the 790s, which suggests that construction activity connected with Pithouse 1 occurred not long after 800. One of these (DUR 141) is a near cutting date whose + symbol and complete terminal ring indicate that this tree was cut after the growing season (summer) of 790 or 791. The early noncutting date of DUR 146 could reflect the removal of exterior rings by burning or erosion from a timber procured around 800" (Dean 1997). Since all the dated timbers are the main supports of the pithouse, the dates suggest a construction date around AD 800. Table 20 summarizes the results from the Laboratory.

Table 20. 5LP378 Tree-ring dates

Provenience	TRL #	Species	Dating: Years A.D. Inside-Outside
Pithouse 1, post	DUR-146	Juniper	671-763vv
Pithouse 1, post	DUR-141	Pinus	719-790+LB
Pithouse 1, post	DUR-142	Juniper	663-793+vv
Pithouse 1, post	DUR-143	Juniper	648-799++vv

Outside Date Symbols

B - bark present
L - surface patination and smoothness that develops on beams stripped of bark
v - a subjective judgment that, although there is not direct evidence of the true outside on the specimen, the date is within a very few years of being a cutting date
vv - there is no way of estimating how far the last ring is from the true outside
+ - one or more 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
++ - a ring count is necessary due to the fact that beyond a certain point the specimen could not be dated

Relative

Ceramic

The Mesa Verde variety graywares from 5LP378 are most likely Chapin Gray pottery. Breternitz, Rohn and Morris (1974) place Chapin Gray pottery between A.D. 600-900. Piedra Black-on-white is limited to A.D. 750-900. No corrugated pottery was recovered from the structure,

which indicates that the structure was abandoned some time prior to A.D. 900, when the production of corrugated ceramics began. These ceramic dates correspond well with the tree-ring dates presented above and indicate a Pueblo I occupation of the site, between A.D. 790 and 900.

ARCHAEOLOGICAL SUMMARY

Excavations at site 5LP378 revealed a pithouse built around A.D. 800. The pithouse was subrectangular in shape and lacked wingwalls or a bench. Built into the south wall at the juncture of the vent tunnel and the pithouse was an adobe deflector. The floor of the structure was mostly open containing only a central hearth, a small sipapu and four main support posts. The ancestral Puebloan people who built the structure apparently leisurely abandoned the structure taking their portable and valuable goods. In addition, it appears they partially dismantled the roof and consequently buried the floor with earthen materials covering the roof. These earthen materials also buried the lower portions of the upright posts which had not been salvaged.

Shortly thereafter, the pithouse with its upright posts was reused as a temporary structure and then abandoned again. At the second abandonment, the pithouse was burned leaving the upper portion of the posts charred and ash and juniper bark and sage charcoal on the makeshift floor.

The pithouse was probably associated with a roomblock that was destroyed during the 1950's pipeline construction. This is based on the orientation of the pithouse (northwest-southeast) and the absence of roomblock now in the northwesterly direction.

Excavation work in 1980 located a roomblock to the north of the pithouse. Dates obtained from that excavation indicated it was built in AD782, 18 years prior to the recently excavated pithouse. It is believed that this roomblock is not to be associated with the recently excavated pithouse but rather a previously identified pithouse (Pithouse 2) which is situated to the east of the excavated pithouse.

EVALUATION OF RESEARCH

Below is an evaluation of the research domains that were originally proposed for the site. Following this section is a section that evaluates the research reported upon here in relation to the newly published prehistoric context for the southern Colorado River Basin (Lipe, et al. 1999)

Chronology

Hypothesis. Dendrochronological and ceramic evidence recovered from the 1980 MAPCO excavations indicates that the surface rooms were built prior to A.D. 800, probably in the 780's. It was therefore hypothesized that Pithouse 1 was contemporaneous with the surface rooms and dates to the A.D. 780's.

Data. Absolute chronometric data from dendrochronological samples indicate that the site was constructed shortly after 800. Relative chronometric data from the ceramic assemblage indicates that the site was occupied between A.D. 600-900. Radiocarbon and archaeomagnetic samples were not collected as none were appropriate.

Testing. The hypothesis is not directly supported.

Site Structure

Hypothesis. As previously stated, it was suspected that surface rooms were destroyed during the 1954 construction of the Ignacio-Sumas pipeline. It was also suspected that Pithouse 1 was associated with these destroyed rooms. Therefore, it was hypothesized that when excavated, the long axis of Pithouse 1 would be found to have an east-west orientation, pointing to the now-destroyed portion of the roomblock.

Data. Architectural and feature data in the form of wall outlines, ventilator shaft and tunnel, and central hearth determined that the long axis of the pithouse was not oriented with the surface rooms.

Testing. The hypothesis is refuted.

Abandonment

Hypothesis. Data from the three excavated surface rooms and the one tested pithouse indicated that all four structures were burned at the time of site abandonment. However, the limited testing data suggested that the pithouse fire was not catastrophic. It was therefore hypothesized that when the site was abandoned, the people first dismantled the pithouse roof, removed selected building beams, burned the remainder, and moved away; summarily, it was hypothesized that the people were not driven from their home by a catastrophic, unintentionally caused fire.

Data. Data on the quantity, size and location of remaining beams indicate that much of the roof of the pithouse was removed at or just prior to abandonment. This was also indicated by the rapid deposition of sediment in the lower portion of the structure. The absence of a complex *in situ* floor artifact assemblage indicates that the structure was abandoned in a planned fashion.

Testing. The hypothesis is supported.

Resource Utilization

Hypothesis. Analysis of the materials from the 1980 excavation revealed that the Pueblo I inhabitants used a wide variety of mostly local resources. The cobbles which are abundant just below the site were used both for building walls and for making stone tools. The faunal materials (cottontail rabbit, prairie dog, mule deer, etc.) indicated that the people also hunted and ate locally available animals.

Although no direct evidence of corn agriculture was recovered from the 1980 excavation, indirect evidence (e.g., surface storage room, trough metate) suggested that the inhabitants did derive at least some portion of their diet from corn. Therefore it was hypothesized that the pithouse belonged to a family of corn farmers who also utilized wild plant and animal foods in their diet.

Data . Macro- or microbotanical data in the form of corn kernels, racemes, husks or pollen were recovered from the floor of the structure. However, no large storage pits were present. The presence of average quantities of wild plant and animal food remains and presence of corn is considered supporting evidence for the hypothesis.

Testing. The hypothesis is supported.

Intra-and Inter-Regional Exchange

Hypothesis. The redware ceramics recovered from the surface rooms indicate that this family engaged in some form of inter-regional exchange. It is hypothesized that the occupants of Pithouse 1, also engaged in inter-regional exchange.

Data. One piece of Washington Pass chert, a non-local lithic material was recovered. The presence of non-local lithic material considered supporting evidence for this hypothesis.

Testing. The hypothesis is supported.

RESEARCH IN RELATION TO PREHISTORIC CONTEXT

CHRONOLOGY

Precise dating is important to our understanding of the Pueblo I occupation in southwestern Colorado, as it appears that large movements of population occurred during this time. The Durango area exhibited a large increase in population in the period AD 750 – 800 and was virtually abandoned by AD 840. The dating of site 5LP378 during the period AD 780 – 805 falls within this period of occupation.

Fuller (1988b) suggests that Blue Mesa might have served as a refugium for Durango Anasazi during the period from AD 800 – 830. The dating of the pithouse to the early portion of this period (around AD 800) indicates that the inhabitants may be part of a group that occupied Blue Mesa during the time when the Durango area was starting to become abandoned.

SITE TYPE

Site 5LP378 falls within the category of hamlet but could be considered part of a large village community on Blue Mesa. Based on limited evidence, it is suggested that even though the site contains two pithouses that it to be considered as a single-residence site that was occupied by two successive households.

Like many sites in the San Juan, and Animas Drainages, the surface rooms were relatively insubstantial, with much of the domicilary architecture being confined to the pithouse. Excavation of site 5LP378 in 1982 revealed three possible cobble-based jacal rooms: one of which is believed to have functioned as a habitation structure.

REGIONAL SITE DISTRIBUTION

Settlement Patterns

Site 5LP378 was occupied during the period of high population density in the Durango area. Blue Mesa contained one of the highest population densities in the southwest during this period. The community on Blue Mesa was composed of several village sites surrounded by numerous single and multiple residential sites. Situated on deep loess soils, this community probably utilized the spaces between their settlements for farm fields.

SUBSISTENCE STRATEGIES

Data obtained from excavations at site 5LP378 taken in conjunction with data from other excavations in the Durango area indicate that the inhabitants' economy was centered around dryland corn, squash, and bean agriculture. This diet was supplemented with game (mountain sheep, deer, jackrabbit, cottontail rabbit, porcupine, and large bird) and wild plant foods (chenoams, cactus, and saltbush). Game appears to be relatively abundant in sites of the Durango area and as a result of the location adjacent to mountainous terrain it might not have been such a rarity as in other areas of the southwest.

The location of site 5LP378 in close proximity to good dryland soils allowed for field areas to be located adjacent to the habitation. Whether sufficient field area was present on top of Blue Mesa to grow enough crops to sustain the suspected large population on Blue Mesa is not known. Additional farmland would have been available below the mesa on the lower Animas benches.

While these fields would be closer to running water, they would be more susceptible to cold-air drainage and crops might not have matured or might have been frozen in these locations.

Settlement and Community: Persistence And Mobility

Pueblo I settlements have a use-life of 15 to 25 years and many Pueblo I communities in the southwest have longevity of 25 – 40 years (Wilshusen 1999: 232). Site 5LP378 appears to have been occupied during the period AD 780 to AD 805 and the only other dated site in the Blue Mesa area, site 5LP379, dates to the AD 830s.

As mentioned earlier, the dates of site 5LP378 fit well with the rest of the larger Durango community. The later date from 5LP379, suggests that the Durango Pueblo I community might have persisted on Blue Mesa 20 to 25 years longer than elsewhere in the Durango area.

Regional Population Levels And Distribution

Based on published information and regional surveys, population estimates have been created for the Pueblo I period in the Northern San Juan. It is estimated that the area supported a population of around 6,000 people by A.D. 800 (Wilshusen 1999:234). This population was most abundant in the drylands northwest of Cortez, in the Mesa Verde Area, in the Durango Area, and possibly in the middle San Juan River Drainage. The areas that were virtually abandoned during this time are the lower Animas, La Plata drainages, the lower San Juan drainage from Farmington to the Four Corners, the Red Rock Valley area in northeast Arizona, the Cottonwood drainage area in southeast Utah and the upper San Juan drainage east of Durango.

Cultural Identity And Diversity: Intercommunity And Interregional Ties

Pueblo I people in the Durango area appear to have been influenced by two different but contemporaneous cultural groups. To the west in the Mesa Verde Region, people have made the transition to surface habitation and are building large roomblocks with habitation rooms and storage rooms. Their pithouses tend to be square to rectangular in shape and incorporate wingwalls in their southern halves. They are producing a pottery with crushed andesite diorite temper. We (as archaeologists) term these attributes Piedra Phase and for the lack of better terms we will call them the Piedra people.

To the east in the middle San Juan Drainage and partially in the Durango area, people have not made the transition to surface habitation. Surface rooms were often built entirely above ground (leading to poor preservation) and were often used primarily for storage. Pithouses are often round, have bifurcated vent openings and lack wingwalls. They are producing a pottery with a crushed quartz/ feldspar temper. We (as archaeologists) term these attributes Rosa Phase and for lack of better terms we will call them the Rosa people.

Sites in the Durango area share characteristics of both Piedra people and Rosa people. On some sites in the area (5LP478B [Fuller 1988], Ignacio 7:31 and 7:36 [Carlson 1963], and 5LP171, and 245 [Duke 1985]) roomblocks are robust and resemble those from the Piedra area, while on others (5LP481, 483, 1100 [Fuller 1988], Ignacio 7:23 and 7:30 [Carlson 1963], and 5LP110 [Gooding 1980]) roomblocks share similarities to the Rosa area. The ceramics of the area also show characteristics of both areas. Ceramics commonly contain the quartz/feldspar temper commonly associated with the Rosa tradition while black-on-white wares commonly are painted with designs from the Piedra tradition.

So who are the Durango people and the inhabitants of site 5LP378 related to? Are they a mixture of the two cultural groups, are they primarily Rosa people with influence from the Piedra people, or are they primarily Rosa people with a few Piedra people living among them? One difficulty in answering these questions is defining who the Rosa people are and where was the core area of the Rosa culture during the period AD 750 – 800.

Unfortunately, despite years of research, it is not exactly clear where the core Rosa area is during the period of AD 750 –800. Wilshusen (1999:235) depicts an area of moderate population (1,000 people) in the Durango Area and in the middle San Juan River drainage around AD 800. A review of dendrochronological dates from the tree-ring laboratory (Robinson and Cameron 1991) shows absolutely no dated sites to this period in the middle San Juan Drainage area and numerous sites from the Durango area. According to L. Sesler (personal communication), the earliest date from the middle San Juan River Drainage is AD 790 and most of the occupation dates after AD 820. So where is the ellusive Rosa core during this period? Is it somewhere we haven't conducted excavations over the last 50 years or where the wood preservation is poor? Or perhaps, is Durango is not between two cultural areas but is actually the core of the Rosa culture during the period AD750 – 800?

An examination of the attributes from site 5LP378 indicate that the people who lived here had strong affiliation with the Rosa culture. First, the inhabitants of site 5LP378 produced a pottery with quartz/feldspar temper that ceramists currently attribute to the Rosa culture. Second, the pithouse excavated is rounder in shape than the pithouses from Piedra sites and lacks wingwalls common to Piedra sites. Thirdly, it contains a bifurcated vent system which is unheard of on Piedra sites but is common on later Rosa sites further to the east. Finally, the roomblock contained abundant evidence of jacal construction but does not appear to be as large or robust as roomblocks of this time in the Piedra area.

POTENTIAL FOR FUTURE RESEARCH

Site 5LP378 is sandwiched between pipelines and land developments. Since its last recording the only extant intact surface remains were covered by a gravel parking lot, perhaps being sealed inadvertently or perhaps destroyed during the process. Much of the rest of the site has been either excavated or destroyed by construction of roads, telephone lines, powerlines, roads, or driveways. One element which holds potentially significant information about the site's occupational history and chronology is the pithouse that was located during the 1980's work. It is located under the existing graveled road east of the recently excavated pithouse, just east of the existing MAPCO pipeline.

REFERENCES CITED

Applegarth, Susan M.
1974 *Archaeological survey of the Bodo Business Ranches.* Ms. on file, Department of Anthropology, Fort Lewis College, Durango, Colorado.

Biggs, Robert W.
1967 *Progress report 1966 excavations of Basketmaker II sites north of Durango, Colorado.* Ms. on file, Department of Anthropology, University of Colorado, Boulder.

Bonan, Mark
1980 *The excavations of Homer Root.* Ms. on file, Center for Southwest Studies, Fort Lewis College, Durango, Colorado

Breternitz, David A., Arthur H. Rohn, and Elizabeth A. Morris
1974 Prehistoric ceramics of the Mesa Verde Region. *Museum of Northern Arizona Ceramic Series 5.*

Curtis, Ross
1996 Personal communication regarding the work of Powderhorn Archaeology in the Bodo Park area.

Carlson, Roy L.
1963 *Basketmaker III Sites Near Durango, Colorado.* University of Colorado Studies, Series in Anthropology No. 8, Boulder, Colorado

Dean, Jeffrey S.
1997 Letter concerning tree-ring dates, Accession # A-1311. On file at Woods Canyon Archaeological Consultants, Inc., Yellow Jacket, Colorado.

1975 *Tree ring dates from Colorado W: Durango area.* Laboratory of Tree RingResearch, Tucson.

Duke, P. G.
1985 *Fort Lewis College Archaeological Investigations in Ridges Basin, Southwest Colorado: 1965-1982.* Occasional Papers of the Center of Southwest Studies, Fort Lewis College, Durango, Colorado.

Eddy, Frank W., Allen E. Kane, and Paul R. Nickens
1984 *Southwestern Colorado Prehistoric Context.* Colorado Historical Society, Denver.

Fetterman, Jerry E. and Linda Honeycutt
1980 *Cultural Resource Inventory, MAPCO's Rocky Mountain Liquid Hydrocarbons Pipeline, Southwestern Colorado.* Ms. on file, Montrose District, Bureau of Land Management, Montrose, Colorado.

1996 *Class III Cultural Resource Survey of Northwest Pipeline Corporation's Durango Pipeline Replacement Project, La Plata County, Colorado.* Ms. on file at Woods Canyon Archaeological Consultants, Yellow Jacket, Colorado.

Fetterman, Jerry E. and Linda Honeycutt (editors)
1982 *Testing and Excavation Report, MAPCO's Rocky Mountain Liquid Hydrocarbons Pipeline, Southwest Colorado.* Ms. on file at Woods Canyon Archaeological Consultants, Yellow Jacket, Colorado.

Fuller, Steven L.
1988a *Archaeological Investigations in the Bodo Canyon Area, La Plata County, Colorado.* UMTRA Archaeological Report No. 25. Ms. on file at Anasazi Heritage Center.

1988b *Cultural Resource Inventories for the Animas-La Plata Project: The Wheeler and Koshak Borrow Sources.* Four Corners Archaeological Project, Report Number 12. Ms. on file, Bureau of Reclamation, Salt Lake city, Utah.

Gerwitz, Laura A.
1982 Site 5LP378, a Basketmaker III-Pueblo I Habitation Site, South of Durango. In *Testing and Excavation Report MAPCO's Rocky Mountain Liquid Hydrocarbons Pipeline, Southwestern Colorado*, pp 2-26 to 2-65, editors Jerry Fetterman and Linda Honeycutt. Ms. on file BLM, Anasazi Heritage Center.

Gooding, John D. (editor)
1980 The Durango South Project: archaeological salvage of tow late Basketmaker III sites in the Durango District. *Anthropological Papers of the University of Arizona* 34.

Hartmann, James E.
1996 Letter dated April 10, 1996 regarding Northwest Pipeline Durango Replacement Project. On file at Woods Canyon Archaeological Consultants, Yellow Jacket, Colorado.

Hibbets, Barry N.
1975 *An archaeological survey of Blue Mesa, La Plata County, Colorado.* Ms. on file, Department of Anthropology, Fort Lewis College, Durango, Colorado.

Husband, Michael B.
1984 *Colorado Plateau Country Historic Context*. Colorado Historical Society, Denver.

Ives, John C.
1971 *Preliminary report of archaeological investigations by Fort Lewis College under Permit #71 CO-022.* Ms. on file, Bureau of Land Management, Montrose, Colorado

Leidy, L. Kent
1976 *Archaeological resources of the Animas-La Plata project: report on the 1975 season.* Ms. on file, Department of anthropology, University of Colorado, Boulder.

Lucius, William A.
1982 Ceramic Analysis. In *Testing and Excavation Report, MAPCO's Rocky Mountain Liquid Hydrocarbons Pipeline, Southwest Colorado (*pp. 7-1 - 7-42). Jerry E. Fetterman and Linda Honeycutt, editors. Ms. on file at Woods Canyon Archaeological Consultants, Yellow Jacket, Colorado.

Morris, Earl H. and Robert F. Burgh
1954 *Basketmaker II sites near Durango, Colorado.* Carnegie Institute of Washington Publication 604

Trewartha, G.T.
1954 *An introduction to climate.* New York: McGraw-Hill.

Ware, John
1981 *Archaeological investigations in the Durango district, southwestern Colorado. Contract Abstracts and CRM Archaeology* 2:2

Wilshusen, Richard H., and Scott G. Ortman
1999 Rethinking the Pueblo I Period in the San Juan Drainages: Aggregation, Migration, and Cultural Diversity. *Kiva* 64:369-399.

Winter, Joseph C., John A. Ware and Philip J. Arnold III
1986 *The Cultural Resources of Ridges Basin and Upper Wildcat Canyon.* Ms. on file, Bureau of Reclamation, Salt Lake City.

APPENDIX A:

POLLEN AND MACROFLORAL ANALYSIS AT SITE 5LP378, SOUTHWEST COLORADO

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June, 1997

INTRODUCTION

Soil samples from a pithouse at Site 5LP378 in southwest Colorado were analyzed for pollen and macrofloral remains. Three vegetal samples also were examined. This subrectangular pithouse is believed to have been occupied during the Early Pueblo I period, approximately the AD 790s or early AD 800s. Pollen and macrofloral analyses are used to address questions pertaining to evidence of foods being processed, types of wood burned as fuel, season of occupation, and evidence of ritual activities.

METHODS

Pollen

A chemical extraction technique based on flotation is the standard preparation technique used in this laboratory for the removal of the pollen from the large volume of sand, silt, and clay with which they are mixed. This particular process was developed for extraction of pollen from soils where preservation has been less than ideal and pollen density is low.

Hydrochloric acid (10%) was used to remove calcium carbonates present in the soil, after which the samples were screened through 150 micron mesh. The samples were rinsed until neutral by adding water, letting the samples stand for 3 hours, then pouring off the supernatant. A small quantity of sodium hexametaphosphate was added to each sample once it reached neutrality, then the beaker was again filled with water and allowed to stand for 3 hours. The samples were again rinsed until neutral, filling the beakers only with water. This step was added to remove clay prior to heavy liquid separation. After the clay was removed the samples were dried and powdered. The dry samples were mixed with zinc bromide (density 2.1) for the flotation process. The heavy liquid separation was repeated at least once. All samples received a short (20 minute) treatment in hot hydrofluoric acid to remove any remaining inorganic particles. The samples were then acetolated for 3 minutes to remove any extraneous organic matter. This method also recovers starch granules present in the samples.

A light microscope was used to count the pollen to a total of 51 to 201 pollen grains at a magnification of 400-600x. Starch granules, when present, are tabulated along with pollen. Pollen preservation in these samples varied from good to poor. Comparative reference material collected at the Intermountain Herbarium at Utah State University and the University of Colorado Herbarium was used to identify the pollen to the family, genus, and species level, where possible.

Pollen aggregates were recorded during identification of the pollen. Aggregates are clumps of a single type of pollen and may be interpreted to represent pollen dispersal over short distances, or the actual introduction of portions of the plant represented into an archaeological setting. Aggregates were included in the pollen counts as single grains, as is customary. The presence of aggregates is noted by an "A" next to the pollen frequency on the pollen diagram. A plus (+) on the pollen diagram indicates that the pollen type was observed outside the regular count while scanning the remainder of the microscope slide.

Indeterminate pollen includes pollen grains that are folded, mutilated, and otherwise distorted beyond recognition. These grains are included in the total pollen count, as they are part of the pollen record.

Macrofloral

The macrofloral samples were floated using a Flote-Tech flotation machine designed by Ray Dausman. Each sample was placed one liter at a time into the machine in the heavy fraction box. A combination of air and water flow carried seeds, charcoal and other materials that float over onto a 250 micron mesh screen. A baffle was then placed into the heavy fraction box and the water flow increased to recover near-flotables, such as nutshell and bone. The screen was changed and the material that was left in the .5 mm heavy fraction box was rinsed off onto a clean 250 micron mesh screen. The floated portions were allowed to dry.

The light fractions were weighed, then passed through a series of graduated screens (US Standard Sieves with 2 mm, 1 mm, .5 mm and .25 mm openings) to separate charcoal debris and to initially sort the seeds. The contents of each screen were then examined. Charcoal pieces larger than 2 mm in diameter were separated from the rest of the light fraction and the total charcoal weighed. A representative sample of these charcoal pieces were broken to expose a fresh cross-section and examined under a binocular microscope at magnifications up to 140x. The weights of each charcoal type within the representative sample also were recorded. The remaining light fraction in the 2 mm, 1 mm, and .5 mm sieves was scanned under a binocular stereo microscope at a magnification of 10x, with some identifications requiring magnifications of up to 70x. A portion of the finest material in the .25 mm screen also was examined under a magnification of 10x. The material which passed through the .25 mm screen was not examined. The heavy fractions also were scanned for the presence of botanic remains. Macrofloral remains were identified using manuals (Martin and Barkley 1973; Musil 1978; Schopmeyer 1974) and by comparison with

modern and archaeological references. Estimates of frequencies were calculated from the sort of a portion of the total volume floated and are noted in the macrofloral table with an asterisk (*). The term "seed" is used to represent seeds, achenes, caryopses, and other disseminules. Remains from both the light and heavy fractions were combined and recorded as charred and/or uncharred, whole and/or fragments.

When examining macrofloral remains from prehistoric sites, it has become most acceptable to consider only charred seeds for the interpretation of a feature and utilization of resources (Minnis 1981). Few seeds live longer than a century, and most for a much shorter time period (Harrington 1972; Justice and Bass 1978; Quick 1961). It is presumed that once the seeds have died, decomposing organisms act to decay the seeds. Interpretation of uncharred seeds to represent presence in the prehistoric record is considered on a sample-by-sample basis. Extraordinary conditions for preservation are important in this interpretation.

ETHNOBOTANIC REVIEW

It is a commonly accepted practice in archaeological studies to reference ethnological (historic) plant uses as indicators of possible or even probable plant uses in prehistoric times. It gives evidence of the exploitation, in historic times, of numerous plants, both by broad categories, such as greens, seeds, roots, and tubers, etc. and by specific example, i.e., seeds parched and ground into meal which was formed into cakes and fried in grease. Repetitive evidence of the exploitation of resources indicates a widespread utilization and strengthens the possibility that the same or similar resources were used in prehistoric times. Ethnographic sources do document that with some plants the historic use was developed and carried from the past. A plant with medicinal qualities very likely was discovered in prehistoric times and the usage persisted into historic times. There is, however, likely to have been a loss of knowledge concerning the utilization of plant resources as cultures moved from subsistence to agricultural economies and/or were introduced to European foods during the historic period. The ethnobotanic literature serves only as a guide indicating that the potential for utilization existed in prehistoric times—not as conclusive evidence that the resources were used. Pollen and macrofloral remains, when compared with the material culture (artifacts and features) recovered by the archaeologists, become indicators of use. Pollen and macrofloral analyses identified remains of plants that might have been important food items for the various occupants of this site. These plants are discussed in the following paragraphs in order to provide an ethnobotanic background for discussing the remains.

Native Plants

Apiaceae (Umbel family)

Members of the Apiaceae family, including but not limited to Cymopterus, Lomatium, and Pseudocymopterus, are noted to have been used. The roots, stems, and leaves of these plants may be used for food, seasoning, and medicine (Colton 1974:305; French 1971:385-412; Whiting 1939:86).

Cactaceae (Cactus Family)

Many members of the cactus (Cactaceae) family were important food resources. Cactus fruits, buds, and stems provided some essential nutrients not available in most native foods (Gasser 1981:224).

Mammillaria-type Cactus

The Mammillaria-type group of cacti include such genera as Carnegiea gigantea (saguaro), Coryphantha, Echinocactus, Echinocereus (hedgehog cactus, strawberry cactus), Ferocactus (barrel cactus), and Mammillaria (pincushion cactus). The pollen from this group of cactus is morphologically indistinct from one another. These cacti provided edible seeds, fruits, and stems.

Echinocereus (hedgehog cactus, strawberry cactus) are small, cylindrical plants with juicy, edible fruits. The fruits have large spine clusters that readily detach when mature. Fruits were eaten raw after the spines were rubbed off, and are reported to taste very much like strawberries. E. enneacanthus (pitahaya) flowers were used to treat intestinal worms and to poison fish. Echinocereus may be found in Colorado, western Kansas, Oklahoma, Texas, New Mexico, Arizona, Utah, California, and northern Mexico. Echinocereus plants flower from February to May, depending on the species and elevation (Kearney and Peebles 1960:570-571; Krochmal and Krochmal 1978:92; McDougall 1973:320; Shields 1984:92).

Mammillaria (fishhook cactus, pincushion cactus) are small or low cacti with crossing spiral rows of nipple-like tubercles. M microcarpa produces small, spineless red fruits that were eaten fresh. The small black seeds may be ground into a meal. Mammillaria can be found in Texas, New Mexico, Arizona, Nevada, Utah, Colorado, southern California, and Sonora (Kearney and Peebles 1960:576-578; Manning 1962:69; Moerman 1986:283).

Cylindropuntia and Opuntia
(Cholla and prickly pear cactus)

Opuntia (prickly-pear cactus) and Cylindropuntia (cholla cactus) were both utilized, frequently in similar ways. Cylindropuntia is an antiquated term for cholla cactus which has been applied in palynology to distinguish cholla cactus from prickly pear cactus (Opuntia). Cholla buds are collected during the spring and roasted. The fruits or tunas of both cholla and prickly pear cactus also were collected for consumption, as were the joints of both cacti. The pads or joints of prickly pear cactus were boiled and eaten, frequently with syrup. The fleshy fruits may be eaten fresh or dried, while non-fleshy fruits were frequently boiled or dried and ground into meal. The process of removing the spines from the cacti usually involves roasting or baking in a pit, and rubbing the spines off (Beaglehole 1937:70; Greenhouse et al. 1981; Kearney and Peebles 1960:581-586; Nequatewa 1943:18-9; Robbins et al. 1916:62; Stevenson 1915:69; Whiting 1939:85-6).

Cheno-ams

Cheno-ams refer to a group representing the Chenopodiaceae (goosefoot) family and the genus Amaranthus (pigweed). These plants are weedy annuals or perennials, often growing in disturbed areas such as cultivated fields and site vicinities. Cheno-ams, including a variety of plants such as Amaranthus, Atriplex, Chenopodium, Monolepsis, and Suaeda, are noted to have been used as food and for processing other foods. These plants were exploited for both their greens (cooked as potherbs) and seeds. The seeds were eaten raw or ground and used to make pinole and/or sometimes mixed with cornmeal to make a variety of mushes and cakes. The seeds usually are noted to have been parched prior to grinding. The greens are most tender when young, in the spring, but may be used at any time. The greens may be harvested and cooked either alone or with other foods. Various parts of the Cheno-am plants are noted to have been gathered from early spring through the fall (Castetter and Bell 1942:61; Curtin 1984:47-71; Kearney and Peebles 1960; Kirk 1975).

Atriplex (Saltbush)

Atriplex (saltbush) leaves and young shoots have a salty taste and may be used as a seasoning, often boiled with meat. The Hopi used ashes of A. canescens as a substitute for baking powder (Kearney and Peebles 1960:255). The dried tops of A. canescens (four-wing saltbush) were used to make a tea for treating nausea and vomiting from the flu. A hot tea was taken for breaking fevers, while a cold tea is used to treat stomachs (Moore 1990:29). Atriplex leaves, twigs, and blossoms yielded a bright yellow dye (Bryan and Young 1978:32).

Chenopodium (Goosefoot, Lamb's Quarters)

Chenopodium (goosefoot) leaves are rich in vitamin C and were eaten to treat stomachaches and to prevent scurvy. Chenopodium also is rich in calcium and vitamin A. Leaf poultices were applied to burns, swellings, and arthritis, and a tea made from the whole plant was used to treat diarrhea and toothaches. C. ambrosioides (Mexican tea, American wormseed) has been used to expel worms in animals and humans. It also has been used to season beans (Angier 1986:191-193; Krochmal and Krochmal 1978:66-67; Moore 1990:42).

Cleome (Beeweed)

Cleome (beeweed) is a weedy plant that grows in disturbed areas. This plant is noted to have been allowed to grow in gardens with cultivated plants. Cleome was used both as a food and a pottery paint. The young plants were usually gathered and boiled as potherbs from spring until mid-summer. Large quantities of leaves were gathered and hung indoors to dry for winter use by the Zuni. The leaves were cooked with boiled corn and highly seasoned with chile. The seeds also may be gathered and ground into meal, although utilization as a potherb appears to have been more common. The seeds ripen in the late summer and fall. Both the young and older plants may be gathered and the entire plant boiled until the water is thick and black. This fluid is then dried and made into cakes, which keep for an indefinite period. The cakes may be reconstituted by soaking them in water for use as pottery paint, or fried in grease to be eaten. Cleome is noted to yield a yellow-green dye (Bryan and Young 1978:23; Clary 1983:55; Harrington 1967:72; Robbins et al. 1916:58-9; Stevenson 1915:69,82; Whiting 1939:77-8).

Eriogonum (Wild Buckwheat)

Eriogonum (wild buckwheat) are perennial or annual herbs or shrubs. The stems may be eaten raw or boiled before the plant flowers (Kirk 1975:231). An infusion of the entire plant was used by Hopi women to help stop post-partum bleeding. The Navajo used a cold root infusion to treat diarrhea, as a ceremonial medicine, as a mouthwash for sore gums, and for bad coughs. A lotion was used for rashes, dog and/or bear bites, and for infants' sore navels. A poultice of chewed leaves was applied to

red ant bites, and the dried plant was smoked to cure snakebites. E. jamesii (antelope sage) root was an important medicine. The Navajo people used a root decoction in medicine ceremonies, to ease labor pains, and as a contraceptive. The Zuni also used antelope sage root to cure many illnesses. The powdered root was applied to cuts and arrow wounds, and a root decoction was taken after childbirth to heal lacerations (Moerman 1986:171-176; Wiener 1972:34, 41). Eriogonum may be found from the foothills to the subalpine on mesas, dry rocky hillsides, rocky meadows, and plains (Kirk 1975:231; Weber 1976:261-263).

Picea (Spruce)

Picea is used by Native Americans ceremonially, nutritionally, medicinally, and architecturally. To the Hopi, it is used to represent one of the sacred directions (northwest) and it is associated with the kachina-cottonwood phratry (Whiting 1939:45). The branches are used in almost all Puebloan dances as symbols for their emergence from the prior world and as a symbol for rain (Robbins et al. 1916; Sweet 1976; Whiting 1939:42). In emergencies, Native Americans have been known to use the inner bark and new shoots as food (Fernald 1943:79). In general, Picea is used to cure dietary ills such as kidney infections and scurvy, as an antiseptic, and as a cold medicine (Moerman 1986:338). Specifically, its needles are brewed as a tea and used as a ceremonial emetic (Vestal 1952:12, as cited in Moerman 1986:338) and for ritual smoking (Whiting 1939:40). Moreover, some have used the ashes from burned twigs as a grease ointment or salve (Steedman 1928:475, as cited in Moerman 1986:338). Interestingly, while it is used in building as roof supports, it is not used, at least by the Hopi, as firewood in the kiva (Whiting 1939:38).

Poaceae (Grass Family)

Members of the Poaceae (grass) family, such as Oryzopsis (ricegrass) and Sporobolus (dropseed grass) have been widely used as a food resource (Colton 1974:338, 365; Cushing 1920:219,253-4; Whiting 1939:65). The seeds could be eaten raw, but were usually parched and ground into a flour that could be combined with other flours and ground meal to make breads and mushes. Young shoots and leaves may have been cooked as greens (Rogers 1980:32-40). Grass also is reported to have been used as a floor covering (Chamberlin 1964:372). Various grasses were used in the manufacture or decoration of pahos (prayer sticks) (Whiting 1939:65-66). Grass seeds ripen from spring to fall, depending on the species, providing a long-term available resource.

Shepherdia (Buffaloberry)

There are three species of Shepherdia (buffaloberry), and all produce edible berries. Berries can be eaten raw, or dried and stored for future use. S. argentea (silver buffaloberry) is a shrub or small tree with silvery leaves and bright red or golden fruits. The berries are noted to have a pleasantly tart flavor and make a good jelly. Native peoples are reported to have gathered the fruits by hand-picking or by spreading a thin cover on the ground and beating off the berries onto it. These berries were eaten raw, cooked into a sauce to flavor buffalo meat, or dried for winter use. The berries are said to be sweeter after a frost. The wood is light, soft, and weak. S. argentea grows in the western one-third of the United States, and the Southwest range extends through plains and canyons in the pinyon/juniper zone, often along streams and river bottoms, from 3000-7500 feet (Angell 1981:64; Elmore 1976:32; Harrington 1967:282-284: Kearney and Peebles 1960:587; Kirk 1975:115-116; Lamb 1989:92). S rotundifolia (round-leaf buffaloberry) is an evergreen shrub with silvery leaves. The ripe fruit contains a sweet, watery, pale-yellow juice. S. rotundifolia is found at 5000-8000 feet in elevation, often in the pine-oak belt. These shrubs are found through-out north-east Arizona and north into Utah, often on steep slopes (Elmore 1976:151; Kearney and Peebles 1960:587; Lamb 1989:92). S. canadensis (russet buffaloberry) has more bitter-tasting berries, although cooking improves the flavor. The leaves and younger twigs have rust colored scales. These shrubs are thornless and are found in moist, usually shaded, slopes in more northern states, although shrubs were noted at about 9000 feet at March Lake on the Kaibab Plateau in Coconino County, northern Arizona (Kearney and Peebles 1960:587; Kirk 1975:116; Lamb 1989:92).

PET Fruity

The term PET (processed edible tissue) was originated by Nancy Stenholm (1993) and refers to softer tissue types, such as starchy parenchymoid or fruity epitheloid tissues. PET fruity tissues resemble sugar-laden fruit or berry tissue without the seeds, as well as tissue from succulent plant parts such as cactus pads.

Cultigens

Cucurbita (Squash/Pumpkin/Gourd)

Cucurbita (squash/pumpkin/gourd) is noted as one of the most important New World crops, and, along with corn and beans, belongs to what Ford (1981) has called the Upper Sonoran Agricultural Complex (Cordell 1984:171). These crops were the first to be cultivated everywhere in the Southwest. Fresh squash was cut into pieces, boiled, baked, or roasted whole in ashes. Squash and pumpkins also were cut in coils or strips that were dried for future use. Blossoms were used to season soup or fried in grease and used as a delicacy in combination with other foods. Seeds also were roasted and eaten or used to oil piki stones. The Zuni are noted to have used a paste made from grinding Xanthium (cocklebur) seeds, squash seeds, and maize kernels to extract cactus splinters and to heal wounds (Stevenson 1915:62). Gourds were dried and made into cups, ladles, dippers, ceremonial rattles, and used for other purposes (Cordell 1984:178; Cushing 1920:561; Stevenson 1915:62,67,88; Vestal 1952:46-47; Whiting 1939:93).

Zea mays (Maize, Corn)

Zea mays (maize, corn) has been an important New World cultigen, originating from a wild grass called teosinte. Maize has long been a staple of the Southwest inhabitants, and charred maize is found in almost every cliffhouse in the Southwest (Stevenson 1915:73). Maize is by far the most common remain in Anasazi coprolitic material from Basketmaker III to Pueblo times (Clary 1983; Minnis n.d.; Moore 1978; Scott 1979; Stiger 1977; Williams-Dean 1986; Williams-Dean and Bryant 1975). Innumerable ways of preparing maize exist. Green corn was widely used, and ears were collected from the regular fields. Mature ears were eaten roasted or wrapped in corn husks and boiled. The kernels may be parched, soaked in water with juniper ash, and boiled to make hominy. Dried kernels may be ground into meal, which is used as a staple. Cornmeal may be colored with Atriplex ashes. Black corn is used as a dye for basketry and textiles and as a body paint. Maize may be husked immediately upon harvesting. Clean husks are saved for smoking and other uses, such as wrapping food. The Pima (Akimel O'odham) and Papago (Tohono O'odham) harvested corn by pulling up the entire stalk after it was dry and piling them at the edges of the fields. Women and children removed unhusked ears from the stalks and then threw them into piles, which were ultimately carried to the dwelling in burden baskets. Unhusked ears of corn were frequently roasted by piling up corn and mesquite brush and setting this pile on fire. The fire burned much of the husk away and the ears were pulled from the fire and dried on top of the house. The roasted, unhusked corn then was stored for later use. Corn also was sometimes shelled prior to storage. Ears also may be allowed to dry on the roof, and ristras of maize may be hung inside from the roof (Castetter and Bell 1942:180-189; Cushing 1920:264-7; Robbins et al. 1916:83-93; Stevenson 1915;73-6; Whiting 1939:67-70). "Corn appears in virtually every Hopi ceremony either as corn meal, as an actual ear of corn or as a symbolic painting" (Whiting 1939:67).

Charcoal

Charcoal recovered from archaeological samples most often represents use of that type of wood as fuel; however, several trees and shrubs had utilitarian and medicinal uses as well. The presence of charcoal indicates that the trees and shrubs represented were present at the time of occupation. If these resources were present and collected as fuel, it also is possible that they were exploited for other purposes as well.

Artemisia (Sagebrush)

The seeds of Artemisia (sagebrush) may be eaten raw, or dried and pounded into a meal to make pinole. Seeds may be harvested from July to September. The leaves may be roasted and added to other foods as a flavoring. The leaves also were used to cover berries and food preserved in caches (Chamberlin 1964:362-363). Artemisia often was used medicinally. A tea made from the leaves was used to treat colds, sore eyes, stomach troubles and many other ailments, and as a hair tonic. Artemisia also was an important ceremonial plant, used as an incense to drive away evil powers. Artemisia ranges in size from herbaceous plants to large, woody shrubs, and is found in arid habitats throughout the West (Gilmore 1977:82-83; Kirk 1975:141-142; Rogers 1980:49).

Cercocarpus (Mountain Mahogany)

Cercocarpus (mountain mahogany) are deciduous or evergreen shrubs or small trees with medicinal and utilitarian properties. Scraped bark was added to Ephedra (Mormon tea) tea (Kirk 1975:92). Navajo peoples used Cercocarpus for many purposes. The roots and bark were used to treat stomach problems, and a leaf decoction to treat stomachache resulting from overeating. A leaf decoction also was used to hasten recovery after childbirth (Moerman 1986:112). C. ledifolius (curlleaf mountain mahogany) is a very hard and heavy wood, but very brittle. A root decoction was mixed with Juniperus (juniper) ashes and powdered Alnus (alder) bark to make a red dye for

woolen blankets. The fruiting twigs of C. montanus (birchleaf mountain mahogany) with their white plumes were used as prayer sticks. The wood of this species never splinters and grows smoother with use. It was used for distaff handles, looms, and dice. The many varieties of Cercocarpus may be found in a variety of habitats, and are common in chaparral belts on mesas and lower foothills, as well as on hills and on canyons on rocky ground (Kirk 1975:92; Peattie 1980:523-527; Weber 1976:291).

Juniperus (Juniper)

Juniperus (juniper) berries were a commonly exploited resource for both food and medicine. Juniper berries are an abundant crop and available throughout the year. The berries were eaten fresh, with piki bread, cooked in stew, boiled, roasted, or used to season meat. Dried berries were stored for winter use, when they may have been ground into meal and used to make mush, cakes, or a beverage. Fresh berries also were pounded to make a liquid drink. Smith (1974) reports that the northern Utes rubbed juniper berries with a mano to separate the seeds from the pulp. The pulp then was eaten either fresh or dried and ground on a metate. Juniper seeds were strung together as beads. Juniper was used medicinally by many groups in various ways to cure various ills. The leaves or twigs are high in vitamins E and C, and were used to make an "all purpose" medicinal tea, commonly used to treat coughs and colds. A tea made from juniper leaves also was given to Hopi women after childbirth (Whiting 1939:62). Juniper trees had utilitarian uses as well. Ashes from green needles were added to water and used as a mordant when dying. The bark, berries, and needles were used to obtain a brown, orange-tan, or yellow-tan dye. Juniper bark was used for a variety of purposes. It was used as a tinder, to line babies' cradleboards, and to line pits where dried fruits were stored. Juniper bark also was used to weave clothes and sandals. Juniper wood often was used as fuel and construction material. Bows and arrows may be made from juniper wood, and juniper pitch was used to fasten feathers to the arrow shafts. The wood also was used to make prayersticks (Angell 1981:96; Bryan and Young 1978:17,39; Castetter 1935:31; Chamberlin 1964:372; Colton 1974:330; Cushing 1920:243,255; Elmore 1944:18; Fowler 1989:63; Gallagher 1977:88-90; Harrington 1967:242; Whiting 1939:62).

Pinus (Pine)

All species of Pinus (pine) produce edible nuts, but Pinus edulis (pinyon pine) was one of the most important and widely used pine. Nuts were harvested in the fall or winter, and a bumper crop occurs approximately every seven years. Nuts were eaten raw or roasted. One method of roasting pinyon nuts involved shaking nuts and coals in a basket. Whole cones sometimes were collected and heated to open the scales and release the seeds. Nuts were roasted in preparation for storage or for being ground into a flour. Ground pinyon nuts were added to corn meal or used to thicken soup, make cakes, formed into balls, or to make a paste similar to peanut butter. Pinyon nuts are high in thiamine, riboflavin, niacin, protein, and fat (Colton 1974:347; Gallagher 1977:37-39; Harrington 1967:323-325; Niethammer 1974:47-49; Whiting 1939:63). Pine needles, inner bark, and resin also were used medicinally. The needles are high in vitamin C and can be used to prevent scurvy. A medicinal tea was made from pine needles to treat a variety of ills. Pine pitch was applied to sores and cuts, and water jugs were coated with pine gum after firing to make them waterproof. Hopi house and kiva main roof beams are noted to have been made from cottonwood or pine. Pine was valued as firewood because the pitch would readily start the wood burning, even when wet (Angier 1986:193-197; Gallagher 1977:113; Whiting 1939:22,63).

Populus (Cottonwood, Aspen)

Populus (cottonwood, aspen) trees are found in moist to wet ground, commonly along streams and in washes (Kearney and Peebles 1960:207, 209; Kirk 1975:106, 263). The catkins may be eaten raw or boiled in stews. The Pima (Akimel O'odham) are noted to have eaten uncooked P. Fremontii (Fremont cottonwood) catkins (Kearney and Peebles 1960:207). A bark tea was used to treat fevers, arthritis, and diarrhea. The ashes of burned bark were mixed with cornmeal and hot water to form a poultice for boils and abscesses. A leaf tea is diuretic and was used as a spring tonic. Flowers and seeds were made into a strong tea and applied to sore gums. Cottonwood twigs were used for basket material, and the root was valued for carving. The Hopi are noted to have traded for cottonwood root. Hopi house and kiva main roof beams were made from cottonwood or pine (Kearney and Peebles 1960:207; Moore 1990:10-11; Whiting 1939:22, 25, 71).

Quercus (Oak)

Quercus (oak) are deciduous or evergreen shrubs to large trees, and the various species are widespread throughout the United States. All species of Quercus produce edible acorns, although the presence of tannin results in varying degrees of bitterness. White oak acorns are generally less bitter than black oak (including red oak) acorns. The acorns of Q. gambelii (Gambel's oak, Rocky Mountain

white oak) are noted to be the least bitter of all; sometimes they are able to be eaten fresh. Gambel's oak is the most common oak of the southern Rocky Mountain region. Other species of acorn are palatable only after the bitter taste has been removed. Acorns are noted to have been utilized by native peoples in the Southwest. Acorns were gathered, shelled, roasted, and ground into a meal. The ground meal most often was leached with water in various ways to remove the bitter taste. Wood ashes could be used like lye in the leaching process. The ground meal was used alone or mixed with cornmeal to make mush, thicken soup, or make breads and cakes. Acorn meal also could be mixed with meat or animal fat. Oak wood was used for a variety of utilitarian purposes including making bows, arrows, rabbitsticks, digging sticks, clubs, and other utensils. Oak wood is strong and hard, and it was valued as firewood because a large piece of oak would burn slowly all night long. Oak bark was the principal source of tanning materials. Oaks in the southwestern United States may be found in dry soils in canyons and foothills (Elmore 1976:23; Gallagher 1977:113; Harrington 1967:239-241; Kearney and Peebles 1960:216-217; Kirk 1975:104-106; Vines 1990:162; Whiting 1939:72).

DISCUSSION

Site 5LP378 is located on Blue Mesa overlooking the Animas River, approximately two miles south of the town of Durango, Colorado. Blue Mesa is noted to be covered with sagebrush (Artemisia), while riparian plants may be found growing along the Animas River. This site consists of a subrectangular pithouse (Pitstructure 1) that is believed to have been occupied during the Late Basketmaker III - Early Pueblo I period. The pithouse exhibited a hearth, four posts, prayer stick holes, a ventilator/deflector feature, and two occupation surfaces. The lower surface contained remains of several partial ceramic vessels, flaked lithic debitage, two projectile points, a maul, a ceramic pendant, charred corn kernels and squash seeds, and faunal material.

Pollen sample PD323.33 was examined from fill below a rock on the lower floor near the east wall of the pithouse (Table 1). This sample yielded a relatively large pollen concentration, perhaps as a result of its protected location. Pinus and Juniperus pollen (Figure 1, Table 2) were recovered in sufficient quantity to indicate the presence of a local pinyon/juniper woodland. The small quantity of Quercus pollen probably also derives from the local pinyon/juniper woodland. Small quantities of Abies, Picea, and Pseudotsuga pollen are present through long distance transport from vegetation communities at higher elevations. Moderate to small quantities of Artemisia, High-spine Asteraceae, and Cheno-am pollen may represent the presence of sagebrush, rabbitbrush, and saltbush in the local vegetation. Only a single small Cheno-am pollen aggregate was recorded, which is not sufficient to argue for economic activity involving Cheno-ams. Small quantities of Low-spine Asteraceae, Liguliflorae, Sarcobatus, Poaceae, and Polygonum pollen may represent other local plants. Cylindropuntia, Opuntia, and Zea mays pollen were noted during the scan of this sample, indicating that cholla, prickly pear cactus, and maize might have been processed in this portion of the pithouse. Of these, only Zea mays pollen was accompanied by an aggregate.

Vegetal sample PD319.6 was removed from fill just above the floor in the northwest quadrant of the pithouse. This sample contained a piece of Populus charcoal (Tables 3 and 4). Cottonwood may have been burned as fuel or used in the pithouse superstructure. Three uncharred probable Picea cone fragments also were present. These cone fragments were compressed and flattened. A scale from one of the fragments was digested in bleach in order to observe the cell structure, which was compared to a digested cone scale from a modern spruce cone. The cell structures of the archaeological sample were similar to those from the modern reference cones. Presence of these spruce cone fragments may reflect ritual activity.

Feature 15 is the pithouse hearth. Samples PD330.2, BS330.3, and PD330.1 all were recovered from fill in the east half of the hearth. Pollen sample PD330.2 yielded a moderately low concentration of pollen (441 pollen per ml of sediment) and a large quantity of charcoal flecks. This sample was dominated by Pinus pollen, representing local and regional pine. The Juniperus pollen frequency was extremely low, in comparison with sample PD323.33. Elements of this pollen record that might represent economic activity associated with the hearth include small quantities of Apiaceae pollen, which was accompanied by a single small aggregate, Mammillaria-type pollen, Shepherdia pollen also accompanied by a single small aggregate, and Zea mays pollen accompanied by a single small aggregate.

Flotation sample 330.3 contained a variety of charred remains. A charred Cactaceae areole fragment, two charred Cactaceae spine fragments, and a charred Echinocereus seed suggest that hedgehog, and possibly other cacti, were utilized (Table 5). A charred Atriplex fruit fragment suggests use of saltbush seeds. Charred Zea mays cupule fragments, a charred kernel, and charred kernel fragments indicate that maize was processed. Two charred PET fruity tissue fragments may represent use of fleshy fruit or berry resources or succulent plant parts such as cactus pads. Charred Pinus bark scale fragments indicate that a pine log or branch was burned. The

charcoal record was dominated by Juniperus, with moderate amounts of Artemisia and Cercocarpus and lesser amounts of Pinus edulis/ponderosa and Quercus charcoal also present. Juniper, sagebrush, mountain mahogany, pine, and oak wood appear to have been burned as fuel in this hearth. Charred, calcined, and uncharred bone fragments suggest that animal remains also were processed in the hearth. Charred and uncharred pieces of fired clay, a few uncharred rootlets from modern plants, and three insect fragments were the only other remains to be recovered.

Vegetal sample PD330.1 contained a charred Cucurbita seed embryo and embryo fragment, indicating that squash/pumpkin also was utilized. These embryos represent mature seeds that have lost their outer seed coat. Seeds may have been processed and/or discarded in the hearth.

The combined pollen and macrofloral records from this hearth (Feature 15) are in agreement concerning processing of maize and a cactus more firmly identified through the seed as Echinocereus, which produces pollen that is included in the Mammillaria-type group. In addition, squash/pumpkin, a member of the umbel family, and buffaloberry appear to have been processed.

Samples PD335.1 and PD335.2 were recovered from Feature 16, a paho (prayer stick) hole or sipapu in the pithouse floor. Pollen sample PD335.1 was very similar to sample PD330.2 in pollen content. Three pollen types, Apiaceae, Mammillaria-type, and Shepherdia, were absent, and Zea mays pollen was reduced in frequency. Significant differences in the presence of pollen include the presence of Cleome pollen, which was accompanied by a few small- to moderate-sized aggregates, the presence of a single large Cheno-am aggregate, and the presence of a single starch granule that is consistent with the type produced by grass seeds including maize. It is likely that this pollen signature is the result of general economic activity on the floor of the structure, since the signature is so similar to the hearth sample. Any hole or depression in the floor is expected to function to accumulate debris including pollen. There is no specific evidence of ritual activity in this sample.

Vegetal sample PD335.2 consisted of an uncharred Juniperus root fragment. This sample may represent intrusion of juniper tree roots into the pithouse. It is less likely that this uncharred root fragment represents juniper root wood used in the manufacture of the prayer stick since this location is not sufficiently protected that uncharred material is expected to survive from the time of occupation to the present.

The upper surface of the pithouse consisted of a burned reoccupation surface covered by burned rooffall deposits. Groundstone and a partial ceramic vessel were found on this upper surface. Pollen samples PD308.30 and PD308.33 were examined from fill beneath rocks on the upper surface to assess seasonality of occupation that might be recorded in these protected locations. These two pollen samples were considerably different from those collected inside the pithouse. High-spine Asteraceae pollen was dominant and the quantity of Pinus pollen was reduced considerably. A few small High-spine Asteraceae aggregates were recorded in each sample, as were single Pinus aggregates. The Cheno-am frequencies remained similar to those noted inside the structure. A single large Artemisia pollen aggregate was recorded in sample PD308.30. Pollen that might represent economic activity associated with this reoccupation surface includes only small quantities of Zea mays pollen in both samples. This indicates that maize was used by occupants of this upper surface.

The difference in pollen concentrations in these two samples (2241 pollen per ml of sediment in sample PD308.30 and 25209 pollen per ml of sediment in sample PD308.33) probably is the result of differing preservation conditions. Sample PD308.33 was recovered beneath a metate, while sample PD308.30 was recovered beneath a hammerstone. The flat metate would have provided a much better shelter for the sediment beneath it. Pollen would have been protected from some oxidation resulting from alternating wetting and drying of the sediments because the sediments beneath the metate would have stayed drier than other areas. Conversely, the rounded sides of the hammerstone would not have offered similar protection. The types of pollen recovered from these two samples was very similar to one another. The majority of the High-spine Asteraceae pollen in each sample were most similar to the pollen produced by Chrysothamnus (rabbitbrush), indicating that rabbitbrush probably was a common element of the vegetation at the time of this occupation. Also the dominance of these two samples by High-spine Asteraceae pollen that probably represents rabbitbrush is the best indicator of season of occupation. The pollen record from these samples points to the probability of reoccupation during the summer to late summer after the pines have quit pollinating and before the sagebrush pollinates, but when rabbitbrush flowers. This interpretation is based solely on the pollen evidence and assumption that the area sampled beneath these rocks was open to pollen rain during the occupation and protected from further pollen contamination since the abandonment of this upper surface.

Flotation sample BS310.2 was collected from ashy, organic fill on the reoccupation surface. This sample contained an abundance of charcoal, dominated by Juniperus. Juniper may have been used in the pithouse superstructure, or the wood may have been burned as fuel. A moderate amount of Pinus charcoal also indicates use

of pine wood. The sample also contained charred Chenopodium, Eriogonum, and Poaceae seeds or seed fragments, suggesting that goosefoot, wild buckwheat, and grasses were utilized. Seeds may have been processed, plants may have been used as medicinal resources, and/or the plants may have been used in processing other foods. Two charred Zea mays kernel fragments represent use of cultivated maize. The sample also contained two charred bone fragments, an uncharred bone fragment, and numerous pieces of charred and uncharred fired clay.

SUMMARY AND CONCLUSIONS

Pollen and macrofloral analysis of samples from Pitstructure 1 at Site 5LP378 yielded pollen and charred remains representing plants utilized by the various pithouse occupants. Samples from the lower surface of the pithouse represent the earlier occupation. Pollen from the pithouse floor indicates use of cholla, prickly pear cactus, and maize. A piece of Populus charcoal from fill above the floor suggests use of cottonwood in the pithouse superstructure or as fuel. Uncharred, compressed probable spruce cone fragments may represent prehistoric ritual use of spruce cones. Pollen and macrofloral samples from the hearth fill suggest processing of cultivated maize and squash/pumpkin, as well as native Cheno-ams such as saltbush and goosefoot, cacti including hedgehog cactus, and buffaloberry. Charcoal from the hearth suggests that juniper, sagebrush, mountain mahogany, pine, and oak wood were burned as fuel. Animal remains also appear to have been processed/discarded in the hearth. Pollen from a sipapu or paho hole was similar to that noted in the hearth sample. Recovery of Cleome and Zea mays pollen suggest processing beeweed and maize in this portion of the pitstructure. Apparently this hole collected pollen from activities in this portion of the structure. Uncharred juniper root wood also was recovered from this feature and may represent root intrusion into the pithouse.

The pithouse also contained an upper reoccupation surface representing a second occupation episode. Pollen from this surface was conspicuously different from pollen representing the earlier occupation. Large quantities of High-spine Asteraceae pollen probably represents reoccupation during the summer when rabbitbrush pollinates and before sagebrush pollinates. Charred macrofloral remains from the ashy, organic fill covering the upper surface again suggest use of cultivated maize, as well as native goosefoot, wild buckwheat, and grasses. Juniper and pine charcoal may represent use of these woods as fuel or in construction of the pithouse superstructure. This ashy layer does not appear to represent matting material, but rather an area where the floor and/or superstructure burned.

Table 1. Provenience data for samples from site 5LP378

Sample No.	Feature No.	Description/ Provenience	Analysis	Pollen Counted
PD323.33		Fill below rock on the floor near the east wall of the pithouse	Pollen	201
PD319.6		Botanic remains from fill just above floor in the northwest quadrant of the pithouse	Vegetal	
PD330.2	15	Fill from the east _ of the pithouse hearth	Pollen	51
BS330.3	15	Fill from the east _ of the pithouse hearth	Float	201
PD330.1	15	Botanic remains from the east _ of fill in the pithouse hearth	Vegetal	
PD335.1	16	Fill from a sipapu or paho hole	Pollen	201
PD335.2	16	Wood from a sipapu or paho hole	Vegetal	
PD308.30		Fill beneath rock on the reoccupation surface of a pithouse	Pollen	201
PD308.33		Fill beneath rock (PL-31) on the reoccupation surface of a pithouse	Pollen	201
BS310.2		Ashy, organic fill from the reoccupation surface of a pithouse	Float	

Table 2. Pollen types observed in samples from site 5LP378

Scientific Name	Common Name
ARBOREAL POLLEN:	
Juniperus	Juniper
Pinaceae	Pine family
Abies	Fir
Picea	Spruce
Pinus	Pine
Pseudotsuga	Douglas fir
Quercus	Oak
NON-ARBOREAL POLLEN:	
Apiaceae	Parsley/carrot family
Asteraceae:	Sunflower family
Artemisia	Sagebrush
Low-spine	Includes ragweed, cocklebur, etc.
High-spine	Includes aster, rabbitbrush, snakeweed, sunflower, etc.
Liguliflorae	Includes dandelion and chicory
Cactaceae	Cactus family
Cylindropuntia	Cholla cactus
Mammillaria-type	Bald cactus, pincushion cactus
Opuntia	Prickly pear cactus
Cheno-ams	Includes amaranth and pigweed family
Sarcobatus	Greasewood
Cleome	Beeweed
Ephedra nevadensis-type	Mormon tea
Onagraceae	Evening primrose family
Poaceae	Grass family
Polygonaceae	Buckwheat family
Polygonum aviculare-type	Knotweed
Polygonum sawatchense	Sawatch knotweed
Shepherdia	Buffaloberry
Sphaeralcea	Globemallow
Zea mays	Maize, corn
STARCHES:	
Subround w/dot & X	
Round w/Y-fissure & X	
SPORES:	
Monolete	Fern
Selaginella densa	Little clubmoss

Table 3. Macrofloral remains in vegetal samples from 5LP378

Sample No.	Feature No.	Identification	Part	Charred W	Charred F	Uncharred W	Uncharred F	Weight
PD319.6		Populus	Charcoal		1			0.04 g
		cf. Picea	Cone				3	1.62 g
PD330.1	15	Cucurbita	Seed embryo	1	1			0.10 g
PD335.2	16	Juniperus	Root				1	0.21 g

W = Whole
F = Fragment
g = grams

Table 4. Index of macrofloral remians from 5LP378

Scientific Name	Common Name
NATIVE PLANTS:	
Atriplex	Saltbush, Orache
Cactaceae	Cactus family
Echinocereus	Hedgehog or strawberry cactus
Chenopodium	Goosefoot
Eriogonum	Wild buckwheat
cf. Picea	Spruce
Pinus	Pine
Poaceae	Grass family
PET Fruity	Fruity epitheloid tissues, resemble sugar-laden fruit or berry tissue without the seeds, as well as tissue from succulent plant parts such as cactus pads.
CULTIGENS:	
Cucurbita	Squash, Pumpkin, Gourd
Zea mays	Maize, corn
CHARCOAL/WOOD:	
Artemisia	Sagebrush
Cercocarpus	Mountain mahogany
Juniperus	Juniper
Pinus	Pine
Populus	Aspen, Cottonwood
Quercus	Oak

Table 5. Macrofloral remains recovered from flotation samples, 5LP378

Sample No.	Identification	Part	Charred W	Charred F	Uncharred W	Uncharred F	Weights/ Comments
330.0 Feature 15	Liters Floated						3.0
	LF Weight						64.99 g
	FLORAL REMAINS:						
	Atriplex	Fruit		1			
	Cactaceae	Areole		1			
	Cactaceae	Spine		2			
	Echinocereus	Seed	1				
	Pinus	Bark scale		86			
	Zea mays	Cupule		7			
	Zea mays	Kernel	1	21			
	PET Fruity	Tissue		2			
	Rootlets					X	Few
	CHARCOAL/WOOD:						
	Total charcoal ≥ 2 mm						15.82 g
	Artemisia	Moderate		6			0.07 g
	Cercocarpus	Moderate		6			0.33 g
	Juniperus	Dominant		32			2.88 g
	Pinus edulis/ponderosa	Present		5			1.08 g
	Quercus	Present		1			0.16 g
	NON-FLORAL REMAINS:						
	Bone			2		8	
	Calcined bone			260*			
	Fired clay			X		X	
	Insect					3	
BS310.2	Liters Floated						3.0
	LF Weight						42.36 g
	FLORAL REMAINS:						
	Chenopodium	Seed	11	15			
	Eriogonum	Seed	2				
	Poaceae	Seed		1			
	Zea mays	Kernel		2			
BS310.2	CHARCOAL/WOOD:						
	Total charcoal ≥ 2 mm						1.73 g
	Juniperus	Dominant		32			0.67 g
	Pinus	Moderate		8			0.54 g
	NON-FLORAL REMAINS:						
	Bone			2		1	
	Fired clay			X		X	Numerous

W = Whole
F = Fragment
X = Presence noted in sample
LF = Light Fraction
g = grams

* Indicates an estimated frequency based on the sort of a portion of the total volume floate

REFERENCES CITED

Angell, Madeline
1981 A Field Guide to Berries and Berrylike Fruits. The Bobbs-Merrill Company, Inc., New York.

Angier, Bradford
1986 Field Guide to Medicinal Wild Plants. Stackpole Books, Harrisburg, Pennsylvania.

Beaglehole, Pearl
1937 Foods and Their Preparation. IN Notes on Hopi Economic Life, by Ernest Beaglehole, pp. 60-71. Yale University Publications in Anthropology 15.

Bryan, Nonabah G. and Stella Young
1978 Navajo Native Dyes. Their Preparation and Use. Filter Press, Palmer Lake, Colorado.

Bye, Robert A., Jr.
1972 Ethnobotany of the Southern Paiute Indians in the 1870's: With a Note on the Early Ethnobotanical Contributions of Dr. Edward Palmer. Desert Research Institute Publications in the Social Sciences, No. 8, Reno, Nevada.

Castetter, E. F.
1935 Uncultivated Native Plants Used as Sources of Food. University of New Mexico Bulletin, No. 266, Albuquerque.

Castetter, Edward F. and Willis H. Bell
1942 Pima and Papago Indian Agriculture. University of New Mexico Press, Albuquerque.

Chamberlin, Ralph V.
1964 The Ethnobotany of the Gosiute Indians of Utah. American Anthropological Association Memoirs 2:329-405. Kraus Reprint Corp., New York. (Originally printed 1911).

Clary, Karen Husum
1983 Prehistoric Coprolite Remains from Chaco Canyon, New Mexico: Inferences for Anasazi Diet and Subsistence. MA thesis, Department of Anthropology, University of New Mexico, Albuquerque.

Colton, Harold S.
1974 Hopi History and Ethnobotany. IN Hopi Indians. pp. 279-424. Garland Publishing Inc., New York.

Cordell, Linda S.
1984 Prehistory of the Southwest. Harcourt Brace Jovanovich, New York.

Curtin, L. S. M.
1984 By the Prophet of the Earth. University of Arizona Press, Tucson.

Cushing, Frank Hamilton
1920 Zuni Breadstuff. Indian Notes and Monographs. Vol. VIII. Museum of the American Indian, Heye Foundation, New York.

Elmore, Francis H.
1944 Ethnobotany of the Navajo. University of New Mexico Bulletin with the School of American Research, Santa Fe.

Fernald, M. L.
1950 Gray's Manual of Botany. Eighth Edition. American Book Company, New York.

Ford, Richard I.
1981 Gardening and farming before A.D. 1000: patterns of prehistoric cultivation north of Mexico. Journal of Ethnology 1(1):6-27.

French, David H.
1971 Ethnobotany of the Umbelliferae. IN The Biology and Chemistry of the Umbelliferae, edited by V. H. Heywood. pp. 385-412. Academic Press Inc., New York.

Gasser, Robert E.
1981 The Plant Remains from Walpi. Part I IN Walpi Archaeological Project - Phase II: Archaeological Remains. Volume 7:1-326, by Robert E. Gasser and Linda J. Scott. Museum of Northern Arizona, Flagstaff.

Gilmore, Melvin R.
1977 Uses of Plants by the Indians of the Missouri River Region. Reprinted University of Nebraska Press, Lincoln. Originally published 1919, Bureau of American Ethnology, Washington, DC.

Greenhouse, Ruth, Robert E. Gasser and Jannifer W. Gish
1981 Cholla Bud Roasting Pits: An Ethnoarchaeological Example. The Kiva 46(4):227-242.

Harrington, H. D.
1967 Edible Native Plants of the Rocky Mountains. University of New Mexico Press, Albuquerque.

Harrington, James F.
1972 Seed Storage and Longevity. IN Seed Biology. Vol. III, edited by T. T. Kozlowski, pp. 145-240. Academic Press Inc., New York.

Justice, Oren L. and Louis N. Bass
1978 Principles and Practices of Seed Storage. Agriculture Handbook No. 506, US Department of Agriculture, Washington, D.C.

Kearney, Thomas H. and Robert H. Peebles
1960 Arizona Flora. University of California Press, Berkeley.

Kirk, Donald R.
1975 Wild Edible Plants of Western North America. Naturegraph Publishers, Happy Camp, California.

Krochmal, Arnold and Connie Krochmal
1978 A Guide to the Medicinal Plants of the United States. Quadrangle, the New York Times Book Co., New York.

Lamb, Samuel H.
1989 Woody Plants of the Southwest. Sunstone Press, Santa Fe, New Mexico.

Manning, Reg
1962 What Kinda Cactus Izzat? Reganson Cartoon Books, Phoenix, Arizona.

Martin, Alexander C. and William D. Barkley
1973 Seed Identification Manual. University of California Press, Berkeley.

McDougall, W.B.
1973 Seed Plants of Northern Arizona. Northern Arizona Society of Science and Art, Inc., Flagstaff.

Minnis, Paul E.
n.d. Prehistoric Diet in the Northern Southwest: Macroplant Remains from Four Corners Feces. Ms. on file with Department of Anthropology, University of Oklahoma, Norman.

Moerman, Daniel E.
1986 Medicinal Plants of Native America. University of Michigan Museum of Anthropology Technical Reports, No. 19, Vols. 1 and 2, Ann Arbor.

Moore, Michael
1990 Los Remedios: Traditional Herbal Remedies of the Southwest. Red Crane Books, Santa Fe, New Mexico.

Musil, Albina F.
1978 Identification of Crop and Weed Seeds. Agricultural Handbook No. 219, U.S. Department of Agriculture, Washington, D.C.

Nequatewa, Edmund
1943 Some Hopi Recipes for the Preparation of Wild Plant Foods. Plateau 16(1):18-20.

Palmer, C. Mervin
1962 Algae in Water Supplies. Public Health Service, U.S. Department of Health, Education, and Welfare, Washington, D.C.

Quick, Clarence R.
1961 How Long Can a Seed Remain Alive? In Seeds, the Yearbook of Agriculture, edited by A. Stefferud, pp. 94-99. U.S. Government Printing Office, Washington, D.C.

Robbins, W. W., J. P. Harrington and Barbara Freire-Marreco
1916 Ethnobotany of the Tewa Indians. Bureau of American Ethnology Bulletin 55.

Rogers, Dilwyn
1980 Edible, Medicinal, Useful, and Poisonous Wild Plants of the Northern Great Plains-South Dakota Region. Biology Department, Augustana College, Sioux Falls, South Dakota.

Schopmeyer, C. S.
1974 Seeds of Woody Plants in the Unites States. Agricultural Handbook No. 450. U. S. Department of Agriculture, Forest Service, Washington, D.C.

Scott, Linda J.
1979 Dietary Inferences from Hoy House Coprolites: A Palynological Interpretation. The Kiva 44:257-281.

Shields, Helen
1984 Desert Plants: Recipes and Remedies. Okesa Publications, Tularosa, New Mexico.

Steedman, E. V.
1928 The Ethnobotany of the Thompson Indians. Smithsonian Institution: Bureau of American Ethnology Annual Report #45:441-522 (410).

Stenholm, Nancy A.
1993 Fort Rock Basin Botanical Analysis. IN Archaeological Researches in the Northern Great Basin: Fort Rock Archaeology since Cressman. Edited by C.M. Aikens and D.L. Jenkins, University of Oregon Anthropological Papers, Department of Anthropology, University of Oregon, Eugene.

Stevenson, Matilda Coxe
1915 Ethnobotany of the Zuni Indians. Thirtieth Annual Report of the Bureau of American Ethnology. Government Printing Office, Washington, D.C.

Stiger, Mark A.
1977 Anasazi Diet: The Coprolite Evidence. MA Thesis, Department of Anthropology, University of Colorado, Boulder.

Sweet, Muriel
1976 Common and Useful Plants of the West. Naturegraph Company, Healdsburg, California.

Vestal, Paul A.
1952 The Ethnobotany of the Ramah Navaho. Papers of the Peabody Museum of American Archaeology and Ethnology 40:4. Harvard University: Cambridge.

Weber, William A.
1976 Rocky Mountain Flora. Colorado Associated University Press, Boulder.

Wiener, Michael A.
1972 Earth Medicine-Earth Foods. Collier Books, A Division of Macmillan Publishing Co., Inc., New York.

Whiting, Alfred F.
1939 Ethnobotany of the Hopi. Museum of Northern Arizona Bulletin No. 15.

Williams-Dean, Glenna
1986 Pollen Analysis of Human Coprolites. IN Archaeological Investigations at Antelope House. Edited by Don P. Morris, pp. 189-205. National Park Service, Washington, D.C.

Williams-Dean, Glenna and Vaughn M. Bryant, Jr.
1975 Pollen Analysis of Human Coprolites from Antelope House. The Kiva 41:97-112.

APPENDIX B:

5LP378
PROVENIENCE DESCRIPTION
DATA FILE

5LP378 PROVIENENCE INFORMATION

PD #	Study Unit	Study Unit Horizontal	Study Unit Vertical	Feature	Feature Horizontal	Feature Vertical
300	Whole Site	TU 1	Level 1			
301	Whole Site	TU 2	Level 1			
302	Whole Site	TU 3	Level 1			
303	Pitstructure 1	Test Trench	Full Cut			
304	Pitstructure 1	Northeast Quarter	Level 1 (97.70-97.25)			
305	Pitstructure 1	Southeast Quarter	Level 1 (97.80-97.27)			
306	Pitstructure 1	Southwest Quarter	Level 1 (97.70-97.23)			
307	Pitstructure 1	Northwest Quarter	Level 1 (97.80-97.26)			
308	Pitstructure 1	Whole Study Unit	Upper Surface (97.50-96.95)			
309	Pitstructure 1	Southwest Quarter	Level 2 (97.23-96.92)			
310	Pitstructure 1	Northwest Quarter	Level 2 (97.26-96.92)			
311	Pitstructure 1	Northeast Quarter	Level 2 (97.25-96.92)			
312	Pitstructure 1	Southeast Quarter	Level 2 (97.27-96.92)			
313	Pitstructure 1	West Half	Level 3 (~97.50-96.72)			
314	Pitstructure 1	East Half	Level 3 (~97.50-96.74)			
315	Pitstructure 1	Northwest Quarter	Level 4 (15-5cm above lower			
316	Pitstructure 1	Southwest Quarter	Level 4 (15-5cm above lower			
317	Pitstructure 1	Southeast Quarter	Level 4 (15-5cm above lower			
318	Pitstructure 1	Northeast Quarter	Level 4 (15-5cm above lower			
319	Pitstructure 1	Northwest Quarter	Level 5 (5cm above to lower			
320	Pitstructure 1	Southwest Quarter	Level 5 (5cm above to lower			
321	Pitstructure 1	Southeast Quarter	Level 5 (5cm above to lower			
322	Pitstructure 1	Northeast Quarter	Level 5 (5cm above to lower			
323	Pitstructure 1	Whole Study Unit	Lower Floor Surface			
324	Pitstructure 1	Whole Study Unit	Lower Floor Surface	14	Whole Feature	Full Cut
325	Pitstructure 1	Whole Study Unit	Lower Floor Surface	10	Whole Feature	Full Cut
326	Pitstructure 1	Whole Study Unit	Lower Floor Surface	13	Whole Feature	Full Cut
327	Pitstructure 1	Whole Study Unit	Lower Floor Surface	12	Whole Feature	Full Cut
328	Pitstructure 1	Whole Study Unit	Lower Floor Surface	11	Whole Feature	Full Cut
329	Pitstructure 1	Whole Study Unit	Lower Floor Surface	15	West Half	Full Cut
330	Pitstructure 1	Whole Study Unit	Lower Floor Surface	15	East Half	Full Cut
331	Pitstructure 1	Northwest Quarter	Lower Floor Surface (Floor			
332	Pitstructure 1	Southwest Quarter	Lower Floor Surface (Floor			
333	Pitstructure 1	Southeast Quarter	Lower Floor Surface (Floor			
334	Pitstructure 1	Northeast Quarter	Lower Floor Surface (Floor			
335	Pitstructure 1	Whole Study Unit	Lower Floor Surface	16	Whole Feature	Full Cut

APPENDIX C:

5LP378
INVENTORY DATA FILE

5LP378 INVENTORY INFORMATION

PD	Bag	PL	Count	Material	Function
300	1		1	Faunal	awl
301				NONE	
302				NONE	
303	1		1	Flaked	biface
303	2		1	Lithic	ground stone
303	3		33	Ceramic	jar sherds
303	4		1	Dendro	
303	5		1	Flaked	paint stone
303	6		1	Non-flake	paint stone
304	1			Dendro	
304	2		12	Ceramic	jar sherds
304	3			Dendro	
305	1			Dendro	
305	2		21	Ceramic	jar sherds
305	3		1	Flaked	debitage
305	4		1	Faunal	other
306	1			Dendro	
306	2			Dendro	
306	3		31	Ceramic	jar sherds
306	4		1	Flaked	debitage
306	5		1	Non-flake	ground stone
307	1			Dendro	
307	2			Dendro	
307	3		21	Ceramic	jar sherds
307	4		1	Flaked	debitage
307	5		1	Dendro	wood
307	6			Dendro	
307	7		1	Non-flake	mano
308					
308					
308	1	1	1	Groundst	ground stone
308	2	2	1	Groundst	mano-chopper
308	3	3	1	Ceramic	jar sherds
308	4	4	1	Ceramic	jar sherds
308	5	5	1	Ceramic	jar sherds
308	6	6	1	Ceramic	jar sherds
308	7	7	1	Ceramic	jar sherds
308	8	8	2	Ceramic	jar sherds
308	9	9	1	Ceramic	jar sherds
308	10	10	1	Ceramic	jar sherds
308	11	11	1	Ceramic	jar sherds
308	12	12	1	Ceramic	jar sherds
308	13	13	1	Ceramic	jar sherds
308	14	14	1	Ceramic	jar sherds
308	15	15	2	Ceramic	jar sherds
308	16	16	1	Ceramic	jar sherds
308	17	17	1	Ceramic	jar sherds
308	18	18	2	Ceramic	jar sherds
308	19	19	2	Ceramic	jar sherds
308	20	20	1	Ceramic	jar sherds
308	21	21		Dendro	
308	22	22	1	Ceramic	jar sherds
308	23	23	1	Ceramic	jar sherds
308	24	24	2	Ceramic	jar sherds
308	25	25	1	Ceramic	jar sherds
308	26	26	2	Ceramic	jar sherds
308	27	27	1	Ceramic	jar sherds
308	28	28	1	Groundst	mano-hammersto
308	29	29	1	Hammer	two-hand mano
308	30	30		Pollen	pollen
308	31	31	1	Groundst	slab metate
308	32	32		Ceramic	
308	33	33	1	Pollen	pollen
309	1			Dendre	
309	2		1	Vegetal	
310	1		2	Ceramic	jar sherds
310	2		1	Bulk Soil	
311	1		6	Ceramic	jar sherds
312				NONE	
313	1	1		Dendro	
313	2		21	Ceramic	jar sherds
313	3		6	Flaked	shaped slab
314	1		26	Ceramic	jar sherds
314	2		1	Flaked	debitage
314	3		1	Non-flake	indeterminate
314	4			Faunal	
315	1		4	Ceramic	jar sherds
315	2		1	Flaked	debitage
315	3		1	Faunal	indeterminate
316	1		4	Ceramic	jar sherds
316	2		1	Flaked	fire-cracked rock
317	1		7	Ceramic	jar sherds
317	2		1	Flaked	debitage
318	1		5	Ceramic	jar sherds
318	2	1	2	Ceramic	jar sherds
318	3		1	Lithic	debitage
318	4		1	Faunal	indeterminate
319	1		2	Ceramic	jar sherds

5LP378 INVENTORY INFORMATION

PD	Bag	PL	Count	Material	Function
319	2		1	Flaked	utilized flake
319	3		1	Faunal	indeterminate
319	4		1	Ceramic	spindle whorl
319	5		2	Non-flake	indeterminate
319	6		1	Vegetal	
320	1		5	Ceramic	jar sherds
320	2			Dendro	
320	3		1	Faunal	indeterminate
320	4		2	Non-flake	indeterminate
321	1		2	Ceramic	jar sherds
321	2		1	Flaked	debitage
322	1		1	Ceramic	jar sherds
323	1	1	1	Flake	indeterminate
323	2	2	1	Ceramic	jar sherds
323	3	3	1	Mineral	paint stone
323	4	4	1	Flaked	debitage
323	5	5	1	Flaked	debitage
323	6	6		Faunal	
323	7	7	1	Flaked	debitage
323	8	8	1	Mano	trough-type
323	9	9	1	Flaked	debitage
323	10	10	1	Hammer	ground stone
323	11	11	1	Core	core
323	12	12	1	Core	core
323	13	13		Dendro	
323	14	14	1	Projectile	stemmed
323	15	15	1	Flaked	debitage
323	16	16	1	Mineral	indeterminate
323	17	17	4	Ceramic	jar sherds
323	18	18	2	Ceramic	jar sherds
323	19	19	3	Flaked	debitage
323	20	20	1	Flaked	debitage
323	21	21	1	Non-flake	ground stone
323	22	22	1	Flaked	core
323	23	23	1	Ceramic	jar sherds
323	24	24	1	Flaked	debitage
323	25	25	1	Faunal	indeterminate
323	26	26	1	Ceramic	jar sherds
323	27	27	1	Flaked	debitage
323	28	28	1	Flaked	debitage
323	29	29	6	Ceramic	jar sherds
323	30	30	1	Faunal	indeterminate
323	31	31		VOIDED	
323	32	32		Groundst	
323	33	33		Pollen	pollen
323	34	34	1	Microflak	debitage
323	35	35	1	Flaked	debitage
323	36	36	1	Flaked	debitage
323	37	37	1	Flaked	debitage
323	38	38	1	Mano	ground stone
323	39	39	1	Flaked	fire-cracked rock
323	40	40	1	Groundst	ground stone
323	41	41	1	Groundst	ground stone
323	42	42		Faunal	
323	43	43	1	Vegetal	
323	44	44	1	Vegetal	
323	45	45	1	Maul	maul
323	46	46	1	Faunal	indeterminate
323	47	47	1	Non-flake	ground stone
323	48	48	1	Vegetal	
323	49	49	1	Vegetal	
323	50	50	1	Ceramic	bowl sherds
323	51	51	1	Flaked	debitage
323	52	52	1	Faunal	indeterminate
323	53	53	1	Non-flake	ground stone
323	54	54	1	Non-flake	ground stone
323	55	55	1	Faunal	indeterminate
323	56	56	1	Non-flake	ground stone
323	57	57	1	Ceramic	jar sherds
323	58	58	1	Groundst	indeterminate
323	59	59	1	Ceramic	jar sherds
323	60	60	1	Groundst	debitage
323	61	61	1	Lithic	fire-cracked rock
323	62	62	1	Lithic	fire-cracked rock
323	63	63	1	Lithic	fire-cracked rock
323	64	64		Lithic	
323	65	65	1	Ceramic	bowl sherds
323	66	66	1	Lithic	fire-cracked rock
323	68	68	1	Lithic	indeterminate
323	69	69	1	Non-flake	indeterminate
323	70	70	1	Flaked	debitage
323	71	71	1	Vegetal	
323	72	72	1	Ceramic	jar sherds
323	73	73	1	Non-flake	ground stone
323	74	74	1	Non-flake	ground stone
323	75	75	1	Non-flake	ground stone
324	1			Dendro	
325	1		5	Flaked	debitage

5LP378 INVENTORY INFORMATION

PD	Bag	PL	Count	Material	Function
325	2		3	Faunal	indeterminate
325	3		1	Bulk Soil	
326	1		1	Bulk Soil	
327	1		2	Flaked	debitage
328	1		1	Flaked	debitage
329	1			Bulk Soil	
330	1		1	Vegetal	
330	2		1	Pollen	
330	3		1	Bulk Soil	
331				NONE	
332				NONE	
333	1		1	Bulk Soil	
333	2		1	Non-flake	indeterminate
334				NONE	
335	1		1	Bulk Soil	
335	2		1	Vegetal	

PD	Bag	PL	Count	Material	Function

APPENDIX D:

5LP378
ANALYSIS DATA BASE

5LP378 Analysis

PD#	Bag#	Count	Material Code	Material	Function Code	Function	Completness	Weight	L	W	T	Comments
300	1	1	700	Non-Human Bone	0	awl	complete					Awl, made of a distal lateral end of a right tibia of a juvenile Ovus canadensis. The bone represents 15% of the tibia end and has a partially fused ephysis. It is heavily weatherd and no striations are visible on use edge
303	1	1	1	chert	150	biface	fragmentary	5.5	>2.5	2.9	0.7	midsection fragment of tan-gray chert late stage biface, relatively large
303	2	1	530	quartzitic sandstone	500	ground stone	half	1050	16.5	>13.5	3.4	fragment possibly ground on opposite sides, very irregular though and certainly not at all formalized, no shaping etc.
303	2	1	410	limestone	700	manuport	complete	638	9.1	8.0	5.6	unmodified limestone cobble, might have been ground on one surface, not definitive though
303	2	1	420	sandstone	531	one-hand mano	complete	560.0	12	11	3.0	nearly entire item ground, flattened cobble of fine sandstone appears to have been utilized to grind soft material or polish hides, nearly wedge shaped in cross-section
303	3	3	6109	MV Plain Gray	801	bowl sherds		50.8				three gray bowl rims, no painted elements visible
303	3	33	6109	MV Plain Gray	800	jar sherds		359.0				
303	3	1	6102	MV Chapin Gray	800	jar sherds		7.8				
303	3	1	6109	MV Plain Gray	800	jar sherds		4.3				exterior has two parallel incised marks
303	4	1										dendro
303	5	1	300	igneous	90	core	complete	859.0	12.6	10.7	5.6	fragment of lg, gray igneous cobble with <30 % quartz inclusions, flakes removed in multidirectional manner, platforms battered for preparation, coarse material
303	5	3	631	massive quartz	1	debitage	complete	437.8				fat flake of white quartz, one of gray and one of pink, all from cobbles, platforms are entirely cortex
303	5	4	510	quartzite	1	debitage		114.1				
303	5	2	450	shale	1	debitage		15.0				one piece is a flake, the other is a plate, both are unmodified
303	5	1	430	siltstone	1	debitage		2.2				
303	5	1	420	sandstone	592	paint stone	complete	1.589	15.5	12.2	8.1	large chunk of extremely finely grained sandstone, poorly cemented and powdery, possibly a shale from Hermosa Fm. and most likely utilized as a pigment, not clearly modified, possibly a few flakes removed
303	5	1	300	igneous	4	retouched flake	complete	277.6	9.8	9.8	2.6	large igneous cobble flake with unidirectional retouch along one lateral edge with use wear apparent on that edge as well, probably from chopping and scraping
303	6	1	420	sandstone	592	paint stone	fragmentary	140.1	6.6	5.8	3.1	very finely grained and poorly cemented pink sandstone, could be from the Hermosa Fm., possibly ground on one side, this stuff turns to powder with the slightest abrasion
303	6	1	420	sandstone	592	paint stone	complete	223.8	6.9	6.5	3.6	very finely grained and poorly cemented pink sandstone, could be from the Hermosa Fm., possibly ground throughout but eroded, this stuff turns to powder with the slightest abrasion
304	2	12	6109	MV Plain Gray	800	jar sherds		103.6				
305	2	1	6102	MV Chapin Gray	801	bowl sherds		18.8				no design visible
305	2	1	6210	MV Indeterminate Whiteware	801	bowl sherds		3.8				glaze paint, possibly Piedra
305	2	21	6109	MV Plain Gray	800	jar sherds		348.0				a number of pieces refit and may fit with other proveniences
305	3	1	1	chert	1	debitage		23.7				brown chert flake from cobble
305	4	1	700	Non-Human Bone	999	other						right temporal bone of a juvenile Canis spp. The bone is the medial portion and is 40 % complete
305	4	2	700	Non-Human Bone	999	other						right parietal bone (2 pieces) of a juvenile Canis spp. The bone is 85 % complete
305	4	4	700	Non-Human Bone	999	other						right frontal bone (4 pieces) of a juvenile Canis spp. The bone is 35 % complete
305	4	5	700	Non-Human Bone	999	other						cranial fragments bone (5 pieces) of coyote-sized mammal
305	4	3	700	Non-Human Bone	999	other						Left tibia bone (3 pieces) of a juvenile Canis spp. The bone is 15 % complete and is part of the proximal shaft less articular surface
306	3	7	6210	MV Indeterminate Whiteware	801	bowl sherds		48.6				two with painted elements visible, one mineral , one vegetal
306	3	31	6109	MV Plain Gray	800	jar sherds		520				two with handle attachments
306	3	1	6102	MV Chapin Gray	800	jar sherds		7.7				jar rim
306	4	1	0	unknown								
306	4	1	300	igneous	1	debitage		5.1				flake from a green, igneous cobble
306	4	1	510	quartzite	1	debitage		45.7				coarse green qtz.
306	4	1	410	limestone	100	uniface	complete	125.9	6.0	5.3	2.0	gray chunk of limestone, very finely grained with unidirectional retouch around two sides and some attrition from use, pointed aspects are abraded or battered smooth
306	5	1	420	sandstone	500	ground stone	fragmentary	147.1	>9.2	>7.5	1.9	ground on prominences on opposite sides, one edge might be ground and pecked to shape, function not clear
307	3	6	6210	MV Indeterminate Whiteware	801	bowl sherds		108.1				most appear to be polished and unslipped

5LP378 Analysis

PD#	Bag#	Count	Material Code	Material	Function Code	Function	Completness	Weight	L	W	T	Comments
307	3	1	6203	MV Piedra Black-on-white	801	bowl sherds		5.2				glaze paint, bold design
307	3	21	6109	MV Plain Gray	800	jar sherds		370.0				
307	4	1	410	limestone	180	chopper	complete	1248.5	15	10.5	8.4	limestone cobble with a few flakes removed to make it an expedient chopper, not much use wear present
307	4	1	450	shale	1	debitage		6.1				dark with fossil inclusions
307	4	2	300	igneous	1	debitage		69.2				two black igneous flaked, one from a ground item
307	4	1	510	quartzite	1	debitage		115.6				shatter from cobble
307	4	1	450	shale	0	indeterminate		160.6				unmodified shale slab
307	5	1				wood						dendro
307	7	1	300	igneous	0	indeterminate	complete	1475.5	13	10.5	6.9	fine, smooth, fat oval cobble, inherently smooth, no striations, might be ground but may be unmodified
307	7	1	530	quartzitic sandstone	530	mano		618.0	>12	12.5	3.6	irregularly shaped fragment of groundstone, probably a broken 2-handed mano that was utilized both before and after it broke, ground on one side only
308	1	1	430	siltstone	500	ground stone	fragmentary	163.0	>11.9	>5.6	1.6	maroon finely grained siltstone (or Hermosa shale?) tabular fragment. ground flat on one side, dimensions of ground area equal that of item. approx. 2 dozen shallow parallel striations on ground surface. possibly a metate or palette fragment.
308	2	1	300	igneous	532	mano-chopper	fragmentary	1475.5	>16.2	>13.8	4.4	multi-purpose split cobble tool. battered from chopping on one edge. grinding on one side measures > 12.4 cm by >13.4 cm, ground curved end suggests use in a trough metate. grinding on other, flat, surface is only on high spots. item is burned.
308	3	1	6109	MV Plain Gray	800	jar sherds		20.3				
308	4	1	6109	MV Plain Gray	800	jar sherds		70.1				
308	5	1	6109	MV Plain Gray	800	jar sherds		23.4				
308	6	1	6109	MV Plain Gray	800	jar sherds		17.8				
308	7	1	6109	MV Plain Gray	800	jar sherds		77.4				
308	8	2	6109	MV Plain Gray	800	jar sherds		64.0				one has handle attachment spot
308	9	1	6109	MV Plain Gray	800	jar sherds		1.2				
308	10	1	6109	MV Plain Gray	800	jar sherds		5.9				
308	11	1	6109	MV Plain Gray	800	jar sherds		43.2				
308	12	1	6109	MV Plain Gray	800	jar sherds		18.8				
308	13	1	6109	MV Plain Gray	800	jar sherds		25.4				
308	14	1	6109	MV Plain Gray	800	jar sherds		57.3				
308	15	2	6109	MV Plain Gray	800	jar sherds		81.8				pieces refit, portion of the neck of a large jar
308	16	1	6109	MV Plain Gray	800	jar sherds		23.9				
308	17	1	6109	MV Plain Gray	800	jar sherds		94.9				
308	18	2	6109	MV Plain Gray	800	jar sherds		130.1				pieces refit
308	19	2	6109	MV Plain Gray	800	jar sherds		125.5				fragment of lg. jar body, pieces refit
308	20	1	6109	MV Plain Gray	800	jar sherds		33.7				possibly a bowl sherd, smoothed on both surfaces
308	22	1	6109	MV Plain Gray	800	jar sherds		4.7				
308	23	1	6109	MV Plain Gray	800	jar sherds		9.5				
308	24	2	6109	MV Plain Gray	800	jar sherds		16.8				two incision marks might be incidental, might be a portion of a design
308	25	1	6109	MV Plain Gray	800	jar sherds		59.3				
308	26	2	6109	MV Plain Gray	800	jar sherds		107.7				
308	27	1	6109	MV Plain Gray	800	jar sherds		55.1				
308	28	1	300	igneous	533	mano-hammerstone	complete	3405.0	23.0	11.0	7.6	large plano-convex cobble, ground on both surfaces, slightly battered on one end. one flake removed on side. broken in 2 pieces but complete. burned.
308	29	1	300	igneous	540	two-hand mano	complete		21	9.5	7.5	
308	30		872	Asteraceae (sunflower family)	712	pollen						high-spine: aster, rabbitbrush, snakeweed
308	30		852	*Pinus (*pine)	712	pollen						
308	30		857	*Artemisia* (sagebrush)	712	pollen						single large pollen aggregate

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PD#	Bag#	Count	Material Code	Material	Function Code	Function	Completness	Weight	L	W	T	Comments
308	30		859	*Zea mays* (corn)	712	pollen						
308	31	1	530	quartzitic sandstone	556	slab metate	fragmentary	2406.2	>22.0	>18	4.6	fragment with edges ground to shape, one ground surface is pecked as well and equals item dimensions, dense, heavy material, burned
308	33	1	872	Asteraceae (sunflower family)	712	pollen						high-spine: aster, rabbitbrush, snakeweed
308	33		852	*Pinus (*pine)	712	pollen						also single aggregate
308	33		859	*Zea mays* (corn)	712	pollen						
309	2	1										veg burned curcurbita seed
310	1	2	6109	MV Plain Gray	800	jar sherds		9.6				
310	2	1										bs with scott**********
310	2		873	*Chenopodium* (goosefoot)	710	seed						charred
310	2		874	*Eriogonum* (wild buckwheat)	710	seed						charred
310	2		875	Poaceae (grass family)	710	seed						charred
310	2	2	859	*Zea mays* (corn)	710	seed						charred fragments
310	2		851	*Juniperus* (juniper)	711	wood						charcoal
310	2		852	*Pinus (*pine)	711	wood						charcoal
311	1	6	6109	MV Plain Gray	800	jar sherds		63.8				
313	2	1	6210	MV Indeterminate Whiteware	801	bowl sherds		7.1				design in mineral pigment is very worn, exterior is roughly finished
313	2	21	6109	MV Plain Gray	800	jar sherds		425.0				
313	2	2	6102	MV Chapin Gray	800	jar sherds		41.8				two rim sherds from jar almost have a single fillet, they do not refit but are most likely from a single vessel
313	3	2	1	chert	1	debitage		2.7				one is mottled chert from a cobble, the other is pink siltstone (same material as 323.7, 323.27, 323.28)
313	3	6	420	sandstone	506	shaped slab	fragmentary	317.0	>12.5	9.9	2.4	fragment of shaped slab that is flaked to shape around the edge, not ground
313	3	1	1	chert	3	utilized flake	complete	6.9	3.9	2.4	0.5	mottled gray chert with some possible unidirectional utilization wear on the ventral side of one lateral edge
314	1	1	6203	MV Piedra Black-on-white	801	bowl sherds		6.6				the paint on this sherd appears to have been a glaze paint, possibly the product of a lead and arsenic compound
314	1	26	6109	MV Plain Gray	800	jar sherds		258.0				
314	1	2	6109	MV Plain Gray	800	jar sherds		69.7				two jar sherds with fugitive red on the exterior, one with lug handle remnant has quite a thick layer of red
314	2	1	300	igneous	180	chopper		282.8	8.2	6.6	3.4	split cobble, battered on “sharp” end
314	2	1	1	chert	1	debitage		5.6				red chert with numerous impurities
314	2	1	300	igneous	1	debitage		111.9				flake from hammerstone or battered dark igneous rock with common feldspars
314	2	1	420	sandstone	0	indeterminate	fragmentary	23.1	>6.5	3.5	0.8	fragment of thin, shaped slab
314	3	1	450	shale	500	ground stone	fragmentary	4.1	2.9	>2.4	0.5	small flattened pebble of fine pink siltstone or shale that is ground on one side where it is not spalled or eroded and ground slightly on two edges, possibly an ornament fragment
314	3	1	510	quartzite	0	indeterminate		20.2				reddish qtz, possibly other metamorphic type, with some micatious inclusions, burned, unmodified
315	1	4	6109	MV Plain Gray	800	jar sherds		42.4				
315	2	1	1	chert	1	debitage		8.9				nice tan and brown , probably from a cobble
315	2	1	450	shale	1	debitage		38.9				gray fossiliferous shale
315	2	1	300	igneous	2	fire-cracked rock		1.3				heat spall
315	3	1	700	Non-Human Bone	0	indeterminate		0.3				unid. small mammal phalange, unmodified
315	3	1	700	Non-Human Bone	0	indeterminate						Hind phalange of a large bird, rodent chewed and wheatered
316	1	4	6109	MV Plain Gray	800	jar sherds		12.2				
316	2	1	450	shale	1	debitage		0.4				pink shale (or siltstone). ground on one edge. this material found in PDs313.3, 314.3, 316.2, 323.7, 323.27, 323.28
316	2	1	430	siltstone	1	debitage		2.7				
316	2	1	300	igneous	2	fire-cracked rock		9.6				
317	1	7	6109	MV Plain Gray	800	jar sherds		136.8				
317	2	1	430	siltstone	1	debitage		18.7				could be dense shale
317	2	1	430	siltstone	1	debitage		4.6				

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PD#	Bag#	Count	Material Code	Material	Function Code	Function	Completness	Weight	L	W	T	Comments
318	1	5	6109	MV Plain Gray	800	jar sherds		17.1				
318	2	2	6109	MV Plain Gray	800	jar sherds		204.5				pieces refit and are 1.1 cm thick! Curvature indicates that this was a very large vessel
318	3	1	430	siltstone	1	debitage		12.9				from pebble
318	3	1	1	chert	203	stemmed projectile point	complete	0.7	2.2	1.4	0.2	small stemmed point of white to gray chert, long tang (one is broken) makes it almost corner notched, one side is retouched only around the edges, very formalized shape, but minimum time invested
318	4	1	700	Non-Human Bone	0	indeterminate						probably bird
318	4	1	700	Non-Human Bone	0	indeterminate						Left humerous proximal medial shaft fragment with foramen of a Cf. Lepus Californicus
319	1	2	6109	MV Plain Gray	800	jar sherds		4.4				one is probably Chapin gray jar rim, very small though
319	2	1	510	quartzite	1	debitage		16.7				
319	2	4	1	chert	1	debitage		5.1				three are fine gray-brown cher t with stripes, sort of translucent, one is tan mottled chert
319	2	2	430	siltstone	1	debitage		1.9				
319	2	1	510	quartzite	1	debitage		6.7				chunky shatter
319	2	1	1	chert	3	utilized flake	complete	1.9	2.2	2.0	0.5	small gray brown interior chert flake, fine material, tiny attrition flakes along one lateral edge from utilization
319	3	1	700	Non-Human Bone	0	indeterminate						Left lateral end of a clavicle of a Cf. Spermopholis variegatus, stained and root etched
319	4	1	1003	Burned Adobe	621	spindle whorl	complete	6.0	2.6		0.9	this item is made of fired adobe or untempered clay, it is not ground but is shaped by pinching and is circular in plan and biconvex in x-section, the small hole in the center is 0.6 cm in diameter and was probably pierced prior to firing, if this is not a spindle whorl, it could very well be an ornament or bead, neat!
319	5	2	0	unknown	0	indeterminate		8.0				one is unmodified pebble, the other might be a mineral concretion (calcium carbonate?) that's like an ugly geode, it's unmodified as well
319	6	1		veg								veg for ID
319	6	3	855	*Picea* (spruce)	713	cone fragment						bark-spruce or fir?
319	6	1	864	*Populus* (cottonwood,	711	wood						
320	1	5	6109	MV Plain Gray	800	jar sherds		24.8				
320	3	1	700	Non-Human Bone	0	indeterminate						Large Mammal long bone shaft fragment (1%). Rodent chewed one edge possibly utilized
320	3	1	700	Non-Human Bone	0	indeterminate						Large bird cf. femur shaft fragment (1%)
320	3	4	700	Non-Human Bone	0	indeterminate						Left and right maxilla and pre-maxilla with incisors of a juvenile Neotoma spp. Stained black
320	3	4	700	Non-Human Bone	0	indeterminate						Left and right femurs and tibias of Neotoma spp. Black stained.
320	3	1	700	Non-Human Bone	0	indeterminate						Brain case fragment of a rodent possibly Neotoma. Stained black
320	3	1	700	Non-Human Bone	0	indeterminate						Frontal bone (75% complete) of a Perognathus
320	4	1	420	sandstone	2	fire-cracked rock		12.2				
320	4	2	455	conglomerate	0	indeterminate		6.4				
321	1	2	6109	MV Plain Gray	801	bowl sherds		4.7				no painted elements visible
321	1	2	6109	MV Plain Gray	800	jar sherds		3.3				
321	2	1	1	chert	1	debitage		0.2				
321	2	1	510	quartzite	1	debitage		1.2				
322	1	1	6109	MV Plain Gray	800	jar sherds		1.5				
323	1	1	300	igneous	0	indeterminate		89.8				pink (60%) with black mica (35%) and feldspars and bits of quartzite, possibly a heat spall, no definitive modification
323	2	1	6109	MV Plain Gray	800	jar sherds		1.5				
323	3	1	600	mineral	592	paint stone		1.4	1.2	0.6	0.6	possibly galena for production of paint, appears to be unmodified, for special analysis
323	4	1	437	Morrison silicified sediment	1	debitage		0.8				
323	5	1	510	quartzite	1	debitage		2.1				finely grained reddish quartzite flake
323	7	1	1	chert	1	debitage		0.5				pink
323	8	1	300	igneous	541	trough-type two-hand	complete	1589.0	18.3	12	3.4	classic trough type mano, ground and pecked to shape on every aspect, might be Granodiorite, is extremely burned
323	9	1	510	quartzite	1	debitage	complete	112.6				large, pink interior flake from cobble

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PD#	Bag#	Count	Material Code	Material	Function Code	Function	Completness	Weight	L	W	T	Comments
323	10	1	510	quartzite	500	ground stone		365.0	8.4	6.0	4.8	ovalish light quartzite cobble that MIGHT be ground, unwashed due to the presence of pigment which is probably hematite
323	11	1	430	siltstone	90	core	complete	802.0	10.7	9.0	7.1	purple and green siltstone, possibly from the Hermosa Gp. , multidirectional core with numerous flakes removed and some possible battering or platform preparation at one end
323	12	1	510	quartzite	90	core	complete	630.0	9.1	7.9	7.0	finely grained pink and black quartzite multidirectional core with numerous flakes removed and evidence of platform preparation as battering and grinding
323	14	1	4	Washington Pass chert	203	stemmed projectile point		1.0	2.4	1.5	0.5	small triangular point with slightly flared stem and corner notches, relatively well made with parallel flake scars, tang tips broken and stem broken on one edge, 9/10 present
323	15	1	1	chert	1	debitage		1.1				
323	16	1	631	massive quartz	0	indeterminate		11.9				fragment of grainy, poorly cemented white quartz cobble, appears to be unmodified, neat material, large shiny grains
323	17	4	6109	MV Plain Gray	800	jar sherds		157.2				all from a single vessel, all refit
323	18	2	6109	MV Plain Gray	800	jar sherds		42.8	2			pieces refit, same vessel as 323-17
323	19	3	1	chert	1	debitage		1.6				same material, possibly a single broken flake
323	20	1	1	chert	1	debitage	complete	0.5				
323	21	1	300	igneous	500	ground stone		1816	17.5	11	5.4	green coarsely grained flattened cobble, possibly diorite, burned and broken, over 1/2 present, ground on opposite sides, ground surfaces each measure 16.5 by 9.0 cm
323	22	1	1	chert	90	core	complete	29.1	3.6	3.3	2.8	remnant of spent, multidirectional core from a cobble
323	23	1	6109	MV Plain Gray	800	jar sherds		0.5				
323	24	1	1	chert	1	debitage		0.5				
323	25	1	700	Non-Human Bone	0	indeterminate						Central shaft with foramen and fibular attachment of a left tiabia from a medium sized Lepus Californicus
323	26	1	6109	MV Plain Gray	800	jar sherds		3.4				
323	27	1	430	siltstone	1	debitage		0.6				pink finely grained siltstone or shale
323	28	1	430	siltstone	1	debitage		0.4				pink finely grained siltstone or shale
323	28	1	510	quartzite	1	debitage		3.8				fine brown quartzite
323	29	6	6109	MV Plain Gray	800	jar sherds		82.8				all pieces refit and may fit with other proveniences
323	30	1	700	Non-Human Bone	0	indeterminate						Large mammal long bone fragment (<1%) burned and mineral encrusted
323	33		852	*Pinus (*pine)	712	pollen						
323	33		851	*Juniperus* (juniper)	712	pollen						
323	33		853	*Quercus (*oak)	712	pollen						
323	33		854	*Abies* (fir)	712	pollen						
323	33		855	*Picea* (spruce)	712	pollen						
323	33		856	*Pseudotsuga* (Douglas fir)	712	pollen						
323	33		857	*Artemisia* (sagebrush)	712	pollen						
323	33		858	*Sarcobatus* (greasewood)	712	pollen						
323	33		861	*Polygonum* (knotweed)	712	pollen						
323	33		862	*Cylindropuntia* (cholla cactus)	712	pollen						
323	33		863	*Opuntia* (prickly-pear	712	pollen						
323	33		859	*Zea mays* (corn)	712	pollen						
323	34	1	1	chert	1	debitage		0.1				
323	35	1	437	Morrison silicified sediment	1	debitage		20.0				shatter, angular and green
323	36	1	510	quartzite	1	debitage		3.6				red to brown quartzite
323	37	1	510	quartzite	1	debitage		4.9				shatter from a cobble
323	38	1	510	quartzite	500	ground stone	complete	930.0	11.5	10.7	5.2	flattened cobble of white quartzite with mica inclusions, opposite sides ground on prominences, one edge burned, probably a mano or hide polisher
323	39	1	510	quartzite	2	fire-cracked rock		20.0				unmodified
323	40	1	300	igneous	500	ground stone	complete	365.0	10.5	7.2	2.9	small flattened cobble with feldspars common throughout, it is ground on one side and might have been used as a hide polisher, ground surface measures 6.7 by 6.6 cm

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PD#	Bag#	Count	Material Code	Material	Function Code	Function	Completness	Weight	L	W	T	Comments
323	41	1	530	quartzitic sandstone	500	ground stone	complete	772.0	15.2	14.7	2.7	spalled slab from cobble with some fossiliferous inclusions, ground lightly on prominences of one side
323	43	1										veg
323	44	1										veg
323	45	1	510	quartzite	560	maul	complete	1906.8	14.0	12.0	7.2	oval coarsely grained quartzite cobble with a deeply pecked groove centered on the item that extends all of the way around it, groove is 2.0-2.5 cm wide and .2-.6 cm deep, no evidence of battering on the ends from use though, very heavy
323	46	1	700	Non-Human Bone	0	indeterminate						Lateral central shaft fragment with foramen of a left tibia of a large Lepu Californicus (10%) complete
323	47	1	510	quartzite	500	ground stone	fragmentary	962.0	>11.4	>8.2	8.1	fragment of large gray quartzite cobble that is ground on opposite sides and battered around the margin of one broken edge, ground surfaces measure >6.8 by >3.4 cm and >9.9 by >5.2 cm
323	48	1										veg
323	49	1										veg
323	50	1	6000	Mesa Verde Grayware	801	bowl sherds		12.0				probably from a Chapin or Piedra bowl, no design elements visible though
323	51	1	510	quartzite	1	debitage		38.2				flake from fine gray quartzite cobble
323	52	1	700	Non-Human Bone	0	indeterminate						First phalange of unknown digit of an artiodactyl very rodent chewed
323	53	1	455	conglomerate	500	ground stone		690.0	>8.1	8.2	7.6	possibly Burro Canyon conglomerate fragment, opposite sides are ground on prominences, the entire item is burned
323	54	1	510	quartzite	500	ground stone	fragmentary	3632.0	>25.0	>15.0	8.5	large quartzite cobble fragment, ground and pecked on opposite sides over almost entire item, burned and not complete, althought it appears to have been used both before and after it was broken based on some edge rounding and wear patterns
323	55	1	700	Non-Human Bone	0	indeterminate						Large mammal long bone fragment (<1%) calcined
323	56	1	300	igneous	500	ground stone	fragmentary	7.4	>3.6	>2.6	0.4	tabular piece of igneous rock prominences ground on one side
323	57	1	6109	MV Plain Gray	800	jar sherds		5.3				
323	58	1	420	sandstone	0	indeterminate		7.5				unmodified thin sandstone slab fragment, burned
323	59	1	6000	Mesa Verde Grayware	800	jar sherds		17.4				probably Chapin jar rim
323	60	1	510	quartzite	1	debitage		10.7				shatter, angular white quartzite
323	61	1	530	quartzitic sandstone	2	fire-cracked rock		98.5				
323	62	1	530	quartzitic sandstone	2	fire-cracked rock		435.0				otherwise unmodified
323	63	1	530	quartzitic sandstone	2	fire-cracked rock		158.1				otherwise unmodified
323	65	1	6210	MV Indeterminate Whiteware	801	bowl sherds		2.2				solid line painted on rim no other design present
323	66	1	530	quartzitic sandstone	2	fire-cracked rock		16.5				unmodified
323	68	1	300	igneous	0	indeterminate		6.6	1.9	1.8	1.1	small, unmodified pebble of lightly colored igneous rock with common feldspars, possibly Granodiorite
323	69	1	430	siltstone	0	indeterminate		88.1				unmodified pebble fragment
323	70	1	100	silicified wood	1	debitage		31.5				gorgeous black and brown cherty wood
323	71	1										veg burned corn
323	72	1	6109	MV Plain Gray	800	jar sherds		23.6				
323	73	1	510	quartzite	500	ground stone	fragmentary	998.0	>14	>8.9	5.4	lg. fragment of pink quartzite cobble ground flat on one surface, ground area measures 11.2 by 6.9 cm
323	74	1	510	quartzite	500	ground stone	complete	1362.0	17.8	11.2	5.4	irregularly shaped piece of burned quartzite, prominences ground on the most irregulary shaped side
323	75	1	530	quartzitic sandstone	500	ground stone	fragmentary	1543.6	>14.5	>10	7.2	thick fragment of dense quartzitic sandstone, lightly ground on one surface dimensions equal those of the item, unshaped and burned
325	1	5	1	chert	1	debitage		3.5				
325	1	1	430	siltstone	1	debitage		0.6				
325	1	1	1	chert	4	retouched flake	complete	0.9	1.0	2.5	0.3	small, irregularly shaped flake with unidirectional retouch along the distal edge
325	1	1	1	chert	4	retouched flake	complete	4.5	3.2	2.0	0.6	fine dark chert with unidirectional retouch along one lateral edge and bidirectional utilization wear along the opposite lateral edge
325	2	3	700	Non-Human Bone	0	indeterminate						Teeth (3 lower incisor) of Lepus Californicus. Two of the teeth are right incisors and all three appear to have been cut in half with the distal 50 % present. One of the teeth is fractured
325	2	1	700	Non-Human Bone	0	indeterminate						Fragment of a spine, proximal end. Possibly from a fish
325	2	1	700	Non-Human Bone	0	indeterminate						Small mammal long bone fragment (5%)

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PD#	Bag#	Count	Material Code	Material	Function Code	Function	Completness	Weight	L	W	T	Comments
325	3	1										BS for analysis of grain (river or blow)
326	1	1										soil sample
327	1	2	1	chert	1	debitage		0.7				one is microflake
328	1	1	1	chert	1	debitage		0.1				microflake
330	1	1		veg								squash seeds?
330	1	1	860	*Cucurbita* (squash, pumpkin,	710	seed						seed embryo and embryo fragment
330	2	1										PN
330	2		852	*Pinus (*pine)	712	pollen						
330	2		851	*Juniperus* (juniper)	712	pollen						
330	2		871	Apiaceae (parsley/carrot	712	pollen						
330	2		866	*Mammillaria* (pincushion	712	pollen						
330	2		865	*Shepherdia* (buffaloberry)	712	pollen						
330	2		859	*Zea mays* (corn)	712	pollen						
330	3	1										bs that scott analyzed********
330	3		852	*Pinus (*pine)	714	bark						charred bark scale fragments
330	3	1	867	*Echinocereus* (hedgehog cactus,	710	seed						also 1 charred Cactaceae areole fragment and 2 charred Cactaceae spine fragments
330	3	1	868	*Atriplex* (saltbush)	710	seed						charred fruit fragment
330	3	1	859	*Zea mays* (corn)	710	seed						also charred cupule fragments and charred kernel fragments
330	3		857	*Artemisia* (sagebrush)	711	wood						moderate amounts of charcoal
330	3		869	*Cercocarpus* (mountain	711	wood						moderate amounts of charcoal
330	3		852	*Pinus (*pine)	711	wood						*P. edulis/ponderosa* charred
330	3		853	*Quercus (*oak)	711	wood						charred
333	1	1										BS floor scrape to look at subfloor fill NE 1/4
333	2	1	510	quartzite	0	indeterminate		1.5				small piece of shatter? from quartzite cobble
335	1	1		pollen								“BS - soil sample for PN?”
335	1		859	*Zea mays* (corn)	712	pollen						
335	1		870	*Cleome* (beeweed)	712	pollen						
335	2	1										veg - paho? Juniperus
335	2	1	851	*Juniperus* (juniper)	711	wood						uncharred root, probably natural