BUREAU OF LAND MANAGEMENT
UTAH

# EXCAVATIONS AT QUAIL CREEK


Barbara A. Walling, Richard A. Thompson, Gardiner F. Dalley, Dennis G. Weder
Ancillary Studies by
Kathleen M. Heath and La Mar W. Lindsay


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Gardiner F. Dalley, Volume Editor

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# INTRODUCTION

It is with particular pleasure that BLM presents this twentieth number in the Cultural Resources Series, "Excavations at Quail Creek" by Barbara A. Walling, Richard A. Thompson, Gardiner F. Dalley, and Dennis G. Weder. Ric Thompson and his students and associates have labored long and diligently in the Virgin (or Western) Anasazi area, although much of their work has not seen wide distribution. Ric has been particularly supportive of BLM programs and personnel in the Cedar City District, and has given freely of his time and resources to further the District Cultural Resources program. Thus, by publishing this monograph, we find ourselves in the highly tenable position of partially discharging accumulated obligations, while bringing to a large and varied audience a substantial and important corpus of archaeological data.

The Quail Creek Archaeological project was wholly a salvage operation in advance of impoundment for the Quail Creek Reservoir. Nearly all of the sites herein reported are now under water or were destroyed during construction. The archaeological project was funded by the Washington County Water Conservancy District. BLM personnel, while not directly involved in the excavation phase, have been instrumental in the project's direction and progress from inception to this point of final reporting.

During the planning stages for the archaeological work, there was considerable debate over the proper approach to such a large number (49) of apparently excavatable sites. We believe the approach selected, that of directly dealing at some level with all sites, has paid significant dividends. Noteworthy, in particular, is the amount of information accumulated on the Southern Paiute occupation, as well as the exposure of small, limited-activity Anasazi sites, some with quite unusual pithouse forms.

Also of particular note in the volume is extensive work with environmental and economic indicators. This sort of information has been sadly lacking for southwestern Utah, and the pollen and macrofossil studies represent near-quantum leaps forward in these areas of inquiry. Workers in the Anasazi area should also find grist in a statement of Ric Thompson's accumulated view on the niceties and nuances of Western Anasazi ceramics and typologies.

We trust both the casual reader and the serious student will find areas of interest in the volume. Utah BLM is pleased to act as an outlet for reports of this quality, and we look forward to future and additional opportunities.

Richard E. Fike, Series Editor

# ACKNOWLEDGEMENTS

During the six months of field work on the Quail Creek Project, the Staff incurred debts to many people not directly involved in the effort. Their assistance requires this modest recognition. A special note of appreciation must be extended to the staff of the Archeological Research Center at the University of Utah for allowing project workers to use their extensive osteological collection to identify the faunal materials recovered at Quail Creek. Thanks are also due to La Mar Lindsay for his analysis of the fossil pollen record and to Kathleen Heath for her identification of plant macrofossils. At the Southern Utah State College Archeological Laboratory, meanwhile, Jeneil Hooper, Georgia Thompson, and Sherwin Tillahash assumed the arduous task of washing and labeling the collections. A further thanks is due to Mr. LaVan Martineau and members of his family for their painstaking work in a separate but related project of photographing the rock art identified within the project area.

The entire Quail Creek crew appreciated the courteous service of the merchants of Hurricane and the crew also thanks Jane Whalen and her staff at Grand Canyon Dories for their logistic and moral support. The crew feels particularly appreciative of the hospitality of Carole Starling, foreman of the Quail Creek Ranch. Similarly, the project workers are indebted to Mr. David Early, owner of the Quail Creek Ranch, for his courteous cooperation.

The project also profited greatly from the timely cooperation of Mr. Ronald W. Thompson, attorney for the Washington County Water Conservancy District which authorized the archeological project. Appreciation is expressed to the Paiute Indian Tribe of Utah for their continuing interest in the project, as well as for their suggestions concerning the treatment of rock art sites and human remains.

This report could not have been completed without the skillful cooperation of Jeneil Hooper who did the greater part of the work of putting the early drafts of the manuscript into presentable form. Janece Pollock, ably assisted by LaDawn Berkey, Cedar City BLM, undertook the tasks of finalizing the draft, typing eleventh-hour sections, and composing the camera-ready document on the word processor. Their careful and complete work is appreciated, as is the use of BLM personnel and facilities generously authorized by Morgan Jensen, Cedar City District Manager, and Paul Swapp, Administrative Officer.

## ABSTRACT


This document reports the results of the excavation of 18 sites and the testing of 31 sites within the project area of the Quail Creek Reservoir in central Washington County, Utah. The greatest number of sites are of Western Anasazi cultural affiliation representing occupations in the period between about A.D. 600 and A.D. 1150, or perhaps as late as A.D. 1200. In addition to these sites, a single Archaic site was tested to yield a date of A.D. 80. At the same time, a total of 17 post-Anasazi Paiute sites representing activity between the thirteenth and the nineteenth centuries were also examined.

The report summarizes both the history of previous archeological research in Washington County and the prehistoric cultures thought to have been present in the area during the past 10,000 years. More importantly, against this background, a fairly detailed description of the present environment of the St. George Basin and the Quail Creek area is presented as a baseline from which to evaluate subsistence techniques employed by the prehistoric inhabitants.

As would be expected in an enterprise involving this number of sites, the project has focused on the intertwined issues of continuity and the change in culture history. The evidence has been found in structural forms, the objects of material culture, and in the subsistence patterns revealed through the analysis of pollen and macrofossil evidence.

Architectural information has been derived more from the study of storage facilities than it has from habitation elements. This approach has been dictated by the nature of the data recovered since storage units have proven far more numerous than habitation structures.

Passing time has also been chronicled in the gradual change in ceramic vessel forms and, above all, in changing painted ceramic designs. Detailed study of the lithic assemblage demonstrates more continuity than change in the flaked stone industry of the region, and there appears to have been little change in ground stone forms as well. The recovery of bone artifacts proved to be much too limited to produce good evidence for either change or continuity. Perhaps more surprising, the results of the ecofactual studies of pollen and macrofossil evidence appears to lean more in the direction of continuity than of change.

It is a matter of some dissatisfaction that the imperatives of time and space have dictated that this report must remain a descriptive one. In a very real sense this means that the scholarship remains incomplete. The authors do not intend that this deficiency should be allowed to remain for an unlimited period of time. Plans for an interpretive discussion of the results of the project are already being formed and it is intended that the interpretive paper will be published within a reasonable length of time. Those who have accumulated experience in Western Anasazi research will perhaps feel less need for such an effort. For others, however, the effort will prove valuable and it will meet the obligation of those who have generated the data to complete the study.

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# INTRODUCTION

## Project Background

The Quail Creek Reservoir project was conceived as the first and largest of a series of water-impounding projects designed to meet the irrigation and culinary water needs of the rapidly growing population centered in the St.George Basin of central Washington County, Utah. While the project involved the construction of an earth filled dam across Quail Creek with a substantial basin behind it, the water flowing in Quail Creek was known to be insufficient to maintain the desired water level.

It was planned that most of the water would be taken from the Virgin River during periods of high flow. The diversion was to be placed some 8 miles east of Quail Creek and carried via pipeline to the reservoir. This approach was deemed essential due to the fact that the Pah Temp Hot Springs in the Virgin River Gorge between Hurricane and LaVerkin introduce heavy concentrations of mineral salts into the river. This addition renders Virgin River water marginal for irrigation and unsuitable for culinary purposes. By diverting the heaviest flows of the Virgin from a point above the mineral springs, the water could be piped to Quail Creek to be stored for later use. At the same time, the reservoir would also allow some of the sediments to settle out of the water. As needed, water could then be piped further down stream to points where it was most needed.

As project planning advanced, the Board of Directors of the Water Conservancy District entered into an agreement with International Learning and Research, Inc. (Intersearch) of Cedar City, Utah to conduct a cultural resource inventory within the project area (Fig. 1). Led by Richard Thompson, two teams surveyed all lands administered by the Bureau of Land Management within the project area in November, 1982. The same crews completed a survey of all privately owned lands in January, 1983. Thompson (1983) summarized the survey results in a paper which he presented to the Bureau of Land Management, the Army Corps of Engineers, and to the Board of the Washington County Water Conservancy District.

The Water District subsequently entered into a contract agreement with Intersearch to mitigate the sites that would be impacted by the reservoir project. Intersearch participation was authorized by Department of the Interior Antiquities Permit No. 83-UT-273 and by Utah State Antiquities Permit No. 860. Excavations began on May 3, 1983 and, with one interruption, continued until December 15, 1983.

Richard A. Thompson administered the project as Principle Investigator while Dennis G. Weder served as Field Director and Barbara A. Walling assumed the position of Assistant Field Director. Allison Bingham and Gregory Woodall served as crew chiefs as needed. The crew was rounded out by Barry Frank and Ivan Benn. During the summer months, the three additional workers who joined the crew included Sherwin Tillahash, Malan Richards, and Elvis Wall. At the end of the summer, Tillahash and Wall returned to classes at Southern Utah State College but they continued with the field work on weekends.

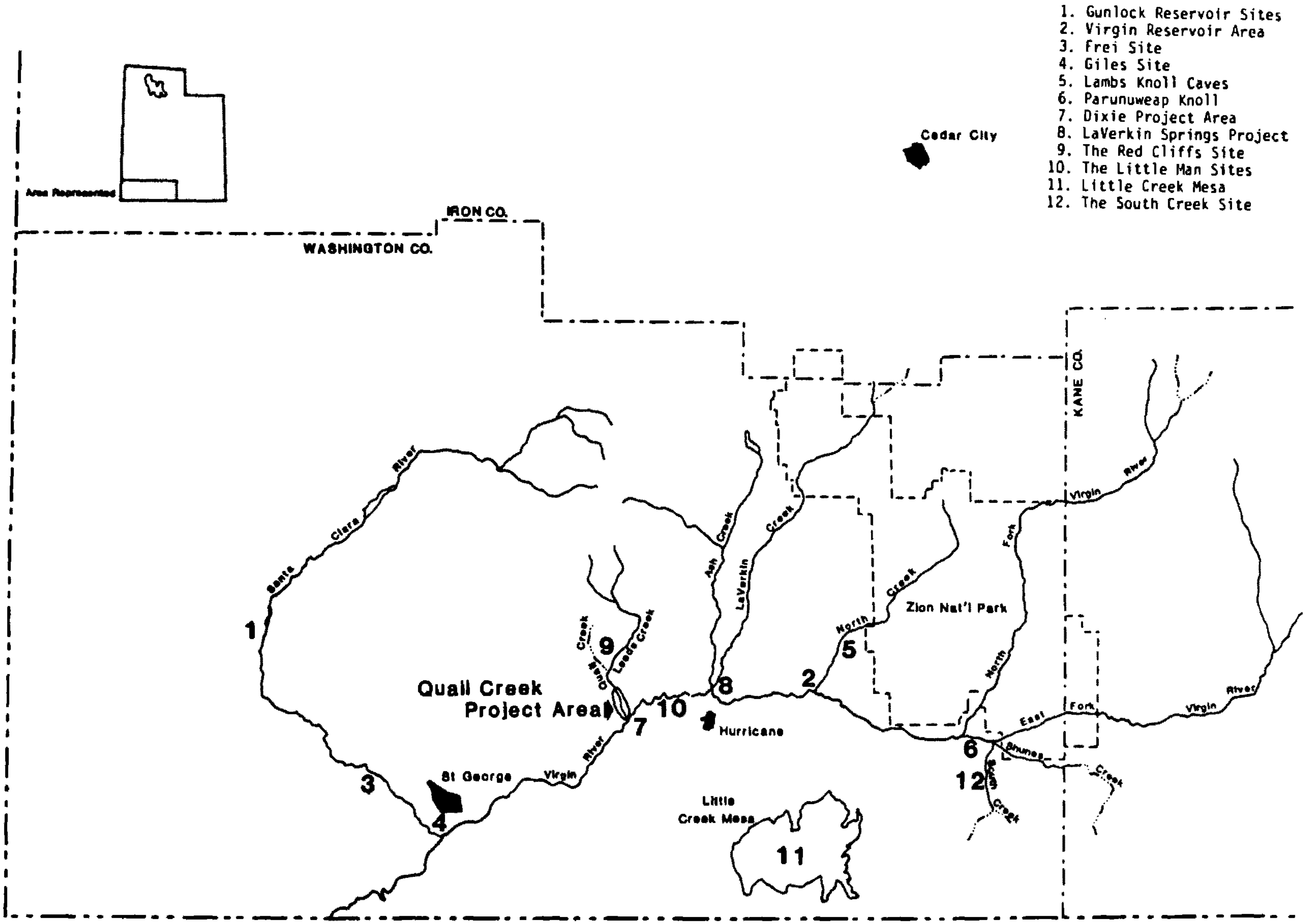



Figure 1. Location map for the Quail Creek Project.

During the month of May, students from the SUSC Archeological Field Class contributed weekends to the work. This group included Todd Atkin, John Gilmore, Patricia Gordon, Todd Prince, Dan Reeder, Craig Rosenberg, Susan Stutz, and Sherwin Tillahash. Also during the summer months, Pat Wong Dean contributed two weeks of volunteer labor.

While the survey recorded a total of 72 sites, only 18 were excavated and 31 were tested. The balance included rock arts sites not subject to further work, sites that were found to be beyond the area of impact, and sites that were judged not significant on the basis of evaluations agreed upon by the Bureau of Land Management and Intersearch in consultation with the Utah State Historic Preservation Officer and the Advisory Council on Historic Preservation.

## Previous Research in Washington County

The summary of archeological investigations within a single county is never an entirely satisfactory approach to the discipline. At the same time, however, it can be useful so long as both the writer and the reader keep in mind that the discussion of the prehistoric past is being confined to a modern, politically defined area while the prehistoric societies that come under scrutiny were distributed in space in ways that bear no relation to the contemporary structure of present society.

The history of archeological research within the state of Utah is mirrored with some accuracy, although on a much smaller scale, in the history of archeological investigations in Washington County. Research conducted both in the state and in the county can be subdivided into three distinct periods in which each was guided by a different approach. While other terms could perhaps serve equally well, the three periods are here termed the "Casual Descriptive Era" which dates from 1875 to 1947; the period of "Systematic Description" which extended only from 1947 to 1973; and finally, the period that is called "Integrated Analysis" which began in 1973 and which continues at the present time (Thompson, Thompson, and Embry, 1983).

Table 1 is a summary which notes most of the investigations on record. There are, inevitably, omissions, and the number of these increase after 1973 owing to a significant growth in land-disturbing activities that required small project archeological investigations. There have been many miles of seismic lines, numerous small highway improvement projects, and other miscellaneous activities that have required cultural resource clearances but which are not recorded here. The tabulation does, however, give some indication of the nature and extent of the work conducted within the county.

During the Casual Descriptive period such work as was done was tentative and it revealed a lack of sustained interest in the area. Some of the limitations may be attributed to the inadequate standards of field work during the time, but many deficiencies that can be discerned actually reflect a greater interest in other areas which dominated the thinking of early field workers. Washington County perhaps saw less work during this period than did other counties of southern Utah, although one of the earliest sorties into the state actually came near St.George.

TABLE 1

SUMMARY OF ARCHEOLOGICAL WORK IN WASHINGTON COUNTY, UTAH

1875 - Edward Palmer - Smithsonian - Excavation near St.George.
1930 - Joseph E. Spencer - Univ. Calif. - Recorded local sites.
1931 - Joseph E. Spencer - Univ. Calif. - Recorded local sites.
1932 - Joseph E. Spencer - Univ. Calif. - Recorded local sites.
1933 - Ben Wetherill - NPS - CWA excavations in Zion National Park.
1934 - Ben Wetherill - NPS - CWA excavations in Zion National Park.
1935 - Elmer Smith - Univ. Utah - Recorded 26 sites.
1949 - Jack Rudy - Univ. Utah - General county survey.
1951 - Jack Rudy - Excavated Pine Park Shelter.
1959 - James Gunnerson - Univ. Utah - Excavated 42Ws163 near St.George.
1960 - Keith Anderson - Univ. Utah - Surveyed El Paso Gas pipeline.
1960 - David Pendergast - Univ. Utah - Excavated 42Ws164 near Santa Clara.
1962 - C. Melvin Aikens -Univ. Utah - Excavated 3 sites near St.George.
1962 - Gordon Grosscup - Univ. Utah - Survey I-15 Right-of-way
1963 - C. Melvin Aikens - Univ. Utah - Excavated 2 sites near Zion NP
1965 - Kent Day - Univ. Utah - Excavated 4 sites at Gunlock Reservoir.
1970 - H. Johnson Hall - Univ. Utah - Survey Dixie Reclamation Project.
1972 - Alexander Lindsay - MNA - Survey power line right-of-way.
1973 - Alexander Lindsay - MNA - Excavated power line sites.
1974 - LaMar Lindsay - Univ. Utah - Survey Zion Park sewage project.
1974 - Curtis Wilson - Univ. Utah - Survey SR-9 alternate right-of-way.
1974 - Helen Dunbar - USFS - Survey land exchange tract.
1974 - Christian Lund - Univ. Utah - Survey Fort Pierce Wash.
1974 - Richard Thompson - INTERSEARCH - Survey eastern Warner Valley.
1975 - LaMar Lindsay - BLM - Survey desert tortoise withdrawal land.
1975 - Barbara Domier - USFS - Survey chaining project tract.
1975 - Barbara Domier - USFS - Survey chaining project tract.
1975 - Barbara Domier - USFS - Survey reseeding project.
1975 - David Gillio - USFS - Survey land exchange tract.
1976 - Howard Smith - BLM - Survey Range EIS.
1976 - James Dykman - INTERSEARCH - Survey Springdale sewage project.
1976 - Gardiner Dalley - BLM - Excavation 42Ws505.
1977 - Gardiner Dalley - BLM - Excavation 42Ws503.
1977 - Frank Hull - Univ. Utah - Survey Warner Valley Reservoir project.
1977 - Richard Thompson - INTERSEARCH - Survey Purgatory Flat.
1978 - Douglas McFadden - BLM - Survey land exchange tract.
1978 - Rodney Snedeker - USFS - Survey chaining project.
1978 - Richard Thompson & James Heid - SUSC - Little Creek Mtn. survey.
1979 - Gardiner Dalley - BLM - Survey land exchange tract.
1979 - Gardiner Dalley - BLM - Survey Little Creek Mtn. chaining project.
1979 - Richard Thompson & Margaret Lyneis - SUSC/UNLV- Excavation 42Ws969.
1979 - Richard Thompson & James Heid - SUSC - Little Creek Mtn. survey.
1980 - Gardiner Dalley - BLM - Survey Little Creek Mtn. chaining project.
1980 - Gardiner Dalley - BLM - Survey land exchange tract.
1980 - Gardiner Dalley - BLM - Survey land exchange tract.
1980 - Douglas McFadden - BLM - Survey land exchange tract.

TABLE 1 (continued)

SUMMARY OF ARCHEOLOGICAL WORK IN WASHINGTON COUNTY, UTAH

1980 - Richard Thompson & Lorrain Debra - SUSC - Excavated 42Ws1331.
1980 - Richard Thompson - SUSC - Little Creek Mtn. survey.
1981 - Gardiner Dalley - BLM - Survey Washington City recreation park.
1981 - Richard Thompson - SUSC - Excavation 42Ws1185 and 42Ws969.
1981 - LaMar Lindsay - Anti. Sec. - Survey, MX Intensive
1981 - Richard Thompson & Allan Sweatfield - SUSC - Little Creek Mtn. survey.
1982 - Gardiner Dalley - BLM - Excavated 42Ws404, 42Ws1346, and 42Ws1349.
1982 - Richard Thompson & Karen Wise - SUSC - Excavated 42Ws1319.
1982 - Richard Thompson & Greg Woodall - SUSC- Little Creek Mtn. survey
1983 - Gardiner Dalley - BLM - Excavated 42Ws1348.
1983 - Timothy Pratt & Richard Holmer - Univ. Utah - IPP Survey
1983 - Richard Thompson & Karen Wise - SUSC - Excavated 42Ws1319.
1983 - Richard Thompson & Dennis Weder - INTERSEARCH - Quail Creek Mitigation
1984 - Richard Thompson & Barbara Walling - SUSC - Excavation 42Ws920.
1984 - Gardiner Dalley - BLM - Excavated 42Ws1365.
1984 - Gardiner Dalley - BLM - Santa Clara Creek/Virgin River survey.
1985 - Richard Thompson & Barbara Walling - INTERSEARCH - Excavated 42Ws1712.
1985 - Richard Thompson & Barbara Walling - SUSC - Excavated 42Ws920.
1985 - Richard Thompson & Barbara Walling - INTERSEARCH - Survey/test SR-9.
1985 - Asa Nielson - BYU - Powerline corridor survey.
1985 - LaMar Lindsay - Antiq. Sec. - Survey State Lands vic. Washington.
1985 - Gordon Tucker - NICKENS & ASSOC. - excavated 7 sites.
1985 - William Davis - ABAJO - Excavated 4 sites,Washington City park.
1986 - Gardiner Dalley - BLM - Excavated 42Ws1831 in St. George

In 1875, Edward Palmer, representing the Smithsonian Institution, is reported to have excavated a site near St.George. Unfortunately, his archeological notes were lost although his botanical notes from the same area have survived (Bye, 1972). Some 40 years later in 1915, Neil Judd (1968), also of the Smithsonian, visited St. George and talked with two men who said they had worked with Palmer. According to them, Palmer had excavated a site by diverting the water of an irrigation ditch across it, thus allowing the artifacts to be exposed and collected. It is not known whether Palmer excavated by other means as well. It is sufficient to note that the products of his efforts, now housed in the Smithsonian, show all too clearly that his primary concern was for the collection of artifacts. He showed no apparent concern for chronology, adaptation, and the causes of cultural change. His perspective was, however, pretty much in keeping with the tenor of most archeology in the nineteenth century.

In the summers of 1930, 1931, and 1932, Joseph E. Spencer (1934), a graduate student in geography at the University of California, Berkeley, did move to a somewhat higher level of inquiry. As a geographer, his primary interest was in a study of Euro-American adaptations in the St. George Basin. The influence of his contacts with A. L. Kroeber, one of the best known anthropologists in the country during the first half of the twentieth century, was evidenced in the fact that, in each of his three summers in the area, Spencer recorded prehistoric sites in the general area while making surface collections which he took back to Kroeber. The ceramics in these collections would eventually find their way to the Museum of Northern Arizona where Colton (1952) used them as the core of a collection which he used to attempt to analyze, describe, and create a ceramic taxonomy for the so-called "Virgin Branch" ceramics.

Still within the Casual Descriptive period, Ben Wetherill and Elmer Smith directed excavations in 1933 and 1934 for Zion National Park with funding and labor provided by the Civil Works Administration. It is unfortunate that a large portion of the records of those efforts were destroyed by fire. Albert H. Schroeder (1955) was later able to use the remnants of the project records in combination with other data to produce a report on the archeology of Zion National Park.

In 1935, meanwhile, Elmer Smith joined the faculty of the University of Utah and began an attempt to establish a state-wide archeological survey. Handicapped by a lack of funds and by poor transportation, he still managed to record 26 prehistoric sites in Washington County as a part of his effort. Unfortunately, his locational information proved to be so inadequate that, where the sites survived the assaults of vandalism to a later time, they have been rerecorded with numbers that differ from those in his records. It simply proved impossible to reidentify his sites. In Smith's defense it should be noted that no USGS 15' maps of the area were available until the 1950s and even these did not cover all of Washington County. It was not until the early 1970s that the first group of 7 1/2' quadrangles were published and this work is still incomplete.

Jack Rudy and Robert Stirland (1950) of the University of Utah undertook a survey of Washington County in 1949. This event should be seen as marking the beginning of the period of Systematic Description. The opening of this phase of archeological research coincides with the addition of Dr. Jesse D. Jennings to the faculty of the University of Utah. It was Jennings who effectively began the development of a state-wide archeological survey. In Washington County, the work of Rudy and Stirland relied heavily on the aid of local informants and they also recorded sites they found in the files of Zion National Park. Most importantly, perhaps, is the fact that the results of this survey were promptly reported in the newly created University of Utah Anthropological Papers. While the format of the early issues was almost crude, the monograph had the virtue of making field work results available to the profession with a promptness that would become the trademark of all work directed by Jennings.

Jack Rudy (1954) also published the results of the excavation of a small rockshelter in northwestern Washington County which offered some insights into the cultural sequence of the area. The results were inevitably restricted by the limited character of the site but, for that time, the report was quite revealing.

In spite of the preoccupation of the University of Utah with the large and complex Glen Canyon project of the late 1950s and early 1960s, the University continued for some years to be the only archeological force active in Washington County. In 1959, James Gunnerson (1960) directed the excavation of

42Ws163 near the Virgin River just south of St.George. This was a part of the mitigation required for the construction of I-15. In 1960, Keith Anderson (1961), also of the University of Utah, recorded a number of small sites in the western part of the county during his survey of the El Paso Natural Gas pipeline right-of-way. Also in 1960, David Pendergast (1960) of Utah conducted test excavations of 42Ws164 near Santa Clara at the request of the Utah Department of Parks and Recreation.

In 1962 and 1963, C. Melvin Aikens (1965) staff archeologist at the University of Utah, excavated three sites near St.George and two close to Zion National Park as part of the Glen Canyon Project. Under terms of the agreement for that larger effort, the University excavated a number of sites located at some distance from the Glen Canyon area in order to provide a cultural context for the archeological data accumulating in the main project.

The construction of the dam which created Gunlock Reservoir returned University of Utah field crews to Washington County under Kent Day in 1965. Four sites in the reservoir area were excavated (Day, 1966). In 1970, H. Johnson Hall (1970), a University of Utah graduate student from New Zealand, undertook a fairly detailed survey in anticipation of the Dixie Reclamation Project. In 1972 the Museum of Northern Arizona conducted a survey of the Navajo-McCullough power line corridor which cut into southwestern Washington County. In 1973 the Museum returned to excavate five sites on the right-of-way in the Beaver Dam Mountains (Moffitt, et al., 1978). These sites would provide a significant increase in the data base for the county in that they marked the first use of new methodologies in this area.

The period we have called Integrated Analysis has been said to date from 1973 although the Museum of Northern Arizona excavations are within this tradition. In 1973, however, as a result of several years of labor, Jennings finally persuaded the Utah Legislature to enact the measures that led to the formation of the Antiquities Section of the Division of State history. David B. Madsen was named State archeologist and he was assisted during the first two years by Michael S. Berry. After that time, LaMar Lindsay became the assistant. As the chronological listing of project reports of work done in the area suggests, the year 1974 witnessed what seemed to be a sudden spurt in the rate of archeological investigation.

While there was an increase in activity, some of the growth shown in the summary is more apparent than real. To some extent, at least, this resulted from the ability of the Antiquities Section to require that copies of all reports of work done within the state be submitted to the State archeologist for informational purposes. The increase in archeological reporting also resulted from the implementation of more stringent antiquities legislation at the national level. There was, however, still another factor that cannot be ignored.

In 1974, the United States Forest Service began using seasonal archeologists to conduct surveys in the Dixie National Forest, a substantial part of which lay in western Washington County. In 1975, meanwhile, the Cedar City District of the Bureau of Land Management acquired a full-time archeologist who, in the years that followed, would become a prime contributor to an expanding understanding of the prehistoric occupations in Washington County.

Also beginning in 1974, Intersearch conducted its first archeological survey in Washington County. This involved a survey of land intended for use in the proposed Warner Valley power project. That same year saw Christian Lund of the University of Utah lead a survey along Fort Pierce Wash while Curtis Wilson also surveyed an alternate route for SR-9 on the south bank of the Virgin River. In 1977 a University of Utah team under Frank Hull surveyed an area for the proposed Warner Valley Reservoir while Thompson's Intersearch group (1977) completed a fairly large survey of Purgatory Flat for the Bureau of Reclamation.

During the late 1970s and early 1980s, both the Forest Service and the Bureau of Land Management continued a series of projects relating to land exchanges, chainings, and reseedings which added a good deal of information concerning the archeology of Washington County. In the case of the BLM, however, circumstances made it possible to go beyond surveys to undertake some much needed excavation. The year 1977 marked the first year in which Dalley and others would excavate and eventually stabilize 42Ws503 in the BLM's Red Cliffs Recreation Area near Leeds (Dalley and McFadden, 1985).

In the fall of 1978, meanwhile, Southern Utah State College began an archeological survey on Little Creek Mountain under the direction of Richard Thompson and James Heid (Thompson, 1981; Heid, 1982). The following summer Thompson moved the SUSC summer field school from the Tuweep Area of the Grand Canyon National Monument to Little Creek Mountain. The excavation of 42Ws969 in the summer of that year was a joint academic project involving the cooperation of Thompson and SUSC with a group from the University of Nevada, Las Vegas directed by Dr. Margaret L. Lyneis (Thompson, 1980).

During the late 1970s, the state-wide accumulation of data made it increasingly evident to archeological administrators that a viable data base could be maintained only if a site form could be developed that would be acceptable to the State and Federal agencies involved. The problem lay in the fact that the Bureau of Land Management and the Forest Service had developed their own archeological computer programs while the State Antiquities Office and the University of Utah seemed headed in a different direction. After some years of experimentation with various programs, the Intermountain Antiquities Computer System (IMACS) emerged through the cooperation of David Madsen of the State Antiquities Office, Richard Fike of the Bureau of Land Management, Jerry Wylie of the Forest Service, and Richard Holmer of the University of Utah. This form organized data recording in such a way as to make it possible to enter site information into all three computer programs then in use.

It is not really a coincidence that the IMACS site sheets and the revised Guide were distributed to the profession in the summer of 1982 at about the same time as the first semiannual meeting of the Utah Professional Archeological Council (UPAC). This organization, composed of archeologists from government, contract, and academic organizations was designed to serve as a voice for the profession to the public in general. At the same time, it was hoped that the Council would stimulate person to person contacts among members of the profession which, in a very real sense, would supplement the integration of information in the IMACS form.

It is of more than passing interest that the first two UPAC meetings were held in Washington County. The first meeting, in the summer of 1982, was hosted by Southern Utah State College at their field school camp on Little Creek Mountain. The winter meeting, hosted by the Arizona Strip District of the Bureau of Land Management, convened in St.George.

In 1982, meanwhile, Gardiner Dalley directed BLM excavations of three of the four "Little Man" sites in the inner gorge of the Virgin River some 3 miles northwest of Hurricane. Southern Utah State College continued its academic survey of Little Creek Mountain while Thompson and Karen Wise began the first of two seasons of excavation on 42Ws1319. In 1983, Dalley excavated 42Ws1348, the last of the "Little Man" sites. This summer also marked the time, from May 3 through December 15, when the field work for this report was completed under the direction of Dennis Weder and Barbara Walling.

In 1984, Thompson and Walling began the excavation of 42Ws920 as the project for the Southern Utah State College Field School, while Dalley and other BLM archeologists excavated 42Ws1365, also on Little Creek Mountain. Later that year, Dalley undertook an archeological survey of all BLM land bordering Santa Clara Creek and the Virgin River within Washington County.

In 1985, Thompson and Walling returned with the SUSC field school to continue excavations at 42Ws920. Earlier that spring, as representatives of the Intersearch contract organization, they also excavated 42Ws1712 (Walling and Thompson, 1986) near Springdale. In the fall of that year, Intersearch also conducted an archeological survey and testing program along SR-9 from North Creek to Coalpits Wash (Walling and Thompson, 1985).

Also in that year, Brigham Young University conducted a survey of a power line corridor running into the Shivwits Reservation. Gordon Tucker (1985), of Nickens and Associates, excavated seven archeological sites found along the IPP power line right-of-way in the western part of Washington County, and William Davis of Abajo Archeology excavated four small sites in the proposed Washington City recreation park. Finally, in the spring of 1986, Gardiner Dalley excavated a vandalized site, 42Ws1831 on the edge of St. George.

St. George and Washington County have suffered the loss of valuable prehistoric sites to agriculture, to development, and to vandalism at a tremendous rate. The professional research effort has brought some improvement although it is far from adequate. One writer has commented that, although it is now impossible to prove, it is very likely that, at about A.D. 1050, there were more people living in the St. George Basin than were living in the more famous "Lost City" area of the Lower Virgin and Muddy Rivers in Nevada. It is regretable that so much of the Washington County resource was lost before its importance was recognized. Some additional information will, of course, be saved through the work of government, academic, and contract archeologists within the next few years.

## Culture History

Archeologists have, for some 30 years, divided New World Cultural History into five major stages, each of which is defined mainly in terms of the adaptive strategy or means by which peoples have obtained their livelihood. As formalized by Willy and Phillips (1958), and with a single modification, the stages may be defined as follows:

Paleo-Indian - The focus of these people was on the hunting of megafauna or game as large or larger than the modern bison. This reliance upon game may have precluded significant plant use. Small game, however, was most likely utilized without leaving much evidence in the archeological record. This may be a remnant of an Arctic adaptation.

Archaic - A 'total' exploitation of an unaltered environment. While it may be doubted that any people have made use of every possible food resource, the basic thrust of this life-style involved the utilization of a tremendously wide range of resources obtained from an environment unaltered by human agency.

Formative - This stage is characterized by the propagation of domestic plants, the construction of more permanent habitation units and, in many cases, the development of a ceramic technology. The lack of animals suitable for domestication meant that, whenever possible, wild game remained a significant dietary element. In recent years it has been recognized that some use of wild plant materials persisted even after plant domestication was fully developed.

Classic - The development of city states with monumental architecture, formalized political structure, and a general explosion of artistic talent and skill. Not relevant within the continental United States.

Post Classic - The emergence of conquest empires that resulted from protracted warfare between city states. Military organization was elaborated while art became less creative and more highly stylized. Not relevant within the continental United States.

The prehistory of Washington County fits into the first three categories of this cultural taxonomy in ways that are substantially similar to surrounding areas in Arizona and Nevada as well as in Utah to the north. By adding a little more detail developed in the work of Jennings (1978b), James (1981), and by Janetski and Holmer (1982), the cultural development of Washington County can be traced in a series of eight cultural stages or subdivisions.

| | |
|---|---|
| Paleo-Indian. | |
| Early -- Chopper/scraper complex . . . . . . | 15,000 B.P. and older. |
| Middle -- Clovis/Folsom (Llano) . . . . . . . . | 15,000 B.P. to 10,000 B.P. |
| Late -- Plano/Western Pluvial Lakes . . . . . | 11,000 B.P. to 8,000 B.P. |
| Archaic. | |
| Early -- Pinto, Humboldt, Elko points . . . . | 8,000 B.P. to 6,700 B.P. |
| Middle -- Pinto, Humboldt, Elko points . . . | 6,700 B.P. to 4,700 B.P. |
| Late -- Elko, McKean, Gypsum points . . . . . | 4,700 B.P. to 1,450 B.P. |
| Formative. | |
| Western Anasazi -- Virgin and Moapa ceramics . | 1,750 B.P. to 750 B.P. |
| Neo-Archaic. | |
| Numic -- Desert Side-notched, Cottonwood Triangular points, brown ware pottery . . . | 650 B.P. to 100 B.P. |

Early Paleo-Indian.

Some archeologists regard this as the earliest evidence of the human species in the New World while other professionals prefer to ignore the matter altogether. Certainly the chopper/scraper complex remains highly enigmatic and a resolution of the problems involved will not be achieved in the near future. Basically, the culture is manifest in collections of very large but crude choppers and scrapers that have been found in considerable abundance in much of the Great Basin as well as in the western High Plains. Some have argued that the tools are no more than the products of nature but others point to the repetative morphology of the forms identified as well as to their occurrance in rather narrowly defined locations within the Great Basin.

The choppers and scrapers are seen by many as analogous to the Paleolithic industries found at intervals along the east Asian landmass and a connection is usually implied. Thus far, Early Paleo-Indian sites have not been reported in Washington County although they are known in western Iron County and in Lincoln County, Nevada. It is likely that evidence of the Early Paleo-Indian use of western Washington County will eventually be identified.

A distinguishing feature of these collections is that they are never accompanied by projectile points or other small flaked stone tools. The problem lies in the fact that the chopper/scraper finds have been identified almost exclusively as surface finds. While some rough dating has been obtained by associating the material with dated beach lines of extinct post-Pleistocene lakes, the possibilities for error are unacceptably high.

Unfortunately, an examination of materials from sites excavated under well-controlled stratigraphic conditions, shows the same tools are found to be associated with much later cultures ranging from some ten thousand years ago all the way through time to a point just prior to the European intrusion (Jennings, 1978b:12-20). The surface finds continue to convey an impression of substantial age even though the excavated evidence appears to argue a different significance. Some observers have suggested that this problem reflects the fact that many simple or 'crude' tool forms may continue to be used during the course of thousands of years of a lengthy elaboration and refinement of the tool kit. It would seem that it often happens that the older and more generalized tools may remain as tools of opportunity used for more limited purposes in later times.

The apparent conflict of interpretations may thus arise from the fact that the surface chopper/scraper collections may actually be as old as some believe, but these have been left by peoples who moved about so frequently as to leave no accumulated cultural deposits for the excavator. When such tools are actually found in stratified contexts, however, they may represent the persistence of the form into later periods as suggested by associated materials considered diagnostic of later periods. The present writer has recovered cobble choppers from Formative sites less than a thousand years old but the tools do not appear to be significantly different from those found in the African Lower Paleolithic.

Jennings (1974:76) doubtless expresses the sentiments of those who remain convinced that the chopper/scraper complex is actually old when he confessed that he, "continue(s) to express a blind faith that all claims could be true and one day substantiated..." He adds, rather ruefully, that the failure of new evidence to emerge during the passing years had done much to weaken the earlier faith.

Middle Paleo-Indian.

This term refers to the adaptation best known on the high plains east of the Rocky Mountains where it is known in general terms as the Llano. With its primary diagnostics found in the famous Clovis and Folsom projectile points, this culture represents a people who appear to have maintained themselves with a primary reliance upon the late Pleistocene megafauna, that is, on animals larger than the modern bison. There is little doubt that these people also hunted smaller animals but the archeological record provides limited evidence of this fact. More significant, perhaps, is the fact that there is no artifactual evidence of any exploitation of the flora during the period until fairly late in Folsom times. This strategy may perhaps best be viewed as a latent Arctic adaptation.

For many years the majority of scholars have assumed that the Llano cultural pattern was only marginally represented west of the Continental Divide. Although this appears to continue as the dominant view, it means that the work of Davis and Shutler (1969) is being ignored. Aikens (1978b) seems to be one of the few influenced by Davis and Shutler. The latter writers plotted the location of 31 Clovis finds in California and Nevada, while Aikens (1978b) mapped 15 additional discoveries made in Utah, Idaho, Oregon, and Washington. Davis and Shutler (1969:163) assume that the points represent an adaptation that is similar to that found on the High Plains. In his turn, Aikens (1978b:135) makes that assumption quite explicit. Although no Middle Paleo-Indian artifacts were found in association, the Tule Springs Site 10 miles north of Las Vegas demonstrates the possibility of similar adaptive patterns by revealing the presence of such Pleistocene animals as the ground sloth, mammoth, camel, and a prehistoric horse (Mawbry, 1967:105-128).

In reply to objections that all Clovis and Folsom points have been surface finds, Aikens (1978b:135) notes that the greater abundance of stratified deposits of Archaic artifacts results from the fact that the Archaic people followed a comparatively short-range, cyclically repetative round of foraging that brought them repeatedly to the same campsites. This had the effect of building up the finely layered deposits associated with Great Basin caves and, perhaps, with the as yet untested open sites. The lack of Clovis and Folsom finds in similar contexts, Aikens reasons, is a function of the broader ranging strategy of early hunters who followed a less repetative pattern. He sees evidence for this more randomized behavioral pattern among the hunters of the megafauna in the fact that at Clovis sites in Pennsylvania and in Texas, lithic materials have been found to come from sources ranging from 150 to 200 km. from the point of discovery.

The literature remains silent concerning the recovery of fluted points in southwestern Utah but an examination of the site files reveals that two Clovis point fragments have been found in Beaver County on the western slopes of the Mineral Mountains overlooking the Escalante Desert and the Beaver Bottoms, a partially fossilized lake bed. A Clovis and a Folsom point have been recovered from different sites in Iron County and one has been recorded in Lincoln County, Nevada about 30 miles west of the Utah line. While a Clovis find has not been made in Washington County at this writing, one such find is known from Sullivan Canyon, a small side canyon that drains into the Virgin River in the Narrows of the Virgin only a few miles south of St. George (Miller, 1974:37). It seems quite obvious that peoples of the Middle Paleo-Indian period must have been active in Washington County even though direct evidence has yet to emerge.

Late Paleo-Indian.

Steven James (1981:90-99) has referred to the period between 11,000 and 8,000 B.P. as the "Proto-Archaic." He elects this term on the grounds that this is the time of the Western Pluvial Lakes Tradition in the central and western Great Basin. He views the Pluvial Lakes Tradition as transitional from earlier Paleo-Indian strategies to the later, fully developed Archaic. Lithic diagnostics for this period include crescent-shaped bifaces and the so-called Great Basin Stemmed point.

James is undoubtedly correct at least in the sense that any phase within a cultural tradition is transitional between the one that precedes it and the one that follows it. Although this paper sees essentially the same kind of evidence that influenced James, a number of considerations militate in behalf of a stress on those elements of the period which argue that this is a Late Paleo-Indian tradition.

First, this is the time of the Plano hunters of the High Plains, and, although rather poorly documented, the Plano occupation is manifest in southwestern Utah and northwestern Arizona. Also significant, it seems, is the contention of Davis and Shutler (1969:157) that the "crescents" found at China Lake appear to be contemporaneous with the Clovis tradition. While this does not deny the association of this unique artifact with Late Paleo-Indian traditions, it does suggest that the crescentic form provides evidence of a continuity between Middle and Late Paleo-Indian strategies.

Beyond this, Aikens (1978b:148) appears to be one of the very few who clearly states the belief that Middle Paleo-Indian peoples were ancestral to the bearers of the Desert Archaic. Noting that the Clovis people are commonly viewed as big game hunters while the people of the Desert Culture are known to have relied upon a "broad spectrum" of gathering and hunting, he suggests a possible transitional period between the Middle Paleo-Indian and the Archaic. This would, of course, be the Western Pluvial Lakes Tradition or something analogous to it.

Aikens (1978b:148) supports his position by noting that artifacts from both the Middle and Late Paleo-Indian strategies are often found along the lower strandlines of dry or ephemeral post-Pleistocene lakes. He believes that it is possible that the makers of the Clovis points learned the value of lacustrine resources as the environment changed and traditional big game supplies became increasingly scarce.

Keller and Hunt (1967:56-57) report the recovery of stemmed point fragments and "crescentics" from the vicinity of Beryl in western Iron County. These objects would appear to indicate a Late Paleo-Indian presence, with the caution that they could also represent the Middle Paleo-Indian.

Unfortunately, the two items figured in their paper are problematical at best. Two crescents reported by Janetski and Holmer (1982:22) are much more convincing, although they are further removed from the concern of this study.

The so-called Great Basin Stemmed point is considered the major diagnostic of the Late Paleo-Indian, but thus far it has been difficult to find illustrations of the type. All of those illustrated in the published literature are fragmentary and might just as well be parts of specialized bifaces. Field workers also report the recovery of more complete specimens but, thus far, none has been examined at this facility.

Fragmentary evidence of the Plano or High Plains version of the Late Paleo-Indian has been recovered from Mohave, Kane, and Millard Counties and, although no direct evidence is as yet forthcoming from Washington County, this writer believes that it is only a matter of time before they will be reported from the western part of the county. The heavy Formative or Anasazi occupation of the central and eastern portions of Washington County has undoubtedly obscured similar material just as modern developmental projects are obscuring evidence of an intense Anasazi occupation.

## The Archaic

The basic understanding of the Desert Archaic comes from work in Danger and Hogup Caves well to the north of Washington County. More recent students have dated the Archaic from 9,000 to 8,000 B.P. (Janetski and Holmer, 1982:25) although Jennings (1978b:32) earlier calculated the beginning at about 10,000 B.P. The discrepancy involved in these estimates appears to originate with differing assessments of the association between dated samples and the cultural diagnostics recovered in the collections.

Jennings initially presented the concept of the Desert Culture as a generalized rubric for the western Archaic as phenomenon of a temporal and a spatial distribution of remarkable stability. He later (1978b:29) insisted that his initial statement was meant to be considered only at the "synthetic" level. The initial statement did, of course, touch off a debate among Great Basin scholars which ultimately led to the recognition of significant temporal and spatial variability in settlement patterns and subsistence strategies (Janetski and Holmer, 1982:26).

In its broadest sense, the Desert Archaic was characterized by an unrestricted exploitation of all animal species available, as well as a tremendously wide range of plant material with focus on small seeds which provided the major source of dietary carbohydrates. Other plants were valued for such non-food uses as basketry, tools, and weapons along with an indigenous pharmacopeia. At Danger Cave, the principle game included antelope, bison, mountain sheep, jackrabbit, wood rat, dog, bobcat, and the desert fox. The mountain sheep was the most common mammal at most levels. Elk antler fragments were also recovered even though no other elk bone was identified.

Jennings (1974:161; 1978:49) noted that the Hogup Cave data was particularly valuable for the way in which it replicated the sequence of cultural materials from Danger Cave and, more particularly, because it was based upon a very broad base of ancillary studies, many of which had not been available in the Danger Cave excavations, by botanists, palynologists, geomorphologists and geochronologists. The botanists and palynologists, for example, identified in the Hogup Cave fill a total of 46 plants that had food or other value. Of this number, 45 of the plants could be found in the vicinity of the cave at the present day.

These studies also demonstrated the existence of a shallow lake below the cave that continued in existence from 8,350 to 3,200 B.P. At both Danger and Hogup, the major components of the cave fill were wind-blown dust and pickleweed chaff. This plant produced seeds that appear to have been the most important single food resource for the inhabitants at both Danger and Hogup Caves.

At both of these sites, as well as others, the most ubiquitous artifacts were the milling stone and basketry (Jennings, 1974; 1978b). Most often the milling stone was an irregularly shaped stone slab rarely more than an inch thick, on which the only evidence of working was the use-wear marks of grinding. The balance of the stone would be unmodified and rough. An occasional loaf-shaped mano was found but most of the hand-held stones were unmodified stream cobbles that might display wear on one or both surfaces.

The earliest Archaic basketry was simply twined. Coiled techniques appeared later and they grew in popularity and in refined variations. The change in manufacturing applied not only to basketry but to all other textiles such as mats, bags, etc.

In addition to milling stones and basketry, artifacts diagnostic of the Archaic occupation included a large assortment of lanceolate or triangular stemmed and notched projectile points, netting, fur cloth, fiber sandles, hide moccassins, atlatles, dart shafts, digging sticks, clubs, bone awls and notched or serrated scapulas (Jennings, 1974; 1978b). Jennings believed that the most numerous items were made from wood and other vegetable materials, but he was at special pains to suggest the importance of the manufacture of various forms of cordage.

An examination of the State computer printout of sites in Washington County was conducted in 1982 just prior to the start of this project. At that time, a total 1,353 prehistoric sites had been recorded within the county. Of that number, only 21 were listed as Archaic, or 1 percent of the total number recorded. At the time the summary was made, a substantial number of sites had not been entered into the system and many field survey projects have been completed since that time. Not only has the total site count increased, the percentage of Archaic sites has increased proportionately.

There can be little question but what existing tabulations continue to understate the proportion of Archaic sites in the county. Early survey work concentrated heavily on the highly visible structural sites of the Anasazi peoples of a later period. These sites, particularly at lower elevations, tended to concentrate along the perennial watercourses. Even in these areas, it is likely that Archaic peoples used riverine resources. As previously noted, however, the later Anasazi sites tended to obliterate evidence of the earlier occupation just as modern development rapidly eliminates all too many vestiges of the Anasazi.

Another factor contributing to an under-calculation of the Archaic occupation arises from the fact that the field workers in Washington County were oriented to the permanent Formative sites and responded very little to Archaic evidence. It should be noted that specialists in Formative cultures believe that they cannot accurately determine the temporal position of a site with less than 75 sherds while many contend that, if possible, a collection should contain about 500 sherds. To such scholars, the identification of a site as Archaic on the basis of a single point borders on scholarly irresponsibility.

It thus appears likely that much Archaic data is ignored. Recently, for example, a small Anasazi site producing only some 25 sherds has been provisionally cross-dated at about A.D. 950. Included in the site collection, however, was a Humboldt Concave Base point accepted as being anywhere from 6,700 to 4,700 years old. This is not to say that the particular site was Archaic, but it does indicate that the Anasazi occupants were finding evidence of a much older occupation. Until recently, many site forms would ignore this kind of data.

Only recently, in such projects as the Navajo-McCullough transmission line (Moffitt, et al., 1978) and the Hot Desert Survey in the Dixie Resource Area (Wikle, 1979) has there been a focus on areas lacking significant Formative site concentrations. The result has been a considerable clarification of the Archaic occupation in Washington County. At present it can be said with assurance that all of the major Archaic points have been found in Washington County. The previously mentioned Humboldt Concave Base is rare, but as noted, it does occur. All of the Pinto forms have been found with some regularity while it is the Elko series that is the most abundant. The temporally restricted Elko Eared point is the least common and, because of that, is the best time marker. The Elko Corner-notched and the Elko Side-notched forms are more common and are regularly found in Formative as well as Archaic sites. Finally, the ubiquitous Gypsum point is widely distributed.

Many recent writers have stressed the need to go beyond the richness of rockshelter and cave data to find the open Archaic sites. This is obviously an important necessity if a more complete understanding of Archaic strategies is to be obtained. Under the circumstances, it is rather surprising that a major contribution in that area has been rather consistently overlooked. Here reference is to the the work of the Museum of Northern Arizona in surveys and excavation along the Navajo-McCullough transmission line (Moffitt, et al., 1978). This line zig-zagged along the Arizona-Utah line as it was run west from Page. In 1972-73 the Museum of Northern Arizona conducted surveys and excavations along the line and the report was finally published in 1978. Good data was obtained from this work. Here the focus will be on materials relevant to the Archaic occupation.

42Ws471 (Moffitt, et al., 1978:8-11). Excavation exposed five roasting pits, much Southern Paiute debris and a carbon date of A.D. 1615. Of the 19 identifiable points, two were Elko Corner-notched and one is described as a "Willow Leaf." In view of the dominating evidence of Southern Paiute activity, it is not clear whether an Archaic component exists or whether these points were collected by the later peoples.

42Ws472 (Moffitt, et al., 1978:11-20). This site produced substantial data for an occupation of all three of the major cultural components known in the area. In one locus on the site, Archaic materials were overlain by Anasazi debris while another area of Anasazi occupation was overlain by Southern Paiute material. Among the features excavated were four wickiup depressions, each with a firepit, three amorphous rock concentrations, five roasting pits, two hearths, and a slab-lined cist. A total of 133 identifiable projectile points came from the site. The collection included 24 Elko Corner-notched, eight Elko Eared, three Elko Side-notched, 12 Gypsum, eight Humboldt Concave Base, and three Willow Leaf. The only date obtained during the excavations came from a carbon sample which produced a Southern Paiute date of A.D. 1755.

42Ws474 (Moffitt, et al., 1978:21-23) A single roasting pit proved to be the only feature exposed. The cultural materials were basically Southern Paiute and no dates were obtained. Four Archaic points were recovered, however. These included two Elko Corner-notched, one Elko Eared, and one Gypsum. Again, it is entirely possible that these points may have been used by the Paiute but the materials found at other sites in the group suggests this is not necessarily the case.

42Ws475 (Moffitt, et al., 1978:23-25). Although there was evidence of limited Anasazi use, this site was the only one that showed no trace of the Southern Paiute. While no features were exposed and no dates obtained, the site should be seen as Archaic. Evidence for this is found in the point collection which includes six Elko Corner-notched, 12 Humboldt Concave Base, eight Gypsum, and two Willow Leaf.

42Ws478 (Moffitt, et al., 1978:25-37). While all other sites in this group were found in pinon/juniper stands, this site was located in the brush zone high on the western slope of the Beaver Dam Mountains overlooking a region which has, thus far, failed to yield evidence of any prehistoric occupation or activity. The excavators exposed seven roasting pits, two roasting pit/midden complexes, two hearths, and two amorphous rock concentrations. One roasting pit produced a carbon sample which assayed at A.D. 1505 while a roasting pit/midden complex was dated at A.D. 190. It appears unlikely that even the early date applies to the Archaic, but an Archaic occupation is seen in the projectile point collection which included 16 Elko Corner-notched, three Elko Side-notched, 11 Elko Eared, five Gypsum, three Humboldt Concave Base, and two Willow Leaf.

42Ws480 (Moffitt, et al., 1978:37-43). This site produced the most tightly structured evidence of occupation by Archaic, Anasazi, and Southern Paiute peoples. Seven roasting pits and a hearth were superimposed upon each other to provide a good sequence. The only carbon date at this site was A.D. 280, perhaps representing a Basketmaker II occupation rather than an Archaic one. Evidence of Archaic utilization of the site was contained within a fairly large point collection which included 27 Elko Corner-notched, three Elko Eared, seven Elko Side-notched, 24 Gypsum, seven Humboldt Concave Base and one Willow Leaf.

Washington County offers, then, good evidence of an Archaic occupation. Although, for considerations already cited, it was probably more widespread and more significant than the present record would appear to indicate.

The Formative.

The territory occupied by the Western Anasazi extends from the Grand Canyon on the south to the high ground along the northern borders of Kane and Washington Counties in Utah. To the west, the occupation is not only strong in the Moapa Valley, Western Anasazi sites have also been identified in the Las Vegas Valley while the diagnostic Virgin Series ceramics have been found many miles west of Las Vegas.

The eastern limits of the Western Anasazi area would appear to be definable more on the basis of the attitudes of individual workers than on objective data. Some would place the eastern limits of the culture near Kanab Creek in Western Kane County while others dispute the presence or absence of Western Anasazi sites on the Kaiparowitz Plateau. While this is a complex dispute about which much could be written, happily it may be ignored here because there is no question but what the Formative occupation in Washington County is Western Anasazi.

There is a fundamental cultural homogeneity over the entire region in which the Western Anasazi have been found. This is a remarkable fact when the great environmental diversity is taken into account. Some populations lived in Cold Desert environments at elevations ranging from 4500 to 6500 ft. with a few sites both lower and higher. At the same time, much of the culture area in the west is adapted to the intense Hot Desert environment with most sites being found within an elevational range of from 1000 to 2500 ft. with some a bit higher.

While the Hot Desert adaptation is largely confined to the state of Nevada, a Hot Desert transitional zone is found in the St. George Basin of south-central Washington County. As is the case in Nevada, the St. George Basin sites tend to be concentrated along the Virgin River and its perennial tributaries such as Santa Clara Creek, Quail Creek, and others. In this area the plant community is dominated by creosote bush, but numerous Cold Desert plants can also be found.

The site density, particularly in the area where the Santa Clara joins the Virgin, is exceptionally high. So many sites have been lost to the requirements of agriculture and, more recently, to housing developments, that it is almost impossible to estimate the number of structural sites that once existed. There would appear to be, however, some reason to suggest that the Formative population density was at least as great in the St. George Basin as it was in the much more widely known Lost City settlements along the Moapa River and the Lower Virgin in southeastern Nevada.

In the Cold Desert areas which host the Western Anasazi, there would appear to be two adaptations for farming. The best example of the first is found at Pipe Spring in Arizona where a tremendously high site density appears to be explainable in terms of the steady flow of water from a number of springs, one of which still flows. While nothing of similar magnitude is known for Washington County, is is known that a number of Western Anasazi sites have been found in the western portion of the country. These are generally located near the Navajo Sandstone which frequently contain aquifers which produce springs with a flow sufficient to support some prehistoric farming.

On the high ground on Little Creek Mountain, Washington County, as well as in other areas, year-round water is lacking and there is reason to doubt that this is a climatic factor. In other words, there were no springs in much of this area even in wetter times. Rainfall horticulture appears to have been the rule. This proposition has yet to be tested locally but successful wheat production in the mid-1970s at an elevation of 6200 ft. just south of Mt.Trumbull in Mohave County would appear to provide good testimony as to the practicality of rainfall farming.

The sites contained within the Quail Creek project area seem to fall well within the Hot Desert riverine adaptation as do many sites as far east as Zion National Park. The evidence here is circumstantial but the small floodplains along lower Quail Creek and a larger one on the Virgin just downstream, below the mouth of Quail Creek, would appear to offer ample farming possibilities using, in part, diverted water from the two perennial sources.

Since corn macrofossil remains have been found in most excavations throughout the Western Anasazi culture area, it has always been taken for granted that these people relied upon horticulture for subsistence. Earlier scholars assumed that evidence of sedentary habitation meant, per se, a primary reliance on cultivated plants. In recent years, however, evidence that sedentary peoples continued at least some foraging for wild plant foods has increased the need for more explicit identification of subsistence strategies at all excavated sites. Unfortunately, little flotation or pollen sampling has been done in the region.

Workers in the Moapa Valley of Nevada report no success in their attempts to recover pollen and plant macrofossils (Thompson and Dalley, 1978b:342-346). In Washington County, Gardiner Dalley has taken flotation and macrofossil samples from the Red Cliff site near Leeds as well as from a Pueblo I and three early Pueblo II sites in the gorge of the Virgin River. Thompson has taken samples on Little Creek Mountain from a Pueblo I and both an early and a late Pueblo II site. All of this material remains to be processed.

Some analysis has been done for two sites in Kane County, one on Kanab Creek and the other on the Paria River. The results are not directly applicable to Washington County and need no discussion at the point. Suffice it to say, there is at least minimal evidence of a continued exploitation of wild plant food resources. Discussions concerning Parowan Fremont adaptive patterns to the north have tended to revolve around the role of wild plant foods in years of poor corn harvests. That may also have been the reason that wild foods will be found to have been used among the Western Anasazi.

This interpretation may, however, be only a function of the modern student's own cultural orientation. Most of these prehistoric peoples were only a few generations removed from some form of an Archaic foraging pattern. It is entirely possible that the continued consumption of wild plant foods was a matter of taste preference. While such a preference may not be demonstrable, if future research demonstrates a regular rather than an occasional use of wild resources, this would suggest a dietary preference rather than a substitution made only in times when domestic foods were in short supply.

The Formative occupation of the Western Anasazi has traditionally been divided into at least four major cultural periods within what is commonly known as the Pecos Classification. In a very general way these periods include Basketmaker II thought to date from about A.D. 1 to 500; Basketmaker III from A.D. 500 to 700; Pueblo I from A.D. 700 to 900; and Pueblo II from A.D. 900 to 1100. These dates represent a general framework and, for the most part, should not be taken too literally. There were doubtless differing points of transition from one period to another in various parts of the culture area.

Dating in the Western Anasazi region remains something of a problem. No sequence has been developed for tree-ring dating, or dendrochronology and, although the number of radiocarbon dates has continued to grow, a development which produces new insights, the number of chronometric dates must be increased significantly. The older practice continues, meanwhile, of placing sites by cross-dating painted ceramic designs that have been more accurately dated in northeastern Arizona. The issues involved in this work will be discussed in a subsequent context (see Ceramics in Material Culture).

Another means of estimating the temporal position of a site is through architectural analysis. Over 30 years ago, Schroeder (1955) commented on what appeared to him to be the lack of a definable structural sequence changing through time. He reached his conclusion by comparing structural features with associated ceramics. His point was made on the basis of good empirical data. The failure to identify a sequence would appear to result from two factors which Schroeder could not take into account.

First, of course, was the small size of his sample and the limited area of Zion National Park. The lack of other research in the area also denied him a data base from which to work. Secondly, and closely allied with the difficulties of the first limitation, is the fact that subsequent evidence increasingly seems to show that, as architectural innovations appeared, they did not necessarily replace older forms. The passage of time meant, therefore, that the Western Anasazi simply increased the number of structural possibilities open to them and there was an apparent tendency to select the form of building best suited to particular needs. A few features did disappear, of course. The bell-shaped storage cist does not persist to the end of Basketmaker II. The benched pithouse is seemingly known only in Basketmaker III and in perhaps most of Pueblo I. But many other structural forms persist for remarkably long periods of time.

In the early 1970s, the Thompsons (1974b) obtained a suite of six C-14 dates from Basketmaker II structures at the Little Jug site in the Tuweep Area of Grand Canyon National Park in Mohave County. The range of dates was from A.D. 100 to 340. The dates proved to be unexpected early, but they became quite startling when it was realized that in five of the six samples, plain sherds have been found in association. The Thompsons reexamined their records with care and concluded that possible error in the dates could not be ascribed to their procedures. They decided to accept the dates no matter how anomalous they might seem in the face of the traditional assumption that ceramics appear in the upper southwest only at some time between A.D. 475 and 500.

Michael Berry's (1982:119) recent systematic reassessment of the dating of Anasazi culture periods has provided considerable support for the Thompson's belief that their dates are valid. Although Berry's monograph is controversial, he has actually treated his dating in a conservative fashion. He found that the dates from the Little Jug site correspond closely with six dates from the Navajo Reservoir District of northern New Mexico where ceramics were also found in association with carbon samples. The issue is, of course, far from resolved.

The discussion of the Archaic referred to the excavation of seven sites in southwestern Washington County by the Museum of Northern Arizona in 1973 (Moffitt, et al., 1978). The sites will be discussed more thoroughly in the treatment of the Southern Paiute, but at this point, it is well to note that some of these sites also produced significant Anasazi components.

42Ws472 (Moffitt, et al., 1978:11-20). From a collection of 981 sherds, 38 percent were Virgin Series types diagnostic of late Pueblo II. Excavated features included four wickiup depressions, five roasting pits, two hearths, and a slab-lined cist. The last feature was doubtless Anasazi. In one area of the site, Archaic materials were found beneath Anasazi cultural debris while, at another point, Anasazi residue underlay evidence of southern Paiute occupation. The only date obtained was A.D. 1755, clearly related to the Paiute occupation.

42Ws480 (Moffitt, et al., 1978:37-43). A collection of 295 sherds included 33 percent Virgin Series examples which were, once more, diagnostic of late Pueblo II. At this site, seven roasting pits and a hearth were tightly superimposed to provide a clear temporal sequence. A C-14 date of A.D. 280 was obtained.

The presence of late Pueblo II ceramics might be construed as evidence of the termination of the Western Anasazi occupation. The argument could be advanced that the limited activity occupation was symptomatic of the breakup of the Formative sedentism as people returned to a mobile strategy. This is, however, something of a simplistic line of thought. The abundance of projectile points found in every temporal/cultural period at the site argues that it was a hunting camp used periodically for as much as 3000 years. As such, the site is best regarded as yielding evidence that Formative peoples in Washington County, as well as elsewhere, never completely abandoned the foraging and hunting pattern of their Archaic heritage.

It should also be noted that the roasting pits exposed at these sites exhibit no significant change in form over a 1500 year period although they appear to have been made by different peoples at widely scattered intervals. Also of interest are two of the dates. At 42Ws480 an A.D. 280 date was obtained. At 42Ws478, two dates, A.D. 190 and A.D. 1550 were diagnosed as representing the Archaic in the first case and the Southern Paiute in the second. The two early dates conform rather closely to the sequence the Thompsons report for the Little Jug site. Although tabulations are not presently available, a fair number of Archaic points came out of the Thompson excavations. It may be possible that the transition from Archaic to Formative may be taking place about this time, although further work will be required to make this clear. The point is, of course, that the A.D. 190 and 280 dates may represent limited activities of Basketmaker II peoples rather than a station on a foraging round of the Archaic.

At the Little Jug site in Mohave county, meanwhile, a Basketmaker III circular pithouse, partially circumscribed by a bench, is the single example for the Basketmaker III period in the immediate area. In this case interior slabs were used only at points where soft soil or midden lay behind the walls. The storage structures continued to be circular with slab linings as they had been in late Basketmaker II. This was readily determined since one of the largest of the cists was bonded to the Basketmaker III pithouse by a continuous surface of clay plaster that extended from the sidewall of the pithouse across the common wall between the pithouse and the storage cist, and down the interior wall of the cist. The pithouse roof was supported by five posts.

The traditional view has seen the Pueblo I period as a time when isolated storage structures coalesced into contiguous, multi-room elements. Some have said that the storage features tended to become surface structures during this change. This may be the case although the sequence cannot be spelled out in detail. On Little Creek Mountain in southeastern Washington County, for example, Wise and Thompson excavated major portions of a Pueblo I site. Three linear structures of five or six contiguous, slab-lined storage cists with masonry walls above the surface of origin have been exposed. Each cist appears to have been constructed independently with additional cists added accretionally. A benched pithouse with apparent jacal walls was exposed in relation to one of the cluster of cists. There has been no opportunity to explore for additional pithouses.

In the Gorge of the Virgin River northwest of Hurricane, meanwhile, Dalley and McFadden excavated another Pueblo I site in which two linear elements of three or four storage rooms, more nearly surface structures in this case, appear to relate to a deep but unusually nondescript pithouse lacking any sign of a bench.

At site 42Ws388 in the present Quail Creek project, as well as at site 42Ws268, a sequence of contiguous slab-lined cists were exposed and, in both cases pithouses have been found in relative positions identical to those at 42Ws1319 on Little Creek. The 42Ws388 example was benched and evidence indicated a jacal superstructure.

At some time during Pueblo II, the circular habitation unit, or pithouse, seems to have developed three different forms. The deeper pit, with either a roof supported by posts, or perhaps a cribbed superstructure, continued to be used. A second pithouse form was a circular pit surrounded by a masonry wall which rested on the edge of the pit at the surface of origin--that is, on the surface into which the actual pit was dug. Finally, there was a structure formed with a circular depression so shallow that it hardly qualifies as a pithouse. Again, the surrounding masonry wall rested on the surface of origin. All three of these forms persist either as independent elements or incorporated into some of the larger unit pueblos.

A unit pueblo is best defined as a series of contiguous rooms which include both habitation and storage elements. The larger of these appear to represent extended family domiciles. Forms may be linear, L- or V-shaped, crescentic, C-shaped, or circular. This writer knows of one large square. The rooms of unit pueblos are not invariably surface structures, however. Many of the storage rooms prove to be semisubterranean. In most examples, the masonry walls extend down to the floor of the pit, well below the surface of origin. The interiors of these features will be either clay-plastered or slab-lined with the slabs reaching well above the surface of the ground, apparently in order to cover much of the interior masonry. Slab-lined cists, both round and rectangular, are often found as outlying features associated with unit pueblos. The habitation element may be a large surface room, or one of the three pithouse forms incorporated into the unit.

Finally, there is another form of structure that appears in early Pueblo II but which becomes most common in late Pueblo II. This is the two to four room surface structure normally found isolated from other sites in the same time period. The fact that so many, though not all, of these small structures occur quite late in the Western Anasazi Formative calls to mind Haury's concept of the "farmhouse," which he viewed as an integral part of Pueblo III nucleation, as commonly noted in the Mesa Verde area (Haury, 1956:7). It is by no means certain that these structures all fill the same function, but it certainly appears possible.

The comments on structural forms have been phrased as though they are applicable to the entire area of Western Anasazi occupation. It should be noted, however, that there are regional variations arising primarily from differences in available resources. In Nevada, for example, structural materials are primarily adobe and jacal. The stone available is limited to river cobbles which were used for subflooring and, when they are incorporated into walls, they appear to have served more as a "filler" than as masonry. At the same time, the form of the structures follows patterns quite similar to those known in the Utah and Arizona portions of the Western Anasazi territory. Some differences can also be found in areas where structures are built of basalt, but the essential similarity persists. It would be foolish to allow differences in detail to establish a Boasian demonstration of chaos when the most significant factor is the degree of similarity over an area of great environmental diversity.

Perhaps one of the most intriguing issues suggested for the later portions of the Formative occupation is the social significance of such a diversity of structural forms. While there is probably little profit in an attempt to develop a cognitive archeology, one is led to wonder if there was a conceptual difference between an extended family living within a single unit pueblo, and one that was housed in three or four small components spaced a mile or so apart.

The model offered here for the termination of the Western Anasazi occupation is similar to the one postulated by Berry (1982) for the demise of the Parowan Fremont. The end of the Western Anasazi sedentary tradition is not seen as an abrupt and massive folk movement out of the area. It is assumed, instead, that bit by bit there were an increasing number of poor farming years that came more frequently and for progressively longer periods of time during the twelfth and early thirteenth centuries. In the bad years, families would have no alternative but to abandon the basic home and move into a foraging pattern. It should be kept in mind that wild resources are generally more stable during episodes of climatic variation than are domestic plants. Domesticates are derived from a limited number of species, all of which have similar environmental requirements. Thus, all elements in a horticultural plot would fail in drought years. In a strategy involving foraging for wild food resources, dry years would affect some plants more adversely than others. While some food might be preferred, there would usually be a chance to switch to a reliance upon the product of more xerophytic plants. Thus, of course, short term climatic changes could be countered with modifications in the foraging round.

One advantage of a gradual termination model is that it requires no cataclysm to account for demographic adjustments. The Formative doubtless produced a greater population density than that possible in the Archaic strategy. A gradual return to Archaic foraging, at first perhaps only a year or two at a time, would simply lead to earlier mortality for the elderly, a probable reduction in the number of conceptions and an increase in miscarriages. If abandonment took place over a century or so, there is little likelihood that a massive loss of life was a requisite for the transition.

The Neo-Archaic.

The term "Neo-Archaic" represents this writer's small, personal protest against a persisting terminological inconsistency. When Willey and Phillips (1958) defined the adaptive strategies called "Lithic," "Archaic," "Formative," etc., etc., they cautioned their readers that the terms were meant to represent distinct adaptive strategies seen in the New World and that they were not intended to suggest an evolutionary sequence. With the term "Paleo-Indian" advantageously substituted for "Lithic" the labels have continued in general use over most of North America.

There is little question but what the strategies defined by Willy and Phillips have, in fact, come to be viewed as segments along an evolutionary continuum. Were this not the case, there would be no need to abandon the descriptive terms normally used and resort to the linguistic term "Numic" to identify the last prehistoric occupation in Washington County as well as in much of the Great Basin and the Colorado Plateau.

If the Paiute and their Shoshone compatriots arrived in the area from somewhere such as southern California, as many believe, it should be clear that they could never have lived within the Formative framework. If this is the case, the Paiute and Shoshone belong on a select list of societies that sustained themselves in the Archaic pattern well into the nineteenth century. If, however, they are descendents of Formative populations previously known in this area, it follows that they must have "devolved," to use Thomas' (1979:13) most unfortunate term. Perhaps archeologists like Thomas oppose the idea of Southern Paiute derivation from Formative precursors because they fear that Bishop Usher will rise from the grave to proclaim that Paiute history "proves" degeneration.

In approaching the subject of the occupation of the Great Basin by "Numic speakers" it is a common practice to turn to the ethnographic record for a statement concerning adaptive strategy. This has seemed essential in view of a dearth of excavations producing Southern Paiute data. While ethnographic material certainly remains relevant, the intent of this summary is to restrict discussion to excavated Paiute sites, even though the number remains small, and to the data generated by archeological surveys.

Julian Steward's (1938) Basin-Plateau Aboriginal Sociopolitical Groups is the most detailed ethnographic examination of the Shoshone/Paiute adaptation available. It should be read in conjunction with D. H. Thomas' (1971) use of archeological data to evaluate the Steward model. Many archeologists have read both monographs but far too many ethnographers and archeologists continue to overlook or ignore Steward's (1970) critical reevaluation of his own 1938 study.

The Southern Paiute have long been recognized as gatherers and hunters who populated the southern Great Basin before the European intrusion. The most widely accepted model is one holding that they migrated into the Basin from somewhere in southern California. David Madsen (1979a:82-86) used radiocarbon dates and ceramic cross-dating in an attempt to establish a temporal dimension to the Paiute/Shoshone movement. He concluded that the Southern Paiutes were in southern Nevada by A.D. 1000 and that they reached southwestern Utah some time between A.D. 1200 and 1300. The Shoshone also appear to have established themselves in northern Utah by A.D. 1300.

A review of sites recorded in the IMACS state-wide file in late 1982 showed that only 23 of a total of 1,353 sites in Washington County were listed as Paiute. It must be remembered that, at that time, a large number of sites had not been entered in the file and, since that date, survey work has recorded several hundred additional sites. Certainly the number of Paiute sites is greater than the 1 percent of the county total indicated in the 1982 calculation.

The U.S. Forest Service, for example, has recorded a substantial number of Paiute sites in the Dixie National Forest in the northwestern part of the county. BLM archeologists have identified some 20 Paiute sites over a 10 mile stretch north of St. George both east and west of Interstate 15. The Quail Creek sites, herein reported, are just east of the BLM-identified cluster; 17 are either Paiute or contain a Paiute component (see Excavations, below).

There is reason to expect that additional sites will be found along the long canyon between the Hurricane Cliffs on the east and the Pine Valley Mountains on the west. In this trough the ground rises sharply to the north to the summit at Black Ridge. Logically, sites found along this trough should produce evidence of a seasonal transhumance in which the Neo-Archaic foragers first exploited the early spring resources along the Virgin River in the St. George Basin, and then moved gradually higher to the north as spring came to higher elevations until they finally reached the New Harmony Valley just north of the Black Ridge.

As previously noted, the Museum of Northern Arizona completed an archeological survey along the right-of-way for the Navajo-McCullough transmission line which follows a zig-zag route along the Utah-Arizona boundary. Subsequently, a cluster of small sites were excavated in the Beaver Dam Mountains of southwestern Washington County. Five years later, the Museum published a brief report of the work written by staff members who had not participated in the field work (Moffitt, Rayl,and Metcalf, 1978). The sites relevant to this study include 42Ws471, 472, 473, 474, 478, and 480. In addition to Paiute materials, two of the sites produced evidence of the Western Anasazi and, as noted, several exhibited strong Archaic components.

42Ws471 (Moffitt, et al., 1978:8-11). The primary site features were five roasting pits ranging from 1.5 to 2.0 m. in diameter. A total of 157 Southern Paiute Brown Ware sherds were collected while, out of 19 identifiable projectile points, eight were Cottonwood Triangular and five were Desert Side-notched. From Pit 3 came a carbon sample that produced an assay date of A.D. 1615.

42Ws472 (Moffitt, et al., 1978:11-20). This multicomponent site showed substantial use by Archaic, Anasazi, and Southern Paiute peoples. In one section of the site, Anasazi material overlay Archaic items while, in another area, Southern Paiute cultural debris was found above material of Anasazi derivation. Features excavated included four wickiup depressions, each with a firepit (and one of which was circumstantially attributed to the Anasazi occupation), three amorphous rock concentrations, five roasting pits, two hearths, and a slab-lined cist. Of the 961 recovered sherds, 64 percent were Southern Paiute. Of the 133 identifiable projectile points collected, 36 proved to be Cottonwood Triangular and 19 were classed as Desert Side-notched. Both of these types were found in association with the upper levels of the site. Roasting Pit 1 yielded a carbon sample which produced a date of A.D. 1755.

42Ws473 (Moffitt, et al., 1978:20-21). Two small roasting pits were the only features of the site and the only cultural material was limited to two Southern Paiute sherds. No carbon suitable for dating could be found.

42Ws474 (Moffitt, et al., 1978:21-24). This site was limited to a small roasting pit that had been dug into the natural stone pavement only a few centimeters below the present surface. Although the site proved impossible to date, 23 Paiute sherds, a Desert Side-notched point and four Archaic points were recovered.

42Ws478 (Moffitt, et al., 1978:25-37). While all of the other sites were in pinon/juniper forest land, this western-most site of the group is located in the brush zone high on the western slopes of the Beaver Dam Mountains overlooking a region which has, thus far, failed to produce evidence of prehistoric human occupation or activity. The excavators exposed seven roasting pits, two roasting pit/midden complexes, two hearths, and two rock concentrations. Recovered ceramics proved to be 80 percent Southern Paiute. These sherds were concentrated in the upper 20 cm. of the site fill along with three Desert Side-notched and five Cottonwood Triangular points. Other point types revealed a strong Archaic component and a light use by the Anasazi. Roasting Pit 4 produced a carbon sample dated at A.D. 1505 while a roasting pit/midden complex was dated to A.D. 190.

42Ws480 (Moffitt, et al., 1978:37-43). This site argued the heaviest use by Archaic, Anasazi,and Southern Paiute peoples. The roasting pits were superimposed upon each other and a fairly good sequence of occupation could be worked out. Some 59 percent of the 295 sherds collected proved to be Southern Paiute while, in the Western Anasazi occupation zone, sherds found at the deepest ceramic levels were Logandale Gray, a type believed to have been made during Basketmaker III times and again in the Pueblo II period. Of the 124 identified projectile points, 21 were Cottonwood Triangular and five were Desert Side-notched. All of them came from the upper levels of the fill. Roasting Pit 7 produced the only carbon date of A.D. 280.

More recently, Nickens and Associates released a report by Gordon C. Tucker, Jr. (1985) which dealt with the excavation of seven sites in western Washington County. The project involved mitigation of the sites as a prerequisite to the construction of the Intermountain Power Project transmission line through this area. A reading of this rather complex report shows how an attempt to fix the time of occupation can become an exercise in frustration. The author does an excellent assessment of the activities conducted at each site and he is reasonably familiar with the literature in the area, although he does not seem to have heard of Moffitt's work. Without going into greater detail, at this point it seems most relevant to summarize Tucker's temporal diagnostics.

42Ws868. A Rosegate point (A.D. 700 to 1300); a Snake Valley Gray sherd (A.D. 900 to 1200); a total of 128 Paiute utility ware sherds which would not likely date at any point in time earlier than A.D. 1100.

42Ws1585. Four Rosegate points (A.D. 700 to 1300); three Gatecliff Contracting Stem points (3000 to 1300 B.C.); one Elko Corner-notched point (5000 B.C. to A.D. 700); one Humboldt Concave Base point (4000 to 1000 B.C.); 20 Paiute utility ware sherds (A.D. 1100 or later); two Snake Valley Gray and one Snake Valley Black-on-gray sherds (A.D. 900 to 1200).

42Ws1592. A Gypsum point (1800 to 450 B.C.).

42Ws1597. Two Elko Corner-notched points (5500 B.C. to A.D. 700); one Rosegate point (A.D. 700 to 1300) 28 Paiute utility sherds (A.D. 1100 or later); and a C-14 assay from a hearth termed too recent to date.

42Ws1754. One Elko Corner-notched (5500 B.C. to A.D. 700); three Paiute utility ware sherds (A.D. 1100 or later).

42Ws1578. One Rosegate point (A.D. 700 to 1300); 46 Paiute sherds (A.D. 1100 or later); four North Creek Black-on-gray sherds (A.D. 900 to 1100); Thermoluminescence dates of A.D. 1491 to 1589 and A.D. 1771 to 1809 from Paiute sherds. Burned rock produced a C-14 date of A.D. 225 to 605 which Tucker regarded as probably aberrant.

42Ws1753. 1 Elko Corner-notched point (5500 B.C. to A.D. 700)

The first thing to be noted is that five of the seven sites produced Southern Paiute ceramics. In spite of this, not a single Desert Side-notched or Cottonwood Triangular point was found in the project. This is a striking absence of a very common correlation since they are considered diagnostic of the same cultural/temporal position. That correlation is well demonstrated in the sites excavated by the Museum of Northern Arizona (Moffitt, et al., 1978) only a few miles southwest of this project area.

Tucker is quite aware of the danger in assigning Archaic dates to sites producing Archaic points. He rightly notes the dates he believes should be assigned to these points, but it is clear that he believes later re-use may be involved. He assigns 5500 B.C. to A.D. 700 to the Elko Corner-notched point. It is probably quite true that none of these points existed prior to his early date but many workers have recovered them in contexts much later than his A.D. 700. They are, in fact, in much later contexts in three of the sites he reports. Given this fact, there should be no difficulty involved in assuming a much later date for 42Ws1753 where an Elko Corner-notched was the single temporal diagnostic recovered.

Dates obtained from thermoluminescence have always been suspect in the tristate area particularly since they can be altered by the presence of carbonates. The two dates derived from Paiute sherds at 42Ws1578, however, are logical enough and Tucker would appear to be justified in rejecting the C-14 date of A.D. 225 to 605 from burned rock as aberrant.

Finally, for some reason that is not quite understood, Tucker assigns to North Creek Black-on-gray sherds a dating range of A.D. 900 to 1100. Since he did not get those figures from Colton, it is not clear how he reached that conclusion. North Creek Black-on-gray probably fits most accurately as the dominant painted design styles (Colton has A and B) between about A.D. 1075 and 1150.

While there are some questions concerning the dating of these sites, the problem is more with the ephemeral nature of the sites than it is with the scholarship involved. A possible exception with respect to scholarship is D. H. Thomas' new point terms developed from his finds at Gatecliff shelter. One wonders at the validity of a scheme which assigns dates of 1800 to 450 B.C. to Gypsum points while assigning dates of 3000 to 1300 B.C. to the Gatecliff Contracting-stem which is simply smaller. The distinction may be valid but more data is certainly needed.

There is, of course, no archeological issue in the matter of Southern Paiute "termination." That problem is ethnographic and it must focus on deadly cultural and personal trauma. The archeologist must, however, share some responsibility with the general public for ignoring the Neo-Archaic prehistoric episode. It is more than a passing curiosity that many field workers have devoted so much time to the study of the Archaic in the desert west and yet have done so little with the Southern Paiute and the Shoshone. Archeologists often express their admiration for Archaic adaptive skills. The Southern Paiute and their Shoshone neighbors, meanwhile, continue to be ignored by archeologists even though these people must surely represent the ultimate statement of the foraging strategy that is, elsewhere, so much admired.

Perhaps it is no accident that contract work within the last 15 years has led to some investigation of Paiute sites. Although it should not be overstated, there are signs of growing interest in the final phase of the prehistoric record in the Great Basin and on the Colorado Plateau.

## The Environment

### Geography.

The Quail Creek project is located in southwestern Utah on the northern edge of the St.George Basin in central Washington County (Fig. 1). The project area is, therefore, a Hot and Cold Desert ecotone. The true Cold Desert comes within some 5 miles of the Quail Creek project. The Cold Desert is characterized by floral associations that differ radically from the Hot Desert plant communities seen south of St.George.

The striking environmental diversity of the area is largely the product of great elevational differences within a very limited region. In a 10 mile radius of the project area, which lies between 2800 and 3200 ft. above sea level, it is possible to find substantial differences. Southwest of the Quail Creek area, the Virgin River valley has descended to 2650 ft. Hurricane Mesa, which lies to the northeast, attains a height of some 5500 ft. while, to the west, the Pine Valley Mountains rise to 10,000 ft. in places.

As the elevational differences imply, this is a broken and deeply dissected country and the prehistoric people living along Quail Creek probably used their knowledge of the terrain to contact other communities. The Western Anasazi people of southern Nevada could be reached by following the Virgin River between the Beaver Dam and the Virgin Mountains. To the north, the peoples and resources of the eastern Great Basin were accessible via the long incline that rises between the Pine Valley Mountains and the Hurricane Cliffs, or they could follow the route of the Santa Clara River which originates east of the Pine Valley Mountains to reach the same general region. Western Anasazi populations in the east could be reached by a route up the East Fork of the Virgin River through what is now the southern portion of Zion National Park, or they could take one of a number of trails up the Hurricane Cliffs and follow a southeasterly route which would be through well-settled Western Anasazi areas for many miles.

Geology.

The dam and its reservoir are located in an eroded anticline. The anticline runs along a northeast to southwest axis. It is about 1 1/2 miles wide and some 9 miles in length. The anticline has been deeply eroded along its central axis from its southern end to a point about 1/2 mile north of Quail Creek (Fig. 2).

The Virgin River flows in a westerly direction until it meets the eastern edge of the anticline, which forces the river to turn south until it reaches a point where a break in the formation just north of Washington Dome allows the river to veer to the west once more. Quail Creek, meanwhile, maintains a southerly flow out of the Pine Valley Mountains and it cuts through both the northwestern and southeastern scarps of the anticline to form two narrow defiles referred to in this paper as the North Gap and the South Gap. The proposed dam is to be built in the South Gap and the resulting reservoir will, when full, back up almost to the North Gap.

All of the geological formations exposed in the project area are of Triassic age with the exceptions of some Quaternary basalt flows and alluvium which will be discussed later (Hintze, 1973). The highest stratum, capping the surface of the anticline, is the Shinarump Conglomerate Member of the Chinle Formation. The upper Shinarump consists of a well-cemented, course sandstone deposited by continental stream channels. The lower Shinarump is composed of a poorly sorted, but well-cemented, stream-worn gravel containing occasional specimens of petrified wood. The wood is generally light brown in color and it is poorly silicified. Knapping tests performed on this material revealed a nearly complete absence of conchoidal fracture and a strong tendency to crumble. It is understandable, then, that no examples of artifacts made of this petrified wood were found.

The Shinarump is a relatively resistant deposit that forms a low cliff around the interior of the eroded anticline, protecting the softer underlying strata from erosion. Below the Shinarump are two members of the Moenkopi Formation. Immediately below the Shinarump lies the "Upper Red Beds," which consists of a soft mudstone with the brick red color so characteristic of the Moenkopi. In the project area,the Upper Red Beds include a thin, localized tan sandstone member which has not been named. The Upper Red Beds were formed in an environment consisting of steam channels, floodplains, fresh or brackish ponds, playas and shallow seas. This member is generally a soft, decomposing mudstone, but in some places, including the tan submember, mudstone and sandstone slabs of architectural quality are present. This appears to be the only significant source of such slabs in the project area.

Below the Upper Red Beds lies the Schnabkaib Member of the Moenkopi. The Schnabkaib consists of alternating bands of very soft, red and gray shales which form the lower half of the scarps and the valley floor on both sides of Quail Creek. These gypsiferous shale beds are indicative of a shallow marine environment receiving low energy deposits originating from the east. The Schnabkaib is an unlikely source of ceramic clay because of its highly gypsiferous nature.

Several other exposed geologic strata also produced resources for the prehistoric inhabitants of the project area. The most important of these is the Petrified Forest Member of the Chinle Formation lying geologically above the Shinarump. Because of the nature of its soft shale, the Petrified Forest Member is no longer present on the steep outer slopes of the anticline. It is, however, exposed in limited areas to the east and west. The most conspicuous exposure lies just north of the bend in the Virgin River where the river meets the anticline and veers to the south. At this point, the Petrified Forest Member consists of a soft, gray shale with numerous specimens of petrified wood and chert nodules. This member was deposited as a low energy river floodplain where driftwood was buried and silicified because of the presence of bentonitic volcanic ash in the shale. Like the petrified wood noted in the lower Shinarump, this wood is poorly silicified and not suitable for lithic knapping. In addition to the petrified wood, however, the strata at this location also contains numerous nodules of the red, gray and white chert which was extensively used during the prehistoric occupation of the project area. This location marks the nearest known source of chert identified during project work.

A second exposure of the Petrified Forest Member was noted along Interstate 15 and the frontage road immediately west of the North Gap. This small exposure is visible primarily because of several road cuts. It contains no evidence of either petrified wood or chert. The clay at this location varies from gray to light purple and was probably an acceptable source of clay for the manufacture of ceramics.

The second formation of economic importance is the Navajo Sandstone, a fossilized sand dune deposit lying on top of the Chinle. The Navajo is very porous and its base is typically the source of numerous springs which, in this case, feed the Quail Creek watershed. The ultimate source of the water is the higher elevations of the Pine Valley Mountains which lie west of the project area. These mountains are one of a series of four laccolithic intrusive events in southern Utah which occurred during the Oligocene. The Pine Valley Mountains are the most recent of these events, dating to about 21 million years ago.

The high elevation of the Pine Valley Mountains has a significant effect on the climate of the project area. Their great height causes them to generate an inordinate amount of precipitation because of the cooling and subsequent condensation of air-borne moisture as the predominate winds from the southwest are forced abruptly upwards by the mountains. This orographic effect is common in the western United States and characteristically creates a rain shadow or dry desert conditions immediately downwind (east) of the mountains. As a result, the project area has less precipitation than the region west of the mountains. At the same time, however, the area receives moisture because the mountains trap snow at high elevations, and then drain via Quail Creek. Without these mountains, the project area would receive more moisture in the form of direct precipitation, but would be generally drier because there would be no source of year-round water in Quail Creek.

The Pine Valley Mountains are also the source of the Quaternary gravels and sands which form the surface along both sides of Quail Creek. These gravels contain four different lithic materials which were used aboriginally: basalt, quartzite, lithographic limestone, and silicified sandstone. Basalt cobbles and boulders are common in the alluvium. The smaller cobbles were used as grinding and pounding implements, some slab-shaped pieces were put to architectural uses, and for lining hearths. Some of the larger boulders were used as a substrate for many of the numerous petroglyphs found along Quail Creek. The quartzite, lithographic limestone and silicified sandstone were all used for the manufacture of tools, although these materials were rarely used in the production of more delicately formed specimens. Generally, the utility of these materials was limited to simple flakes which were probably used opportunistically for cutting activities, then discarded. Nodules of these three materials also served for various pounding applications. Several of the rare cherts found during the excavations may also have been recovered from the Quaternary gravels along Quail Creek.

The alluvial sand was also used for numerous purposes. Most of this sand probably originated from the thick Navajo Formation located upstream from the project area, although some may have come from the upper Shinarump member. The sand may have been used as a temper in the ceramics although some sorting technique would have been required.

The final geologic factor which must be considered is the Quaternary volcanism which occurred both east and west of the project area. There is evidence of such volcanic activity in the vicinity of the Pine Valley Mountains which is probably the source of the basalt in the Quail Creek alluvium. The volcanic activity east of the project area and the southern bank of the river is defined by a vertical cliff formed by broad lava flows. Along the east side of the anticline, the Virgin River is closely confined between the anticline on the west and the lava bluffs on the east. This lava was used as a construction material at most of the aboriginal sites on that side of the river, but was not utilized in the project area.

## Hydrology.

In spite of the dry appearance and Hot Desert classification of the project area, water is quite plentiful. Both Quail Creek and the Virgin River are perennial streams which support dense riparian vegetation communities on their narrow floodplains.

Quail Creek originates along the eastern slopes of the Pine Valley Mountains, but does not become a substantial stream until its channel passes through the Navajo Sandstone, a typically reliable aquifer. The water in Quail Creek is of quite good quality and is presently being used to irrigate the vineyard at Quail Creek Ranch.

Quail Creek is also quite clear and cool in temperature, probably because of its nearby origin in the Navajo Sandstone. Its temperature and turbidity are affected to some degree by its two main tributaries, Leeds Creek and Cottonwood Creek. Leeds Creek joins Quail Creek slightly over a mile upstream from the North Gap. This perennial stream carries a water volume somewhat greater than that of Quail Creek. Cottonwood Creek joins Quail Creek just before the latter stream enters the North Gap. Cottonwood drains a rather large watershed which includes the southeastern slopes of the Pine Mountains. The actual stream heads in a group of spectacular box canyons in the Navajo Sandstone. Prehistorically, this creek contributed more water than Quail Creek and Leeds Creek combined. Upsteam diversions currently draw so much from the flow that water descends to the lower reaches only when the reservoirs are full. This was the case in the summer of 1983 when some water reached Quail Creek during the entire summer.

Two springs were noted along Quail Creek. One of these was just downstream from the North Gap while the other was found just upsteam from the South Gap. Both springs or seeps are very close to the creek and do not seem to have been significant as independent water sources. The lack of cultural debris near these springs appears to confirm this interpretation.

The Virgin River is the second major source of water within the project area. Virgin River water is of poor quality, however, because of the heavy load of dissolved mineral salts that are added to the flow by the Pah Temp Hot Springs found in the Virgin River Gorge between LaVerkin and Hurricane. Below the hot springs, then, the Virgin river is only marginally useful for irrigation. It is used, however, as witnessed by the Washington fields diversion dam placed at a point where the Virgin cuts through the anticline some 3 miles below the mouth of Quail Creek. The fact remains that the high mineral content poses difficult problems and it was the desire to obtain higher quality water that prompted the Washington County Water Conservancy District to place its diversion structure above the hot springs and then route the water to Quail Creek through a pipeline approximately 8 miles long.

## Vegetation.

The predominant vegetation in the project area includes those species which define the Hot Desert ecozone. A few specimens of several Cold Desert species were noted, however, indicating the ecotonal nature of the project area. These Cold Desert specimens are present only in the form of small, sparse patches or single specimens. McDougall (1973) was utilized as the primary source for identifying the species in the project area.

The vegetation within the reservoir basin can be subdivided into four plant communities. Three of these are a function of exposed geological formations, while the fourth is associated with the riparian zone adjacent to the permanent water sources (Table 2).

The Upper Red Beds (Table 2) are characterized by a generally sparse vegetation cover and rather steep, shale-covered slopes with considerable colluvium originating from the Shinarump Conglomerate cap. This is the preferred environment for the Ephedra species (nevadensis and viridis). The Ephedra becomes more dense as the aspect of the slope becomes more northerly. The Eriogonum also prefers shale-impregnated soils and is less sensitive to both the degree of slope and aspect. Phacelia is noticeably present while those species categorized as "rare" are present but very scarce. One exception is Oryzopsis, which is fairly common, but only on a thin strip defined by the exposed tan sandstone member. This sandy microenvironment created by the tan member is preferred by this species.

The lower slopes and southern valley floor within the reservoir basin consist of gray and red Schnabkaib shales. This formation is characterized by a somewhat different plant community, but like the Upper Red Bed community, it is also very sparsely populated.

The relatively flat shale surfaces of the valley floor are a typical habitat for Atriplex and Eriogonum, although Atriplex is slightly unusual at this low an elevation. Coleogyne is also somewhat unexpected, since it is more normally associated with the lower portion of the Cold Desert ecozone. The two small patches of Nicotiana in this plant community were affected by the presence of small, sandy microenvironments, one in the bed of a large arroyo and the other adjacent to a large sandstone boulder which had accumulated a skirt of detrital sand.

The soils in the Quaternary alluvium are considerably more amenable to plant life than either the Upper Red Beds or the Schnabkaib. The alluvial soil consists of a mixture of clay, sand and the decomposition products of the various transported materials which are present in the alluvium.

The most apparent vegetation in the econiche is Larrea with its understory of the small shrubs Krameria and Dalea, and Bromus. Two of these species are native to the Hot Desert but Bromus is an import from Europe. This Bromus species has replaced many native grasses because of its growth and seed maturation cycle which allows it to deplete the early spring soil moisture, so that it ripens and produces seeds ahead of the native grass species. The spread of this grass probably occurred at the expense of Oryzopsis in the project area.

The secondary species listed in Table 2 are all indigenous to the Hot Desert ecozone except for Salsola which is a Eurasian import found generally on recently disturbed surfaces. It should also be pointed out that Calochortus, a well known and important food source, was at the very end of its life cycle when the excavation phase commenced. Since the exploration of the project area to catalog its floral resources did not commence for another month, and was not completed until early in the autumn, the actual availability of this important food source is not known.

# TABLE 2

## PROJECT AREA VEGETATIVE ASSOCIATIONS

VEGETATION ON THE UPPER RED BEDS

Dominant:

Ephedra sp. (Mormon Tea)
Eriogonum inflatum (Desert Trumpet)

Secondary:

Phacelia crenulata (Phacelia)

Rare:

Bromus tectorum (Cheat Grass)
Opuntia erinacea (Prickly Pear)
Amsinckia sp. (Fiddleneck)
Stanleya pinnata (Prince's Plume)
Sphaeralcea munroana (Globe Mallow)
Larrea tridentata (Creosote Bush)
Oryzopsis hymenoides (Indian Ricegrass)

VEGETATION ON THE QUATERNARY ALLUVIUM.

Dominant:

Larrea tridentata (Creosote Bush)
Bromus tectorum (Cheatgrass)
Krameria parvifolia (Range Ratany)
Dalea fremontii (Indigo Bush)

Secondary:

Encelia farinosa (Brittle Bush)
Franseria dumosa (Bursage)
Muhlenbergia sp. (Brush Muhly)
Croton texensis (Dove Weed)
Baileya multiradiata (Desert Marigold)
Calochortus flexuosus (Mariposa, Sego)
Eriogonum inflatum (Desert Trumpet)
Ephedra sp. (Mormon Tea)
Salsola kali (Russian Thistle)
Gutierrezia sp. (Snakeweed)
Erodium circutarium (Filaree)

Rare:

Opuntia echinocarpa (Cholla)
Oryzopsis hymenoides (Indian Ricegrass)
Artemisia filifolia (Sand Sage)
Datura meteloides (Jimson Weed)
Eurotia lanata (Winterfat)
Tetradymia sp. (Horse Brush)
Castilleja sp. (Indian Paint Brush)
Atriplex canescens (Four Wing SaltBush)
Lycium andersonii (Wolfberry)
Cleome lutea (Yellow Bee Plant)
Descurainia sp. (Tansy Mustard)
Lepidium sp. (Peppergrass)
Elymus sp. (Wild Rye)
Opuntia erinacea (Prickly Pear)
Asclepias sp. (Milkweed)
Yucca baccata (Soapweed)
Echinocereus engelmannii (Hedgehog Cactus)
Hymenoclea salsola (Burrow Brush)

VEGETATION ON THE SCHNABKAIB.

Dominant:

Atriplex confertifolia (Shadscale)
Eriogonum inflatum (Desert Trumpet)

Secondary:

Coleogyne ramosissima (Blackbrush)
Ephedra sp. (Mormom Tea)

Rare:

Opuntia echinocarpa (Cholla)
Phacelia crenulata (Phacelia)
Sphaeralcea munroana (Globe Mallow)
Nicotiana trigonophylla (Wild Tobacco)

RIPARIAN VEGETATION

Dominant:

Populus fremontii (Fremont Cottonwood)
Salix sp. (Willow)
Tamarix pentandra (Salt Cedar)
Bromus tectorum (Cheatgrass)
Chilopsis linearis (Desert Willow)
Helianthus annuus (Sunflower)
Trifolium repens (White Clover)
Datura meteloides (Jimson Weed)
Scirpus spp. (Bulrush)
Pluchea sericea (Arrow-weed)

Secondary:

Prosopis juliflora (Mesquite)
Artemisia filifolia (Sand Sage)
Elaeagnus angustifolia (Russian Olive)

Rare:

Typha angustifolia (Cattail)
Castilleja sp. (Indian Paint Brush)
Oenothera hookeri (Evening Primrose)
Phragmites communis (Common Reed)
Vitis arizonica (Wild Grape)
Cucurbita foetidissima (Buffalo Gourd)
Yucca angustissima (Narrow Leafed Yucca)
Penstemon sp. (Beard Tongue)
Chenopodium sp. (Goosefoot)
Verbascum thapsus (Mullein)
Xanthium strumarium (Cocklebur)
Cirsium sp. (Thistle)
Lactuca scariola (Prickly Lettuce)
Rumex hymenosepalus (Wild Rhubarb)
Oenothera caespitosa (Evening Primrose)
Prosopis pubescens (Screwbean)
Quercus turbinella (Shrub Live Oak)
Juniperus osteosperma (Juniper)

The species classified as "rare" (Table 2) are also not unusual in the Hot Desert except for the single specimen of _Yucca baccata_ which is associated with Cold Desert flora. Several of the rare species are confined to small patches where their requirement for high sand content in the soil is present.

The last of the four major econiches in the reservoir basin is the riparian (Table 2). Although the riparian community is also situated on Quaternary alluvium, the effect of the higher water table immediately adjacent to the streams changes the floral density and composition quite dramatically.

Among the dominant species, _Tamarix_, _Bromus_ and _Trifolium_ are all introduced from Europe or Asia. Like _Bromus_, _Tamarix_ has replaced the native _Salix_ species in many areas of the west, although in the reservoir basin _Salix_ has managed to maintain its presence because of the high quality of the water in Quail Creek. Along the Virgin River, _Tamarix_ has prevailed because of the greater salinity of the water.

The _Populus_ specimens and the stands of _Salix_ are the most apparent species along the narrow riparian corridor. The _Chilopsis_ is also quite common, but only in the upper reaches of the reservoir basin. The _Helianthus_ also grows in comparatively dense stands, although generally limited to the downstream end of the basin. Several species of _Scirpus_ are present, the smaller varieties along the edges of Quail Creek and a large variety in the swampy area associated with the spring near the North Gap. _Datura_ is found all along Quail Creek, sometimes in very dense stands.

Among the secondary species, _Prosopis juliflora_ is economically important because of its large edible seeds. This _Prosopis_ species is present mostly along the lower end of Quail Creek. _Elaeagnus_ is an imported species from Europe.

Among the "rare" species (Table 2) are several of economic importance. A dense stand of _Typha_ is present in the small swamp around the spring at the Northern Gap. A large stand of _Phragmites_ and a few _Prosopis pubescens_ specimens are located along the Virgin River downstream from Quail Creek. _Vitis_ and _Cucurbita_ are both present at the same small patch along Quail Creek and may indicate the presence of another small seep. The two specimens of _Quercus_ and the single _Juniperus_ are both near the center of the reservoir basin and may have originated from seeds washed down the creek from higher elevations. All of the rare species are indigenous to the Hot Desert ecozone except for _Juniperus_ which is a Cold Desert species.

A number of species of economic importance were noted outside the reservoir basin, but within easy procurement range of prehistoric people living in the project area. These species include some not represented in the project area, as well as some which are present, but which are found in greater densities outside the reservoir basin.

One such species is _Juniperus osteosperma_, which is present in the form of a sparse stand along the western-facing slope of the anticline overlooking the confluence of Cottonwood and Quail Creeks. Although _Juniperus_ does not become a dominant species until an elevation of 3600 ft. is reached, a large stand is located at Red Cliffs at an elevation of about 3200 ft. Along the median strip of Interstate 15 are occasional specimens of Yucca brevifolia (Joshua Tree). These particular specimens were planted after the highway was built, but Bye (1972:91) reports that Palmer collected samples of this species near St. George in 1875. Immediately west of the highway is an anomalous patch of Artemisia tridentata (big sagebrush) normally found only above 5000 ft. At the base of Red Cliffs, a mile upstream from the North Gap, lies a large area with a high density of Quercus turbinella and Rhus trilobata (squaw bush) and a few dense patches of Cucurbita foetidissima. In addition, a small stand of Apocynum cannabinum (dogbane) was noted along the banks of Quail Creek in the Red Cliffs area. Along with Yucca baccata, Artemisia tridentata, Juniperus osteosperma and Coleogyne ramosissima, Apocynum is also a Cold Desert species indicating the ecotonal nature of the project area and vicinity.

More than forty of the plant species listed in Table 2 have economic uses which are documented in the ethnographic literature. Each of these species will be briefly discussed and an appropriate reference provided. The majority of the plant usages described below can be attributed to Southern Paiute informants, but a review of the literature on other nearby prehistoric groups was conducted to insure a complete coverage of possible uses.

Amsinckia sp.: The early leaves and seeds were eaten (Zigmond, 1981).

Artemisia tridentata: The leaves were used to make a dye or to prepare a tea used as a stimulant or to treat headaches, colds and worms. The seeds were eaten in desperate situations and the wood was used for fuel and also preferred as a base for the fire drill. The bark was utilized for cordage or to make clothing (Bye, 1972; Kelly, 1964; Wheat, 1967).

Asclepias sp.: The juice was thickened by boiling, then chewed as a gum. The dried stems were collected and the fiber removed for making cordage (Zigmond, 1982).

Atriplex canescens and confertifolia: The seeds were ground into a flour and eaten as mush or bread (Bye, 1972).

Calochortus sp.: The bulbs were eaten and were a locally plentiful source of food in the spring (Bye, 1972).

Chenopodium sp.: The seeds were ground into flour for use as a mush or bread (Bye, 1972).

Cleome lutea: The young shoots and leaves were eaten as greens. The whole plant was boiled to a residue which could be used either as a dye or dried and stored for subsequent culinary consumption (Harrington, 1967).

Cucurbita foetidissima: The pulp of the gourd was used as a soap and the seeds were ground and used as mush (Bye, 1972).

Datura meteloides: All parts of this plant contain various alkaloids which have a stuporific or hallucinogenic effect when ingested, depending on the dosage. Overdoses, however, can be fatal. The roots, leaves and/or seeds were either fermented in water or eaten raw (Bye, 1972). Although its use was generally for the hallucinogenic effect, it was sometimes used merely to deaden pain due to injuries. A detailed description of its preparation and use is given by Zigmond (1981).

Descurainia sp.: The seeds were ground and eaten as mush or used whole as a condiment (Kelly, 1964).

Elymus sp.: The seeds were ground and eaten as mush (Chamberlain, 1911).

Epherdra nevadensis and viridis: The stems were steeped in water to make a tea (Bye, 1972). The seeds were ground and eaten as mush (Harrington, 1967).

Eriogonum inflatum: The young plant was eaten as greens (Bye, 1972) and later in the season the dried stem was packed with tobacco to form a cigarette (Zigmond,1981).

Helianthus annuus: The seeds were either eaten raw or parched, ground, and eaten as mush or bread. In addition, exudates from the stem were eaten as a sweet (Bye, 1972).

Juniperus osteosperma: The seeds were eaten, although care was taken to gather the seeds only from those trees which proved to be sweet. The bark was used for numerous purposes, including coarse cordage, mats, tinder and to form slow matches to transport fire between encampments. The wood was used for fuel and construction and was the preferred wood for making bows (Bye, 1972; Kelly, 1964).

Lactuca scariola: The leaves were eaten as greens (Chamberlain, 1911).

Larrea tridentata: The dried and pulverized leaves have an antiseptic quality and were applied to sores either as a powder or a salve. A gum found on the branches resulting from aphid excretions was used as a cement for fastening projectile points and also as a styptic agent. The wood was used as a fuel since it burns both green and dry (Bye, 1972; Zigmond, 1981).

Lepidium sp.: The seeds were ground and eaten as mush or used whole as a condiment (Bye, 1972).

Lycium andersonii: The fruits were either eaten fresh or dried for later consumption (Bye, 1972).

Muhlenbergia sp.: The seeds were ground and eaten as mush or bread (Bye, 1972).

Nicotiana trigonophylla: The leaves were dried, pulverized and sometimes mixed with lime. The leaves were smoked and the lime mixture was chewed but could also be used as a styptic, or as a salve to relieve itching (Bye, 1972; Zigmond, 1981).

Oenothera caespitosa: The root was used for an unspecified medicinal purpose (Chamberlain, 1911).

Oenothera hookeri: The plant was ground, mixed with white clay and used as a poultice on sores (Wyman and Harris, 1951).

Opuntia sp.: The seed pods were eaten as a fruit either fresh or dried and the leaves were singed to remove the spines and then roasted (Kelly, 1964).

Oryzopsis hymenoides: The seeds were ground and eaten as mush (Bye, 1972). This particular species was widely used because of its prevalence and the large size of its seeds.

Phacelia sp.: The root was boiled and the resulting tea was drunk to cure coughs, colds and stomach disorders (Zigmond, 1981).

Phragmites communis: An aphid exudation was collected from the seeds and eaten as a sweet. The reed itself was used for arrow shafts, pipe stems and fire drills (Bye, 1972; Zigmond, 1981; Kelly, 1964).

Prosopis juliflora and pubescens: The fruit pods and seeds were ground and eaten as mush or bread. The wood was used as fuel (Bye, 1972).

Quercus turbinella: The acorns were ground, leached and then eaten as mush or bread (Bye, 1972).

Rhus trilobata: The fruits were eaten either fresh or dried and a sweet drink was made by adding water to the macerated fresh fruits. The twigs were the preferred source of material for basketry manufacture (Bye, 1972; Kelly, 1964).

Rumex hymenosepalus: The young leaves were boiled and eaten as greens. The roots were used for tanning hides and as a body dye (Bye, 1972; Kelly, 1964).

Salix sp.: The stems were used in the manufacture of basketry and for the construction of shelters. In addition, a sweet exudation was collected from the stems and eaten (Wheat, 1967; Zigmond, 1981).

Scirpus sp.: The seeds and young shoots were eaten and the stems were used for weaving and construction (Bye, 1972; Wheat, 1967; Harrington, 1967).

Stanleya pinnata: The seeds were eaten and the whole plant was eaten as greens after boiling to remove the bitterness (Bye, 1972). It should be noted, however, that if selenium is present in the soil, this plant will concentrate the selenium to toxic concentrations.

Typha angustifolia: The flowering heads were singed and then eaten raw or cooked. In addition, the rhizomes were also consumed (Bye, 1972; Chamberlain, 1911).

Vitis arizonica: The fruits were either eaten fresh or dried for storage and the seeds were ground and eaten in various forms (Bye, 1972).

Yucca baccata: The fruits were eaten either fresh or dried. The stems were used to make soap and the leaves were a source of coarse fiber for cordage (Bye, 1972). The leaves were also used for making sandals (Kelly, 1964).

Yucca brevifolia: The seeds were eaten either raw or as mush after having been ground (Bye, 1972).

In addition to the species listed above, two closely related species of pinyon pine (*Pinus edulis* and *Pinus monophylla*) must also be mentioned because of their well-documented importance in the ethnobotanical literature. Neither of these species was noted in the immediate vicinity of the project area, but specimens were seen as low as 4500 ft. above sea level approximately 7 miles north of the project area. Since these specimens were not closely examined, it is not known which of the two species is actually present. This determination is somewhat irrelevant, however, because both species produce an edible nut.

Based on their presence at 4500 ft. to the north of the project area, it is quite likely that the pinyon is much closer to the northwest, along the flanks of the Pine Valley Mountains, but this assumption was not confirmed by an inspection of the area. Because of the large size of the pinyon nut, it was a heavily utilized source of food.

*Fauna*.

The faunal inventory of the project area was a continuing process conducted over the duration of the excavation phase. The various species listed in Table 3 are those which were actually seen by members of the crew and all were generally verified by the field supervisor.

TABLE 3

OBSERVED PROJECT AREA FAUNA

*Aquila chrysaetos* (Golden eagle) one carcass found
*Bubo virginianus* (Great Horned Owl) one carcass found
*Buteo regalis* (Ferruginous Hawk) numerous
*Geococcyx californianus* (Road Runner) two seen
*Lophortyx gambelii* (Gambel's Quail) one seen
*Myiarchus cinerascens* (Ash Throated Fly Catcher) rare
*Trochilidea* (Hummingbird) sparse
*Zenaida macroura* (Mourning Dove) numerous
*Canis latrans* (Coyote) one seen
*Odocoileus hemionus* (Mule Deer) tracks and one carcass seen
*Lepus californicus* (Jack Rabbit) sparse
*Sylvilagus audobonii* (Cottontail) numerous
*Ammospermophilus leucurus* (White Tailed Antelope Squirrel) numerous
*Castor canadensis* (Beaver) numerous
*Neotoma* sp. (Pack Rat) one seen, numerous nests
*Crotalus* sp. (Rattlesnake) one seen
*Heloderma suspectum* (Gila Monster) two seen
*Sceloporus magister* (Desert Spiny Lizard) rare
*Serpentes* (Snakes, species unknown) numerous
Species unknown (Lizards) very numerous
Species unknown (frogs) numerous
Species unknown (toads) numerous

The above list of animals is only an approximate estimate of the variety and population density of the fauna in the project area. Mule deer, in particular, are surprisingly common. The deer apparently frequent the dense brush along the Virgin River, but were actually seen only once by the excavation crew. They are, however, sufficiently prevalent to be a significant cause of damage to the young grape vines at the Quail Creek Ranch.

The presence of beaver along Quail Creek was also quite unexpected. The first evidence of beaver was noted near the North Gap early in the summer. This evidence consisted of freshly gnawed willows. By autumn, the population had grown. By this time at least four dams had been constructed on Quail Creek between the North and South Gaps. Although none of the animals were ever seen, indirect evidence indicated that at least one of the individuals was quite large: a cottonwood tree about 50 cm. in diameter was felled at a point about 1 m. above the ground.

One very welcome surprise was the apparent scarcity of rattlesnakes in the project area. Only one individual was seen while testing a site near the North Gap early in the summer. Gila monsters were also rare. None were seen during the excavation phase, but Mr. Woodall and one of the Creamer and Noble engineering crews both saw a specimen at different times in the project area, prior to the beginning of the excavations.

A number of the species listed above are known to have been utilized by the Southern Paiute (Kelly, 1964:47-55). Squirrels, cottontails, jackrabbits, pack rats and deer were all hunted and eaten. Many species of birds were also hunted, although Kelly's informants identified only two specifically: quail and mourning doves. Bird eggs were also eaten regularly, those of the quail being preferred. In addition, coyotes were hunted for their pelts, which were used to manufacture arrow quivers. The flesh of the coyote was not eaten.

## Climate

The project area, located on the northern edge of the St. George Basin, has a warm and arid climate with a mean yearly rainfall of 8.25 in. Precipitation occurs largely as localized rain showers. A Cooperative Weather Station in St. George has been recording data for 65 years and, since it is located at an altitude of 2800 ft., its data seems comparable to the Quail Creek Reservoir area. Table 4 summarizes temperature and precipitation figures for the St. George station (Rykaczewski, 1981:76; Mayer, 1976:Table 1). Temperatures range from a record high of 116° F. to an extreme low of -11° F. for the recorded period. Daytime temperatures consistently rise above 100° F. during the summer months while readings drop below 32° F. from December to February. Occasionally, temperatures drop into the teens but only rarely do they fall below 0° F. The result is that the basin usually has well over 200 frost-free days during the year (Rykaczewski, 1981:42,45).

The Quail Creek area is characterized by precipitation patterns that are found throughout southwestern Utah and northwestern Arizona. It should be kept in mind, of course, that specific topographic features, such as differences in altitude, can exercise strong local variations in weather patterns. At the same time, however, there are four distinct seasons that account for the total annual precipitation (Rykaszewski, 1981:24). The winter precipitation which brings snow to the higher elevations generally results from the frontal movement of storms originating in the Gulf of Alaska and which move in southwesterly direction towards the Pacific Coast. The cyclonic motion of the storms means that the storms in southwestern Utah appear to come out of the southwest.

Summer rainfall results primarily from localized thunderstorms which develop as the result of the passage of warm, moist air flowing northeast from the Gulf of Mexico. During the transition periods of May and October, closed low pressure cells pass over the area and often bring precipitation which can add significantly to the total annual rainfall. During all seasons the orographic effect of the Pine Valley Moutains, previously mentioned, affects all precipitation patterns.

In the Quail Creek area, this climatic regime produces a tendency to moist, cool winters and early springs which warm to intense heat and dryness by June. June, July, August, and September are the hottest months while the winter months are definitely the wettest. Snow is a rare occurence, except in the Pine Valley Mountains which receive 20 to 30 in. of precipitation a year, largely in the form of winter snowfall. This water resource is crucial to the project area as Quail Creek and its tributaries head in the Pine Valleys and thus a high percentage of the available water in the project area originates in the mountains. With an average rainfall of less than 10 in. per year, the water in Quail Creek and the Virgin River was probably essential to the practice of horticulture in the project area. This is particularly true because, even though the early spring precipitation is usually sufficient for the planting of fields, the drought during April, May, and June generally makes some form of irrigation necessary for successful cultivation. In addition, precipitation patterns are so erratic in the area (Rykaszewki, 1981:52,55), that combined with the orographic effect of the Pine Valley Mountains, the snow-fed streams become critical for successful farming.

TABLE 4

TEMPERATURE AND PRECIPITATION DATA FOR ST. GEORGE

| | Jan. | Feb. | Mar. | Apr. | May | Jun. | Jul. | Aug. | Sep. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Temperature ($^oF$)** | | | | | | | | | | | | |
| Extreme Maximum | 72 | 81 | 89 | 98 | 108 | 116 | 115 | 113 | 108 | 99 | 86 | 75 |
| Mean Maximum | 53 | 60 | 67 | 76 | 87 | 96 | 101 | 99 | 93 | 80 | 65 | 54 |
| Mean Average | 39 | 44 | 50 | 59 | 68 | 77 | 83 | 81 | 73 | 61 | 48 | 39 |
| Mean Minimum | 25 | 30 | 33 | 43 | 52 | 61 | 68 | 67 | 57 | 43 | 36 | 27 |
| Extreme Minimum | -11 | 1 | 12 | 18 | 25 | 35 | 41 | 43 | 25 | 12 | 4 | -4 |
| **Precipitation (in.)** | | | | | | | | | | | | |
| Mean Monthly | 0.98 | 1.04 | 0.88 | 0.50 | 0.41 | 0.19 | 0.76 | 0.80 | 0.62 | 0.71 | 0.52 | 0.82 |
| Maximum Monthly | 2.71 | 3.61 | 3.61 | 1.59 | 1.60 | 1.75 | 1.73 | 2.22 | 4.16 | 3.07 | 2.55 | 2.84 |

# EXCAVATIONS

## Introduction

The results of the various test and full-scale excavations (Figs. 2-4) are discussed in this section. The individual site discussions are organized on the basis of their prehistoric development so that the aboriginal construction sequence, rather than the excavation sequence, is emphasized. This format accentuates the construction, repair, abandonment and, where appropriate, subsequent construction events.

The excavations were conducted by means of a variable number of test trenches oriented generally along a true north to south and/or east to west axis. The trenches were situated so as to bisect, and therefore provide profiles for, the apparent cultural features of the site. Each trench was subdivided into units measuring 1 m. in width by 2 m. in length. These units were used as the referential basis for both horizontal and profile mapping. At the thirty-one smaller sites, the number and length of the test trenches was quite limited. In these cases, excavation was generally contained within the trench boundaries because of the restricted and superficial nature of these small, limited activity sites. The primary purpose of the trenches at the limited activity sites was to bisect hearths so that ecofact and radiocarbon samples could be collected and to determine the depth of the cultural deposits. Since multiple cultural stratigraphies were rare among the limited activity sites, extensive test trenching of these sites was infrequent.

For those sites which were either multicomponent or contained more than one architectural feature, additional parallel or cross trenches were established using the initial trench as a baseline. In this way, all the cultural features could be related to the baseline trench so that the mapping of the individual features could be integrated for the final site map. The larger and more complicated sites were also mapped using a plane table after the completion of the excavation.

The trench system was also used for the excavation and mapping of the larger architectural features rather than by using a grid system which would have consumed valuable time and required constant readjustment due to the rapid progress of the excavation. Instead, all measurements were taken from established points associated with the nearest appropriate trench unit.

Vertical control was established by setting a single primary datum at the high point of a site. Secondary elevation datum points, all measured from the primary, were then established as necessary. No measurements from the various datum points have been carried forward into the final reports. Rather, unless otherwise specified, all vertical measurements are from the contemporary ground surface.

The trench excavation system was used in the larger sites to expose profiles of the pithouses and storage structures. Excavation of the trench was conducted quickly until definite architectural evidence was encountered, after which the profile of the trench was fully exposed within the confines of

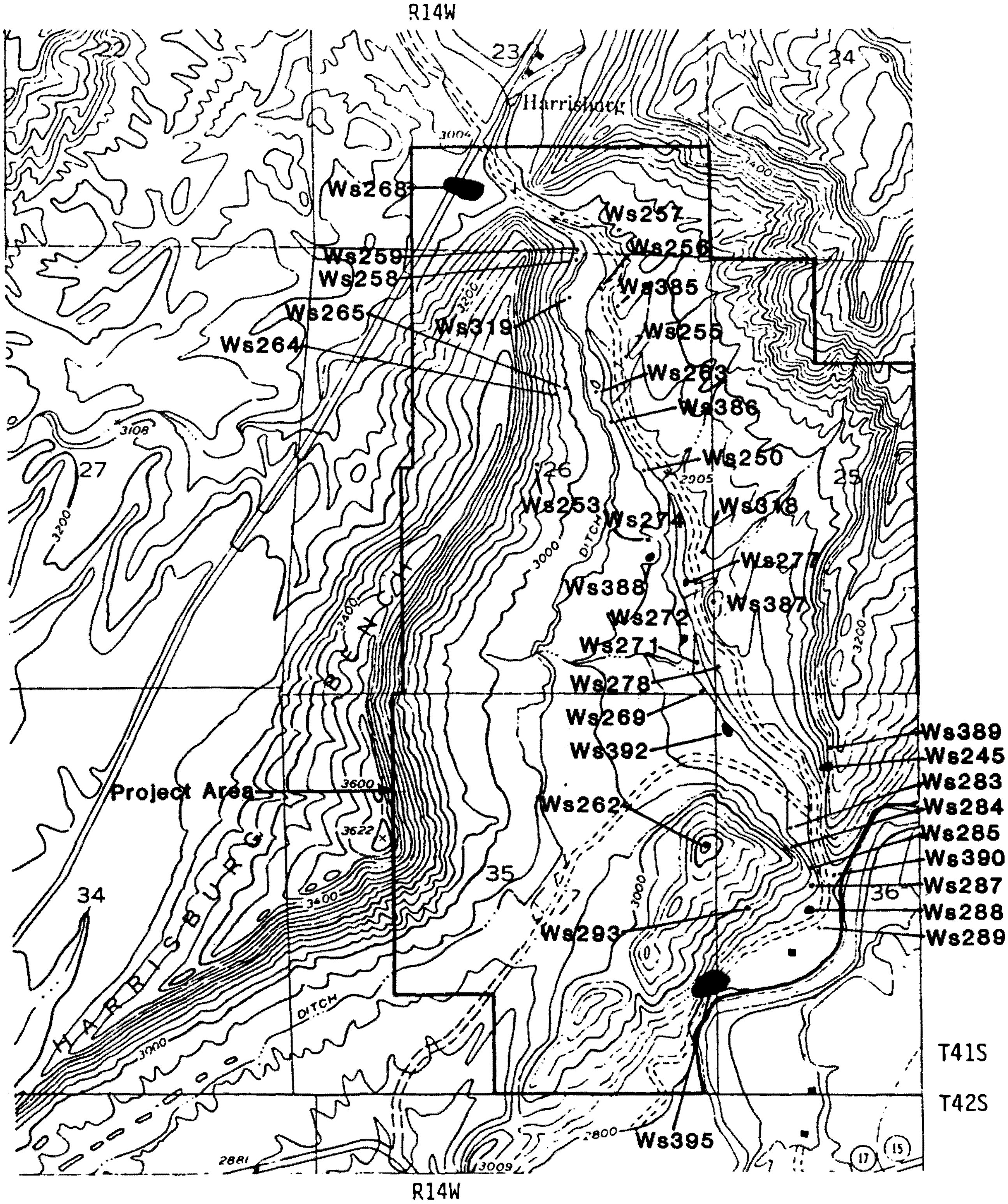



Figure 2. Project area showing locations of Anasazi sites and sites of unknown affiliation.

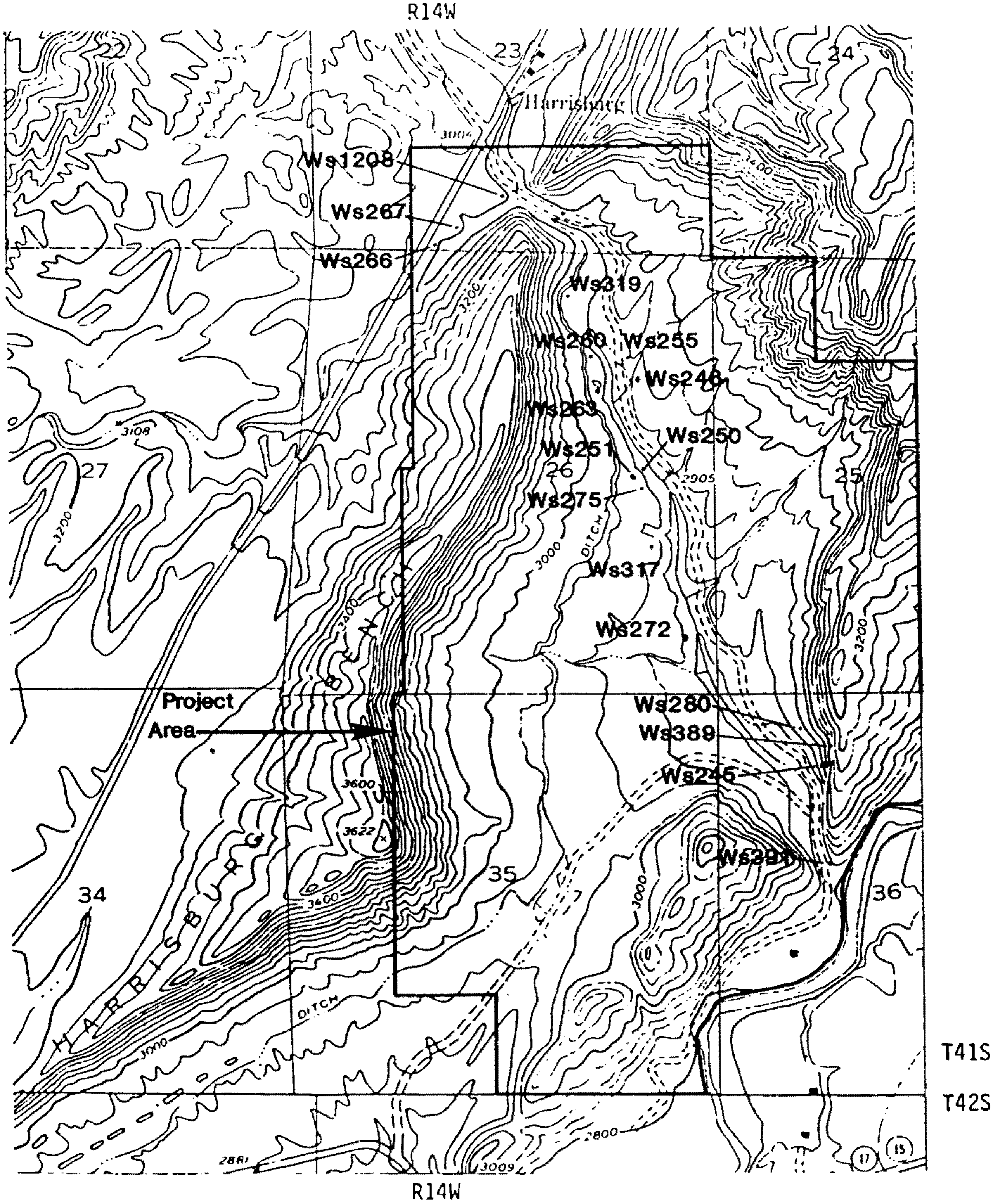



Figure 3. Project area showing locations of Southern Paiute sites.

the feature and then recorded. The feature was then excavated by natural levels, but without a horizontal grid. If important features or artifacts were noted, they were plotted with respect to the defined trench units. Following the complete excavation, mapping, and recording of the feature, the original trench was extended outwards and downwards to complete the cross section of the structure. This approach allowed the feature to be documented photographically in a relatively complete state after which the walls and floor of the feature were exposed in profile to allow the collection of construction sequence information.

In order to generate data for the resolution of the many research questions, numerous pollen, flotation and radiocarbon samples were taken. The pollen samples were taken primarily from the various aboriginal use surfaces and refuse deposits. Only one site had sufficient stratigraphic development to allow the collection of a chronological pollen sequence, and even that set of samples is only representative of the Anasazi occupation period. Numerous flotation samples were also collected, primarily from hearths and refuse deposits, although some use surfaces were also sampled, especially where ash deposits were present. Radiocarbon samples were collected at every opportunity because of the unfortunate scarcity of dates from the Western Anasazi culture area. The best samples were retrieved from hearths and architectural beams, both burned and unburned.

Due partly to time constraints, the entire excavation was conducted without the use of screens. Nonetheless, artifact collections proved quite sufficient to correlate diagnostic artifacts with architectural styles and radiocarbon dates.

With each site report is a full summary of collected materials. Mainly, these summations are presented in tabular format; although, for some of the small sites with very minor collections, the summaries are compressed into a final paragraph. Also, pertinent to the summaries and in need of explanation is the use of letter (and sometimes alphanumeric) designations with the lithic artifacts and debris. These are simply codes for materials of manufacture that key to a presentation of definitions (Table 36) in the Lithics section of Material Culture, below.

The remainder of this chapter consists of the detailed descriptions of each site. The site descriptions are simply presented in numerical order by site number. More elegant schemes, such as organizing by affiliation or use, constantly met with multicomponent sites, sites of questionable affiliation, unassigned sites, etc., were finally abandoned.

## 42Ws245

### Introduction

This site proved to consist of numerous distinct activity loci. These included lithic and ceramic scatters, faint ash stains, a slab-lined storage cist (Figs. 5,6), and two petroglyphs (Fig. 7). Each of the loci were found near or slightly under large boulders resting on the colluvial slope that dropped to the west. The site area measured 80 m. east to west and 40 m.

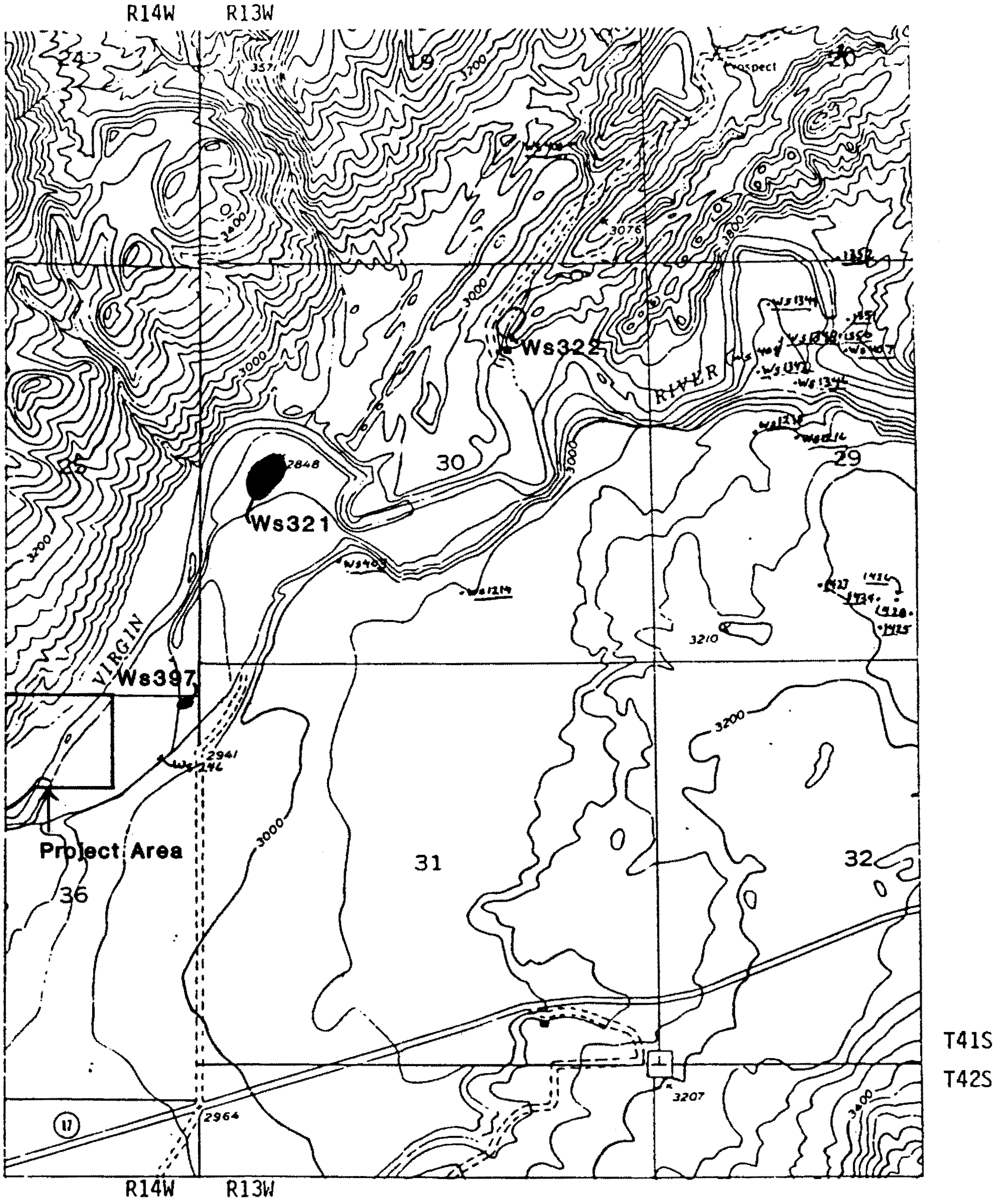



Figure 4. Project area showing sites northeast of the South Gap.

north to south. With an elevation of 3000 ft., the site lay some 200 m. east of Quail Creek. Vegetation dominating the site included creosote bush, hilaria grass, bursage, snakeweed, and hedgehog cactus.

Excavation and Site Features

A total of nine of the most promising loci were tested with small trenches aligned in such a fashion as to bisect the areas of most apparent cultural activity. These areas were invariably located either immediately adjacent to or beneath the overhang of a medium-size or large boulder.

Locus 1. This lithic scatter was concentrated near a boulder with a slight overhang. A few flakes were recovered to a maximum depth of 20 cm. below the modern ground level in what was, otherwise, undifferentiated, loose sand. Pollen and flotation samples were taken from the lower portion of the artifact bearing deposit.

Locus 2. The choice to test here ignored the requirement of surface evidence of activity. Instead, the decision was made on the basis of its similarity to other loci on the site. The required surface indications were shown to be a good criterion since testing revealed no subsurface evidence of cultural activity.

Locus 3. This area was noted because two adjacent boulders formed a small overhang large enough to sit in. A test trench produced a single North Creek Gray sherd along with a core and a flake of chert. All material was recovered from undifferentiated sand within 15 cm. of the modern surface.

Locus 4 and Cist. The feature involved in this instance was a very large boulder with an overhang beneath it measuring 1.5 m. wide and 1.5 m. high at the drip line. The overhang proved to be almost 4.0 m. deep. Immediately inside the overhang three upright sandstone slabs were observed and the test trench was aligned in a manner that insured the exposure of the slabs. Excavation revealed an oval, sandstone, slab-lined storage cist (Figs. 5,6) with internal measurements of 1.2 m. by 1.7 m.

It could not be determined whether or not a pit had been excavated to accommodate the cist because of the loose aeolian and detrital nature of the fill. It was evident, however, that a brownish sand, different in color from that immediately at hand, was placed in a layer from 5 to 25 cm. thick over the culturally sterile gravel and bedrock floor of the shelter before the sandstone slabs of the cist floor were set in place. The brownish sand contained two flecks of charcoal suggesting its cultural origin.

The cist walls were installed next. These involved a series of sandstone slabs that varied in height from 26 to 58 cm. above the cist floor. They may have been higher at one time. The slabs tilted slightly outward near the top. A sand layer was rather carelessly spread over the floor slabs which were highly variable in size. The floor was then covered with a layer of clay that ranged from 2 to 5 cm. thick. At the time of excavation, the clay floor was found only in the western 70 cm. of the cist. The eastern portion of the floor lacked the clay although it may have existed prehistorically. No evidence of wall plaster could be found on the slabs, but remnants of clay chinking were noted in the interspaces between the slabs. Slabs in the

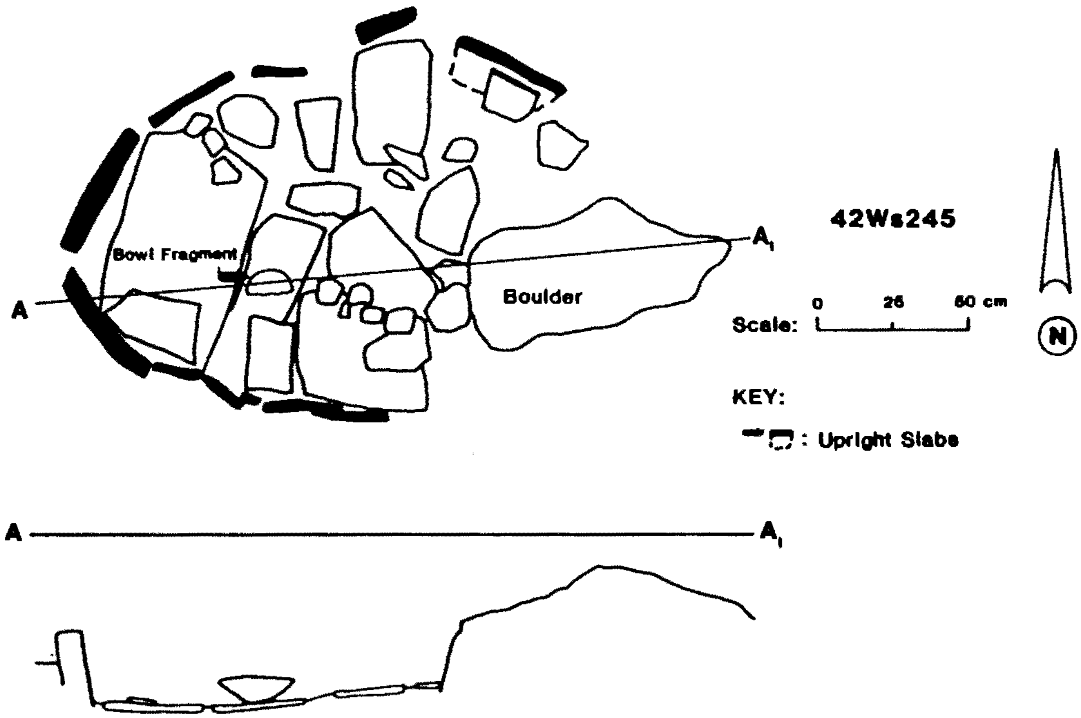



Figure 5. Plan and cross section of the Locus 4 Cist, 42Ws245.

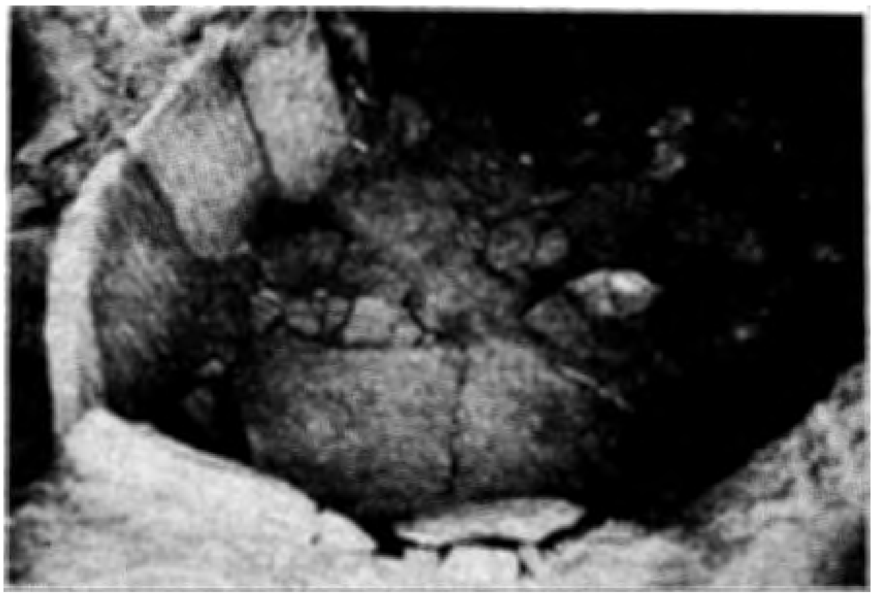


Figure 6. View northeast of fully cleared Locus 4 Cist, 42Ws245.

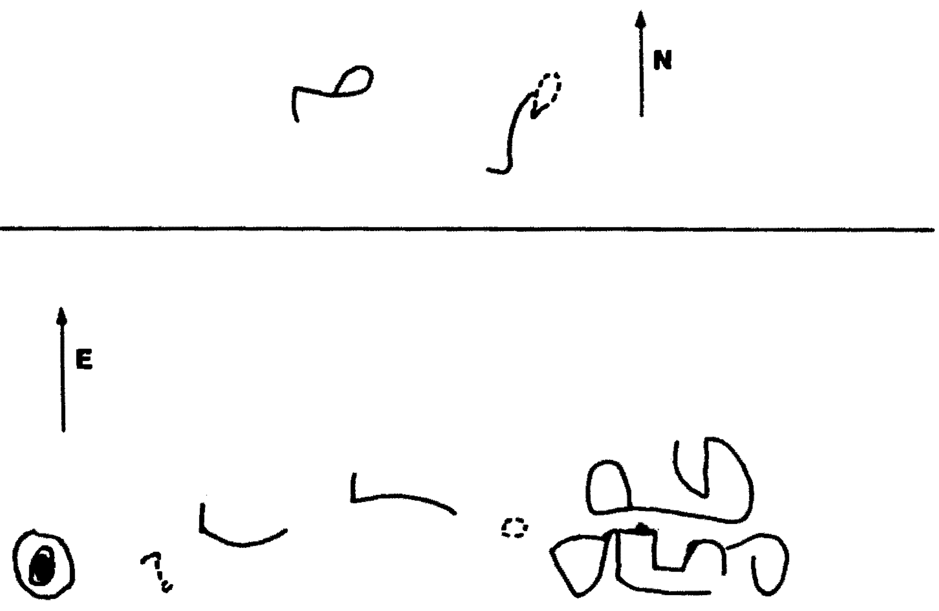



Figure 7. Petroglyphs from two boulders, Locus 10, 42Ws245.

## TABLE 5

## COLLECTION SUMMARY, 42WS245

| | |
|---|---|
| Surface | |
| Paiute Plain | 4 |
| Locus 1 0-20 cm. | |
| C - utilized flake | 1 |
| C - core flake | 1 |
| C - core shatter flake | 1 |
| C - u/i flakes (2 cortex) | 2 |
| Locus 3 0-15 cm. | |
| C - core (cortex) | 1 |
| C - u/i flake | 1 |
| Locus 4 Cist fill 0-15 cm. | |
| North Creek Gray | 4 |
| u/i Virgin Ser. B/G | 2 |
| SS- ground stone frag. | 1 |
| SS- metate | 1 |
| C - core flakes (1 cortex) | 4 |
| C - u/i flakes (1 cortex) | 2 |
| PW- frag. | 1 |
| Locus 4 Cist floor contact. | |
| St.George B/G bowl frag. | 1 |
| C - core shatter flake | 1 |
| C - u/i flake | 1 |
| Locus 6 Surface. | |
| LL- u/i flake (cortex) | 1 |
| Locus 7 Surface. | |
| North Creek B/G | 1 |
| Locus 7 0-5 cm. | |
| North Creek Gray | 3 |
| C - core flake | 1 |
| Locus 9 15 cm. | |
| North Creek Gray (vessel panel) | 13 |
| Locus 9 25 cm. | |
| North Creek Gray (vessel panel) | 13 |

eastern portion of the cist had been removed. Since only a few small slab fragments were found in the fill, it is likely they were taken prehistorically for use elsewhere.

Several artifacts were recovered from the floor of the cist (Table 5). The most striking was a large fragment of a St. George Black-on-gray bowl beneath which were found two small fragments of malachite. A pollen and a flotation sample were taken from the 1 to 2 cm. of fill immediately above the clay floor in the area of the bowl fragment.

After abandonment, the cist began to fill with aeolian sand and coarse sandstone spalls from the roof the shelter. Cultural debris recovered from the fill is listed in Table 5. A pollen and a flotation sample were also taken from the post-occupation fill. The presence of a metate in the fill at least suggests that some cultural activity took place in the shelter after the cist fell into disuse.

Locus 5. This location involved a boulder with a slight overhang. Once more a place was tested in the absence of surface cultural material, and once more the excavation failed to produce evidence of human activity.

Locus 6. A boulder with a small overhang yielded a limestone flake on the surface but a test trench proved unproductive.

Locus 7. This area involved a large boulder with a very minor overhang facing the south. A few sherds and a chert flake were recovered just below the surface. The test also revealed an ash layer below the artifacts at a depth of 20 to 25 cm.

Locus 8. A very small opening in a boulder was tested but produced only a few small charcoal flecks near the surface.

Locus 9. This area yielded surface sherds around a boulder. The test penetrated undifferentiated sand to reveal two clusters of closely associated sherds. At a depth of 15 cm., a total of 13 North Creek Gray sherds from a single vessel were exposed in an area 50 cm. square. At 25 cm., 13 North Creek Corrugated sherds, also from a single vessel, were found confined to an area 10 cm. square.

Locus 10. In this instance two boulders, 3 m. apart, each showed a few abstract petroglyphs (Fig. 7).

## Discussion

The artifact inventory (Table 5) indicates that 42Ws245 was utilized during the Pueblo I and Pueblo II periods. With the exception of a single utilized flake and the ground stone items found in the fill of the Locus 4 Cist, all lithics were characteristic of flake production from cores, mostly of chert.

The cist was clearly a storage feature although it also contained lithic debitage consistent with flake production activity. The ground stone fragment and the metate found in the cist fill were probably not in temporal association with the cist during the period of its use. The grinding activity represented by the metate may also have been associated with the removal of the wall slabs at the eastern end of the cist, although a removal sequence could not be established.

The four Paiute sherds found on the surface by the survey team give but slight evidence of the typically ephemeral Paiute use of the area.

## 42Ws248

### Introduction

This small site rested on the terrace east of Quail Creek at an elevation of 2840 ft. (Fig. 3). Vegetation on and near the site consisted of creosote bush, bursage, hilaria grass, three-awn grass, and a sparse distribution of ricegrass. Surface indications of the site (Fig. 6) extended over an area measuring 40 by 100 m. This included three possible stone circles and a diffuse scatter of chert, quartzite, and obsidian flakes along with ground stone and metate fragments and two North Creek Gray sherds. A boulder to the west on the slope below the site bore the inscription "Frank Largon April 3, 1922" pecked on its surface. Exploration of the site involved three test trenches.

### Excavation and Site Features

Trench 1. This unit was aligned on a north to south axis in such a manner as to bisect the most northerly and best defined of the stone circles. The trench measured 1 by 4 m. while the circle extended 4.0 m. north to south and 3.2 m. east to west. The small boulders of the circle were of basalt, diorite, limestone, and conglomerate rocks. All extended well below the surface. A slight depression was noted within the circle.

The southern 1 by 2 m. element of the trench was located outside the circle and excavated to a depth of 48 cm. Three natural strata were noted within the unit. These were identical to those observed in the northern end of the trench inside the circle. Originating at a depth of 37 cm., Stratum 1 was composed of loosely compacted, tannish brown sand intermixed with gravel and cobbles. Stratum 2 overlay Stratum 1 and was composed of fairly well compacted, tannish-white sand with some gravel and clay content. This layer averaged 25 cm. thick. Stratum 3 originated at the surface and ranged from 5 to 8 cm. thick. It was composed of loosely compacted, wind-blown sand. On the exposed surface of Stratum 1 within the circle, six hardened ungulate hoof-prints were noted. No artifacts or other cultural material were found.

Trench 2. This trench measured 1 by 2 m. and was laid on a north to south axis. The purpose of the test was to investigate a surface ash area (Fig. 6) and a concentration of scattered small boulders of basalt, limestone, sandstone, and conglomerate. The stone represented the southern-most of the supposed circles. Excavation to a depth of 15 cm. demonstrated that the ash was a surface phenomenon while the stone proved to be nothing more than an amorphous cluster. Strata 1 and 2 were observed within the trench. No cultural material was recovered.

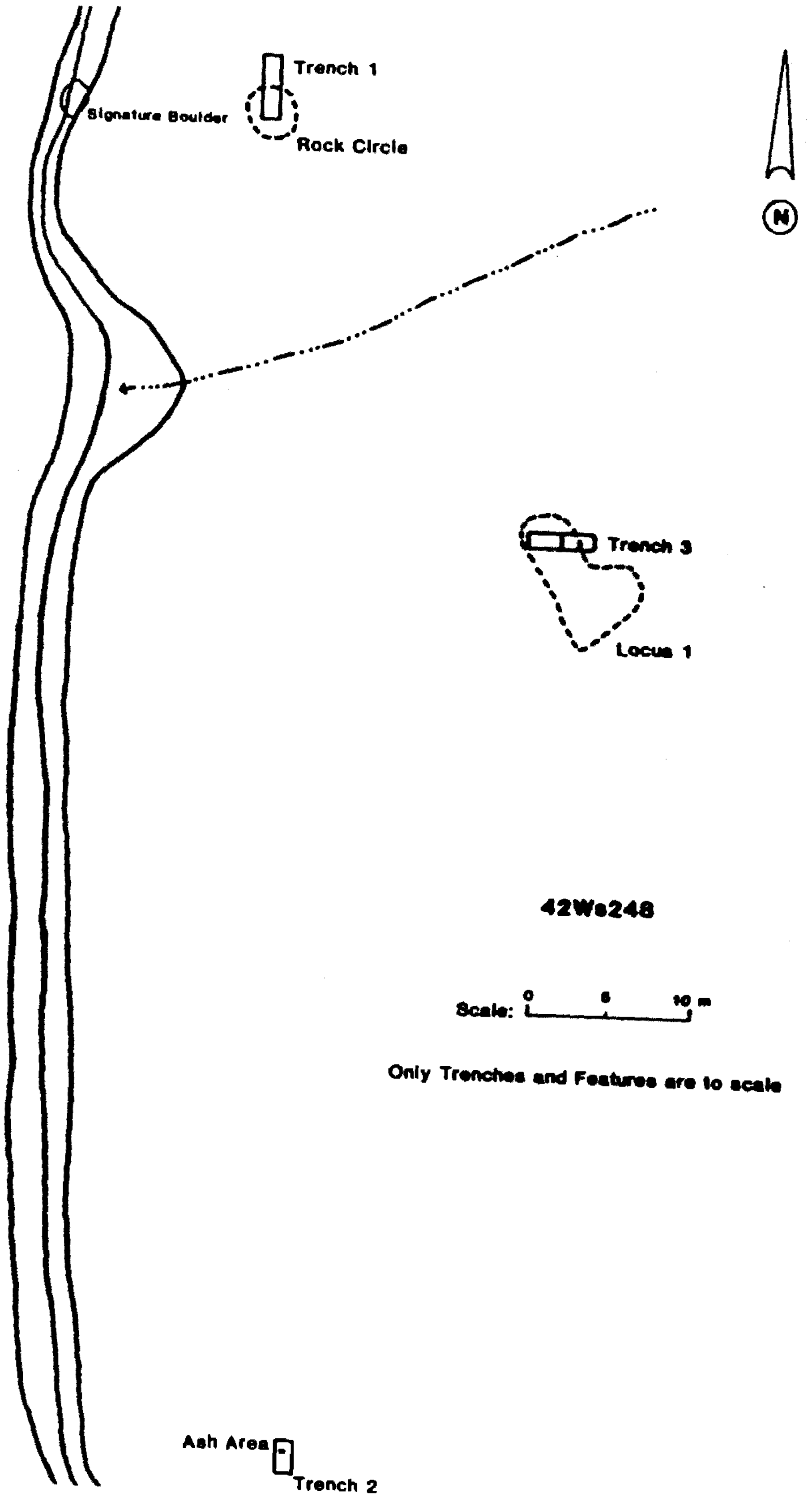



Figure 6. Site map, 42Ws248

Figure 7. Rock circle cut by Trench 1, 42Ws248

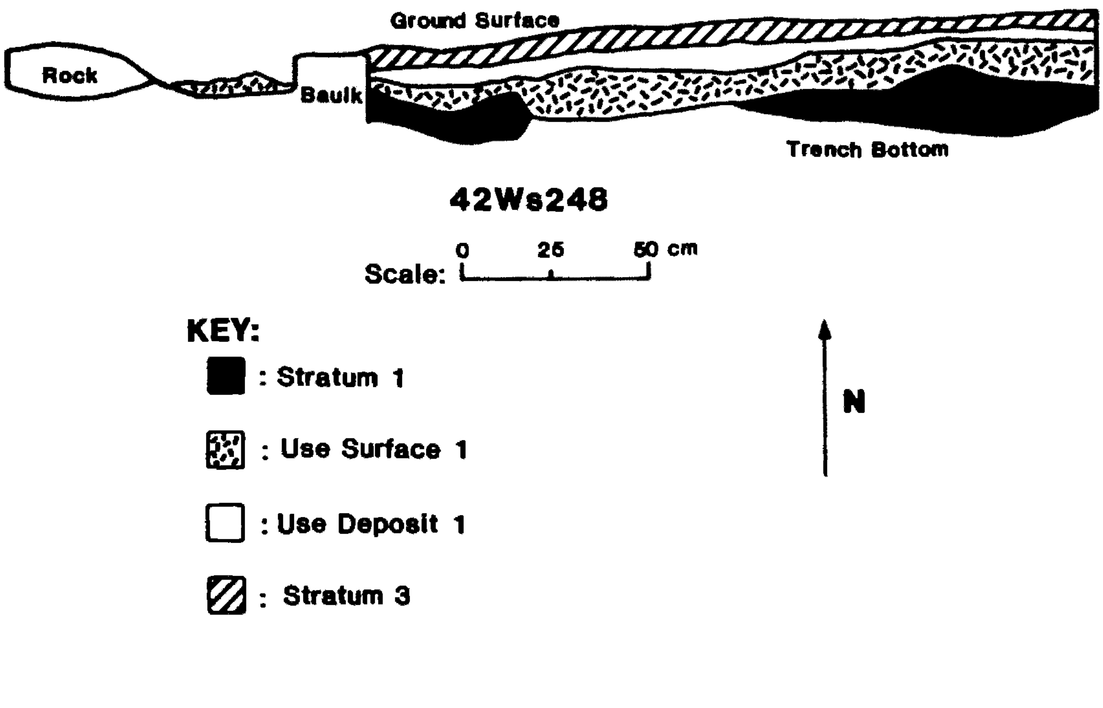



Figure 8. Profile across the north portion of Locus 1, 42Ws248

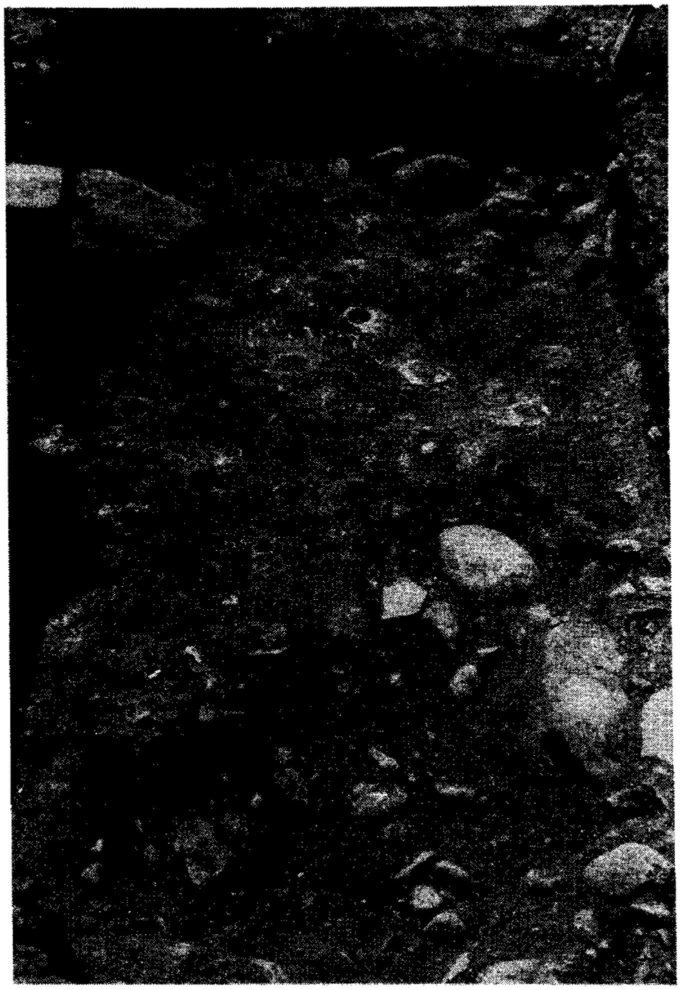


Figure 9. View west of clay depressions on Use Surface 1, Locus 1, 42Ws248

TABLE 6

COLLECTION SUMMARY, 42Ws248

| | | | |
|---|---|---|---|
| Locus 1 Surface. | | C - utilized flakes | 2 |
| D - mano | 1 | O - utilized flake | 1 |
| S - ground stone frag. | 1 | C - Desert Side-notched | 1 |
| Q - edge pounder | 1 | O - biface flake | 1 |
| | | C - core flakes | 2 |
| Locus 1 Stratum 3. | | C - u/i flake | 1 |
| S - metate frags. | 6 | LL- core flake | 1 |
| S - ground stone frags. | 2 | O - core flake | 1 |
| S - grinding slab frags. | 21 | O - u/i flake | 1 |

Trench 3. Running east to west and measuring 1 by 4 m., this was designed to investigate a heavy concentration of ground stone fragments that had been termed a "circle" during the survey but which was designated Locus 1 (Fig. 6) by the excavators. Locus 1 lay 33 m. southeast of Trench 1 and 54 m. north of Trench 2; it measured 8 m. north to south and 10 m. east to west. The trench was cleared to a depth of 55 cm. in order to investigate the stratigraphy and to determine if structures were present.

Four stratigraphic levels were identified, two natural and two possibly cultural (Fig. 8). The top of Stratum 1 varied between 10 and 20 cm. deep and it was overlain by a highly compacted, reddish-white, sandy clay averaging 10 cm. thick. The upper surface of the clay was designated Use Surface 1 (Fig. 9) and it was covered by Use Deposit 1, a tannish-red, sandy clay which was stained with ash and charcoal. Use Deposit 1 varied from 2 to 8 cm. in thickness. No artifacts were recovered from either of these levels. Stratum 3 overlay the entire area of Locus 1. It originated at the modern surface and proved to be from 3 to 5 cm. thick. In some areas this top layer contained scattered flecks of charcoal and all cultural materials were recovered from this stratum.

Following the definition of the stratigraphy, the excavation was extended to the west, the east, and the south in an attempt to follow Use Surface 1. In the course of this work a number of circular depressions, measuring from 1 to 5 cm. in diameter were found to originate on this surface (Fig. 9). Some of these features exhibited slightly raised clay rims about 1 cm. high. A total of 11 of these depressions were identified but no systematic alignment could be seen and thus neither origin nor function is known. In following Use Surface 1, an apparent perimeter was defined in the southwestern area at a point where Use Surface 1 graded into Stratum 1. Time limitations precluded further exploration.

Discussion

The site would seem to have been used only for a limited time (Table 6) and it is impossible to determine whether or not the use surface had an associated superstructure. The small, circular depressions may have served as post supports for some ephemeral structure but their random pattern does not support the possibility. The 30 ground stone fragments suggests that plant food processing was a major activity.

The fact that the ground stone fragments can be grouped into three different forms of sandstone indicates that at least three grinding slabs were used. Lithic materials include a single biface flake, and the usual core flake production debitage characteristic of most limited activity sites. The only ceramics recovered from the site were two North Creek Gray sherds found during the survey. The presence of a Desert Side-notched point, however, argues for later Paiute activity at the site. The limited depth of cultural fill makes it impossible to determine if the site had two periods of use, one by the Western Anasazi and one by the Paiute. In general, the presence of the two sherds would appear more likely to be fortuitous than the presence of the point, so a Paiute cultural affiliation may best be hypothesized.

## 42Ws250

### Introduction and Excavation

Heat-cracked sandstone and quartzite cobbles were the central items at this limited activity site. Also noted during the survey were two apparent hearth areas and a sparse scatter of lithic and ceramic materials. The site lay 25 m. west of Quail Creek on a sand dune terrace at an elevation of 2840 ft., below the general elevation of the valley floor but slightly above the floodplain (Fig. 3). The site area measured 75 m. north to south and 40 m. east to west. Three test trenches, each 1 by 2 m., were excavated to determine the nature of activity.

Trench 1. This was aligned in such a manner as to bisect an apparent hearth in an area where a concentration of fire-altered stone, ash, and charcoal could be seen on the surface. The upper 20 cm. consisted of reddened sand with charcoal flecks. Between 10 and 15 cm., however, a dense charcoal and ash lens was noted in the west end of the trench. Carbon, pollen, and flotation samples were taken from the lens. Between 20 and 60 cm., the sand proved to be grayish-tan in color but the flecks of charcoal continued.

At a depth of 60 to 70 cm., excavators encountered similar sand but mixed with ash, charcoal, and clay. The level between 70 and 85 cm. consisted of culturally sterile, reddish-orange sand below which appeared a 5 cm. thick, pinkish-red, sandy clay which was also sterile. From a depth of 90 cm. to the bottom of the trench at 125 cm., the material was limited to a sterile deposit of grayish-tan sand. No artifacts were recovered from any level of the trench but the C-14 date of $110 \pm 50$ years: A.D. 1840 (Beta 8027) indicated that the site should be associated with historic Paiute activity.

Trench 2. This unit was dug to a depth of 1.8 m. A single chert projectile point tip was recovered from the surface. The trench had been placed in an area that had a rather sparse concentration of sandstone fragments. The upper 30 cm. of the fill consisted of pink sand with charcoal flecks and small, orange, mottled areas. Between 30 and 35 cm. was a layer of gray-black sand that proved very ashy.

At depths between 35 and 90 cm. lay three sterile strata including a 30 cm. thick layer of pink-orange sand, a 15 cm. layer of gray-tan sand with clay wash laminae, and a 10 cm. layer of a red-brown, sandy clay. At a depth of 90 to 110 cm. charcoal flecks reappeared in a layer of gray-tan sand. From 110 to 140 cm. the deposit consisted of a light gray-tan sand with charcoal flecks and clay wash laminae. From 140 cm. to the bottom of the trench at 180 cm., the fill was an orange-tan sand that still held some charcoal flecks. No artifacts were recovered from any of the levels of the trench.

Trench 3. The final trench was excavated to a depth of 80 cm. in order to investigate yet another area of sparsely distributed heat-cracked cobbles. The upper 30 cm. consisted of a gray, tan, and red mottled sand with charcoal flakes. From 30 to 70 cm. a gray, clay-laden sand appeared. In the final zone from 70 to 80 cm., the sand proved to be pink-red and sterile. No artifacts were recovered from the unit.

## Discussion

Although small charcoal flecks were present in all three trenches, even to a depth of 1.8 m. in Trench 1, the scattered and minute character of the charcoal seems to deny a cultural origin. Two layers may be cultural, that at 60 to 70 cm. in Trench 1 and again at 30 to 35 cm. in Trench 2, but even in these two levels, the minute size of the charcoal fragments combined with the absence of cultural debris suggests the fires may have been of natural origin. The only true cultural evidence is restricted to the surface artifacts and the charcoal-and-ash lens found in Trench 1 at 10 to 15 cm. Recovered from the surface were three North Creek Gray sherds, an unidentified painted Virgin Series sherd, four Paiute Plain sherds, and a chert point tip.

The meager collection of cultural materials suggests brief Western Anasazi activity, probably in Pueblo II, and a later Paiute presence. It is possible, of course, that the earlier sherds were brought to the site by the Paiute. The C-14 date of A.D. 1840 $\pm$50 from the hearth in Trench 1 obviously relates to historic Paiute activity.

## 42Ws251

This limited activity site is only 20 m. in diameter and it rests at the edge of the highest terrace overlooking Quail Creek some 75 m. to the east (Fig. 3). On site vegetation includes creosote bush, bursage, mormon tea, three-awn grass, and wild barley. The site was identified on the basis of two charcoal stained areas, a light scatter of flakes, Paiute sherds, ground stone, and heat-altered stone. Two test trenches, each 1 by 2 m. were excavated to investigate the two charcoal stains.

Figure 10. West profile of Trench 1, 42Ws251, Hearth at right of stone.

Trench 1. This was oriented to bisect the first of the stains and was excavated to a culturally sterile deposit formed of a mixture of rocky sand and clay that was identified just above the 40 cm. depth of the trench. Ash and charcoal, however, were found from the surface to a depth of 10 cm.

Hearth. As can be seen in Fig. 10, the ash and charcoal deposit formed a basin shaped, unlined hearth some 45 cm. in diameter. Large pieces of charcoal were present in the lower portions of the hearth. Carbon, pollen, and flotation samples were taken from the area. Analysis of the carbon sample produced a date which is essentially modern (Beta 2028). A discussion with Beta Analytic, Inc. indicated that a "modern" date could be as old as 100 years B.P. or about A.D. 1880.

Trench 2. This was aligned to cross the apparent center of an ash concentration associated with charcoal and heated-altered fragments of sandstone, quartzite and diorite. Trench 2 reached a rocky, sterile deposit at from 20 to 30 cm. below the surface. The ash and charcoal was found to extend to a depth of 15 cm. Carbon, flotation, and pollen samples were taken from the layer.

Collection Summary.

Surface: Paiute Marked, 13; Desert side-notched (C), 1. Trench 1 0-10 cm.: Paiute Marked, 5; point preform (C), 1; utilized flake (LL), 1; core shatter flake (C), 1; Core flake (SS-cortex), 1; hematite fragment, 1. Trench 2 0-15 cm.: grinding slab (S), 1.

Discussion

Though small, the artifact assemblage contains materials representing several major activity subdivisions including grinding, cutting, biface manufacture, core flake production and cooking. The Paiute sherds and the Desert Side-notched point combine with the "modern" C-14 date to indicate Paiute use at a time close to the end of their prehistoric patterns.

## 42Ws253

Again the site focuses on a group of five Shinarump boulders that rest at the foot of the colluvial slope below the western escarpment and some 330 m. west of Quail Creek (Fig. 2). With an elevation of 3080 ft., the site vegetation includes creosote bush, bursage, hilaria grass, snakeweed, spiny hopsage, and Mormon tea. A small, isolated patch of wild tobacco was also noted among the boulders. Two of the boulders were leaning against each other to form a small rockshelter with openings at both the uphill and downhill ends. A low rock wall 1.6 m. long, 0.6 m. high, and 0.75 m. wide ran across the upper end of the shelter. The only surface evidence of human activity other than the wall consisted of two dozen poor quality quartzite flakes that can only be tentatively identified as being of human origin.

A single trench was run inside the overhang to a depth of 30 cm. The excavation revealed a loose, loamy sand atop of layer of gravel-filled clay. No evidence of human activity was found. While the stone wall is definitely of human origin, the lack of diagnostic cultural debris leaves no means of interpreting the nature of activity at the site or its temporal/cultural position.

## 42Ws255

This temporary camp is contained within an area about 50 by 25 m. in size. It is found on the edge of the highest terrace some 75 m. east of Quail Creek at an elevation of 2860 ft. Vegetation is dominated by creosote bush, bursage, blackbrush, three-awn grass, desert marigold, and hedgehog cactus (Fig. 3). The site consists of several distinct loci which include a boulder metate, a small, sparse rubble scatter, a small concentration of heat-altered rock, a very localized scatter of Paiute sherds that may be from a single vessel, and an anthropomorphic petroglyph (Fig. 11) on a boulder. Flakes were scattered over the site in a random manner without any apparent relationship to the loci. Three of the loci were tested. These included the rubble scatter, the heat-altered stone, and a distinctly cleared area.

Trench 1. This 1 by 2 m. unit was excavated immediately adjacent to the rubble area which measured about 2 by 3 m. The cluster did not appear to be substantial enough to represent a collapsed architectural feature. The trench exposed a surface layer of sand some 5 cm. thick below which lay a culturally sterile layer of sandy clay. At a depth of 40 cm., a layer of diorite and sandstone boulders was encountered embedded in a gravel matrix. A single quartzite edge pounder was found on the surface of Trench 1 but no subsurface cultural remains were found.

Trench 2. Also measuring 1 by 2 m., this unit sought to investigate the area of heat-cracked quartzite cobbles which was also the area where most of the Paiute sherds were found. The stratigraphy found in Trench 2 was identical with that found in Trench 1. No artifacts were recovered in the excavation nor was ash or charcoal found in association with the fire-altered stone.

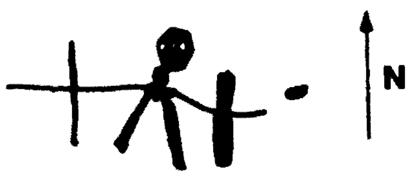



Figure 11. Boulder petroglyph, 42Ws255.

Trench 3. This was a 1 m. square unit that was excavated in the cleared area of some 5 m. in diameter where it appeared that surface stone had been removed. It is unlikely that the rubble found on the surface of the Trench 1 area came from here since the two loci are some 25 m. apart. The stratigraphy was, once more, essentially the same as that encountered in Trenches 1 and 2. No cultural materials were found.

## Collection Summary

Surface: Paiute Plain, 90; edge pounder (Q), 1; scraper (C), 1; biface fragment (C), 1; Point stem (O), 1; core flake (C), 1; core shatter flake (C), 1; core flakes with cortex (O), 3; unidentified flakes (O-2 with cortex), 2.

## Discussion

The artifacts imply a fairly wide range of activities but, once again, core flake production predominates. The only culturally diagnositic items were restricted to a tightly clusted collection of Paiute sherds. The diffuse distribution of the flakes made it impossible to associate them with any of the various loci at the site.

# 42Ws256

## Introduction and Excavation

This small habitation site sits on top of a rocky knoll some 20 m. above the east bank of Quail Creek and just south of the North Gap. With an elevation of 2860 ft., the knoll is a remnant of a gravel stream terrace (Fig. 2). The floral assemblage includes creosote bush, Mormon tea, snakeweed, range ratany, hilaria grass, Indian ricegrass, and three-awn grass. The cultural materials that indicated the existence of the site covered an area of 30 by 35 m. (Fig. 12). Evidence of human activity included a circular stone alignment surrounding a slight depression. One of the stones displayed a small petroglyph (Figs. 13,14) as well. Two other less well-defined cleared areas, one with a nebulous stone ring, were also noted. Both of these features lay southwest of the better defined circle (Fig. 12). A small collection of plain and corrugated sherds was made during the survey and a sparse scatter of flakes was also noted.

Of the two trenches used to explore the site, Trench 1 (Fig. 12) measured 1 by 4 m. and was aligned north to south within the distinct stone circle. Trench 2 (Fig. 12) measured 1 by 2 m. and was also oriented north to south. This was placed in the center of one of the cleared areas. The trenches were used to define the natural stratigraphy of the site which consisted of a single, undifferentiated alluvial deposit of sand, gravel, and boulders. The topography of the knoll (Fig. 12) has precluded any significant aeolian accumulation. The west side of the ridge has also been cut by a previous stream meander and the cut revealed that this Stratum 1 continued for at least 4 m. below the cultural features.

The well-defined boulder circle (Fig. 14) was composed of basalt and diorite boulders which were not generally contiguous. In the northeast perimeter of the circle, one of the boulders showed a petroglyph panel consisting of six X's and a zig-zag line (Figs. 13,14). There was also some evidence of random pecking below the petroglyph near the base of the boulder.

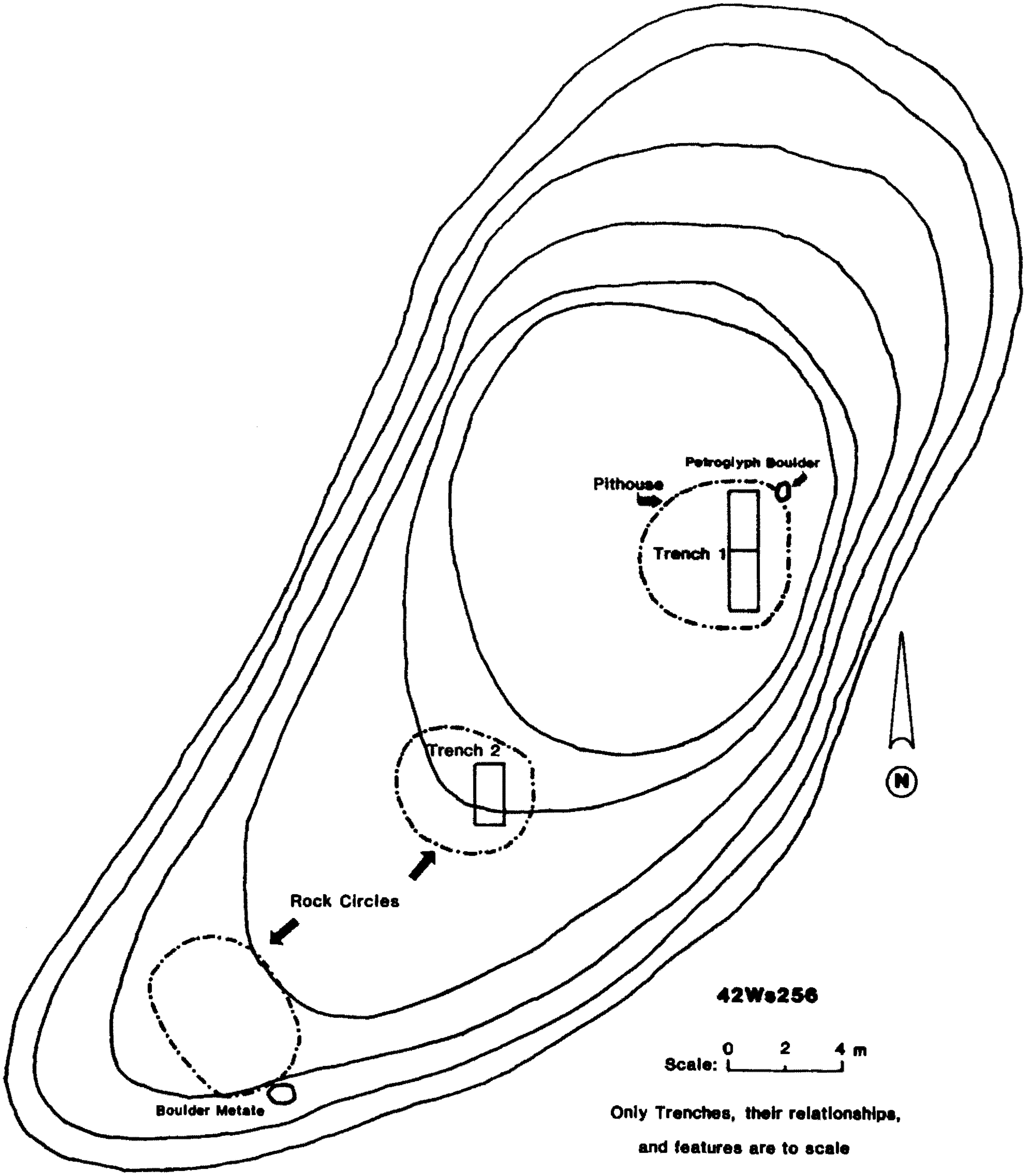



Figure 12. Site, excavation, and feature map, 42Ws256.

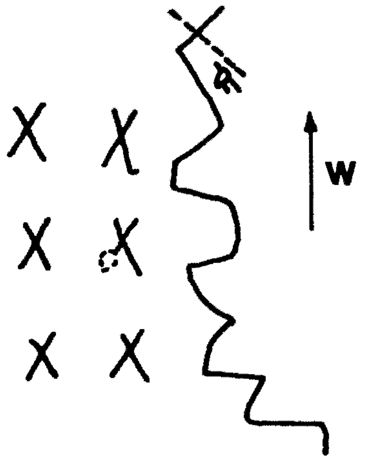



Figure 13. Boulder petroglyph, 42Ws256

Pithouse

Trench 1 was cleared to a depth of 50 cm. at which point the the top of Stratum 1 appeared. The profile of Trench 1 revealed a series of cultural deposits indicating that the boulder circle was actually the outline of a semisubterranean structure (Figs. 14-16). The pithouse was built by clearing stone from a circular area 5 m. in diameter. With this completed, a pit of similar dimensions was dug to a depth of 48 cm. The surface of origin could not be defined with certainty but it appeared to be close to the modern surface.

A superstructure was constructed of clay and an unknown support framework. No evidence of prepared clay could be found either on the floor or on the sides of the pit. At the same time, no artifacts were found on the use-compacted floor. The only evidence of occupation on Floor 1 (Fig. 16) was a vague ash stain near the center of the feature. It is likely that the roof collapsed shortly after construction since there is so little use deposition on the floor.

The collapse of the roof left a layer of chunky tan clay and sand termed Roof-Fall 1 which was some 18 cm. thick. The upper surface of Roof-Fall 1 was subsequently used as a living surface identified as Floor 2 (Fig. 15,16) at a depth of 30 cm. A second clay roof was constructed at the time of this reoccupation. It is not known whether or not any of Roof-Fall 1 was removed before Floor 2 began to be used, but it was certainly smoothed prior to use. During the occupation of Floor 2, a layer of reddish sand approximately 1 cm. thick accumulated on the floor surface. This material has been called Use Deposit 1. An ashy area 30 cm. in diameter was also located near the center of Floor 2 and also mixed with Use Deposit 1. Pollen and flotation samples were taken from the ashy area. Several lithic items of human origin were also found either within Use Deposit 1 or in contact with Floor 2 (Fig. 15).

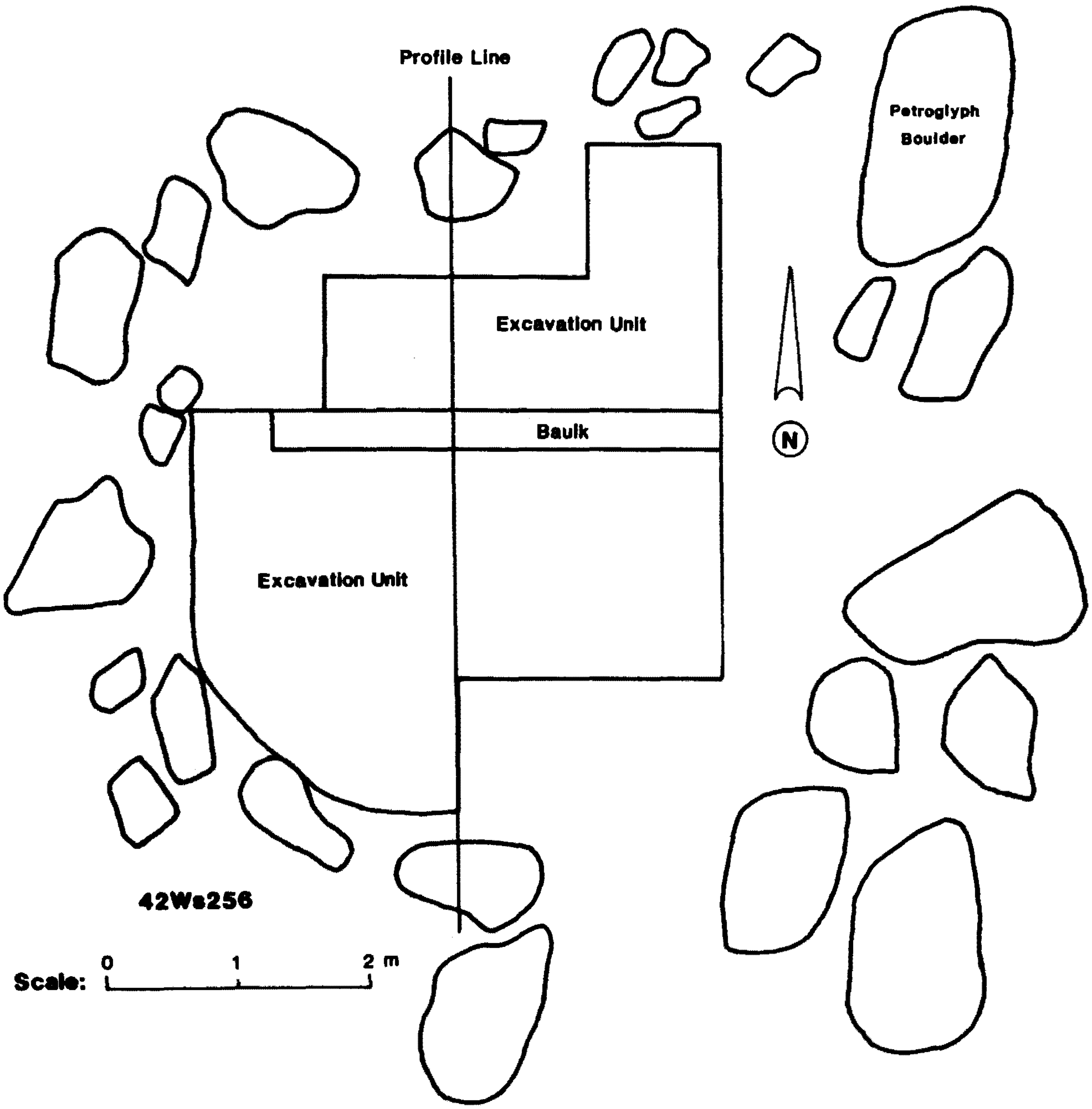



Figure 14. Pithouse plan and excavation map, 42Ws256.

At some point in time, the second roof collapsed to form Roof-Fall 2 and the remainder of the original pit filled with aeolian sand (Fig. 16). Mixed in with Roof-Fall 2, and particularly evident along the west side of the pit, was a pile of large cobbles (Fig. 15) which may have been part of a wall that rose above the surface of origin, and which collapsed along with the roof. The cobbles rest on top of Use Deposit 1. If the cobbles were, in fact, a part of a wall, it was not possible to determine whether the wall was built for the first occupation of the structure and remained standing when the first roof collapsed, or if it was built in conjunction with the second roof.

Roof-Fall 2 and the aeolian fill above it were not clearly distinguishable, but a change came gradually from a reddish-tan, sandy clay near Floor 2 to a clay-impregnated sand at the surface. A piece of adobe was found in Roof-Fall 2 adjacent to Use Deposit 1. It appears to have been a remnant of the original roof. The adobe is 6 cm. thick and smooth on one side and rough on the other. No branch or other structural impressions were present. The upper 10 to 15 cm. of the structure fill was sparsely flecked with charcoal and contained a few elements of cultural debris (Table 7).

## Cleared Areas

Trench 2, a 1 by 2 m. unit placed on a north to south axis, was excavated in a second small cleared area 4 m. in diameter (Fig. 12). The area is encircled by a rather vague stone ring which appears to be nothing more than the stone cleared from the center of the area. A faint ash stain and occasional flecks of charcoal were noted on the sandy surface but the Trench 2 profile showed that this was limited to the upper 1 to 2 cm. The remainder of the profile revealed only Stratum 1 gravels and sand. No artifacts were recovered either from the surface area or the excavation of Trench 2.

Given the absence of significant data in Trench 2, it was decided that the third and even less well defined cleared area need not be tested. This area (Fig. 12), only 2 m. in diameter, displayed no ash or charcoal and lacked any cultural debris except that near its southern edge a basalt boulder showed evidence of grinding on its upper surface (Fig. 17). An area 20 cm. in diameter formed a natural hollow which showed distinct but minimal abrasions.

## Discussion

The site is best summarized as a habitation site consisting of a casually constructed pithouse, two small areas cleared of stone, and a slightly used boulder metate. The pithouse was unlined but had a clay roof supported by means not determined. The original pithouse roof collapsed and the structure was later reoccupied with a new floor being established on the original roof-fall. The period of second use also involved a clay roof with an unidentified support system. It is possible that a wall formed of cobbles had been raised above the surface of origin either during the construction for the first or the second use. It may, of course, have served in both occupations. The only feature noted on the two floors was a faint ash stain located at the approximate center of each. No cultural material was found on Floor 1 but evidence of core flake production and heat-altered cobbles came from Floor 2 (Table 7). The presence of the vague ash stain and the heat-altered cobbles could indicate that stone boiling was practiced, but the size of the cobbles makes it seem more likely that they were used to heat the interior.

Figure 15. Pithouse excavated to the top of Floor 2 with cobbles of possible fallen wall at right, 42Ws256

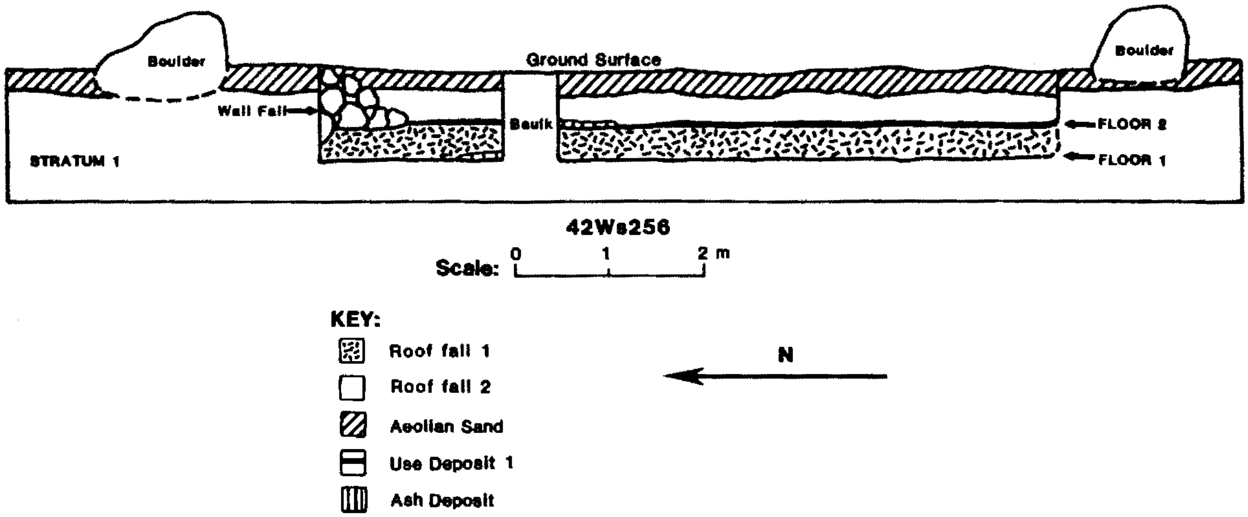



Figure 16. Profile north to south through the pithouse, 42Ws256.

Figure 17. Problematical boulder metate, 42Ws256

TABLE 7

COLLECTION SUMMARY, 42WS256

| | |
|---|---|
| Pithouse Fill 0-15 cm. | |
| North Creek Gray | 2 |
| North Creek Corr. | 2 |
| S - mano | 1 |
| S - ground stone frag. | 1 |
| LL- utilized flake | 1 |
| G - hammerstone | 1 |
| C - core shatter flake | 1 |
| LL- u/i flake | 1 |
| Floor 2 Use Deposit 1. | |
| LL- core | 1 |
| LL- core flake (cortex) | 1 |
| LL- u/i flakes (2 cortex) | 2 |
| Q - heat-altered cobbles | 3 |
| Surface | |
| North Creek Gray | 3 |
| North Creek Corr. | 11 |
| C4- biface Flake | 1 |
| C - core flake | 1 |
| C - core shatter flake (1 cortex) | 3 |
| C - u/i flakes | 2 |
| SS- core flakes (1 cortex) | 2 |
| C4- core flake | 1 |
| C4- u/i flake | 1 |
| C6- u/i flake | 1 |

The casual nature of the pithouse construction, apparently dating to the latter third of the Pueblo II period when construction skills were highly developed among the Western Anasazi, suggests a transient use as a 'farm house' after the fashion of those identified by Haury (1956:7) in the Mesa Verde area. Small structures built late in time are well known in the Western Anasazi region. Unfortunately, neither of the pithouse floors could be dated. The temporally diagnostic materials (Table 7) came from the surface of the site and from the upper 15 cm. of Roof-Fall 2. Since nothing indicates more than brief occupations, however, the corrugated sherds doubtless date the entire site to sometime between A.D. 1050 and 1125.

## 42Ws257

### Introduction and Excavation

Located 400 m. southeast of the North Gap and some 50 m. east of Quail Creek (Fig. 2), this proved to be a limited-use habitation site. At an elevation of 3000 ft., the site area was only 20 m. in diameter. Site flora included blackbrush, creosote bush, bursage, range ratany, and wolfberry. Criteria which identified the site included a stone circle some 3 m. in diameter and a sherd and lithic scatter

Trench 1, a 1 by 6 m. unit, was laid on a north to south axis in a manner designed to cross the western half of the stone circle while extending outside the circle at both ends. This was intended to facilitate the examination of both the internal and external stratigraphy associated with the apparent structure. The stone circle (Fig. 18), composed of small sandstone boulders, had an interior dimension of 2.5 m. east to west and 2.15 m. north to south. Trench 1 (Fig. 18) was divided into three, 1 by 2 m. units with the central unit being entirely within the circle. The northern and southern units were dug to a depth of 55 cm. into Stratum 1 (Fig. 19), the only natural stratum visible at the site. This layer was composed of pinkish-red, moderately compacted, clay-impregnated sand mixed with angular gravel and some rock and boulders.

Following the excavation of the central unit of Trench 1, Trench 2, a 1 by 2 m. unit, was excavated at right angles to Trench 1. Within the circle a number of cultural levels were found to overlie Stratum 1; these defined the presence of a pit structure.

### Pithouse

The structure had been built by digging a pit of the dimensions indicated above to a depth of 70 cm. The bottom of the pit was then lined with clay to become Floor 1 (Figs. 20-21). The clay ranged from 0.2 to 2.0 cm. in thickness and formed a slightly concave surface. Along the edges of the pit the floor clay graded into Stratum 1 except along the western edge where it sloped up slightly to meet the only two upright wall slabs found in the pit. Pieces of red-tan clay found in the fill above the floor seem to indicate that the structure had a clay-covered roof although the roof framing method could

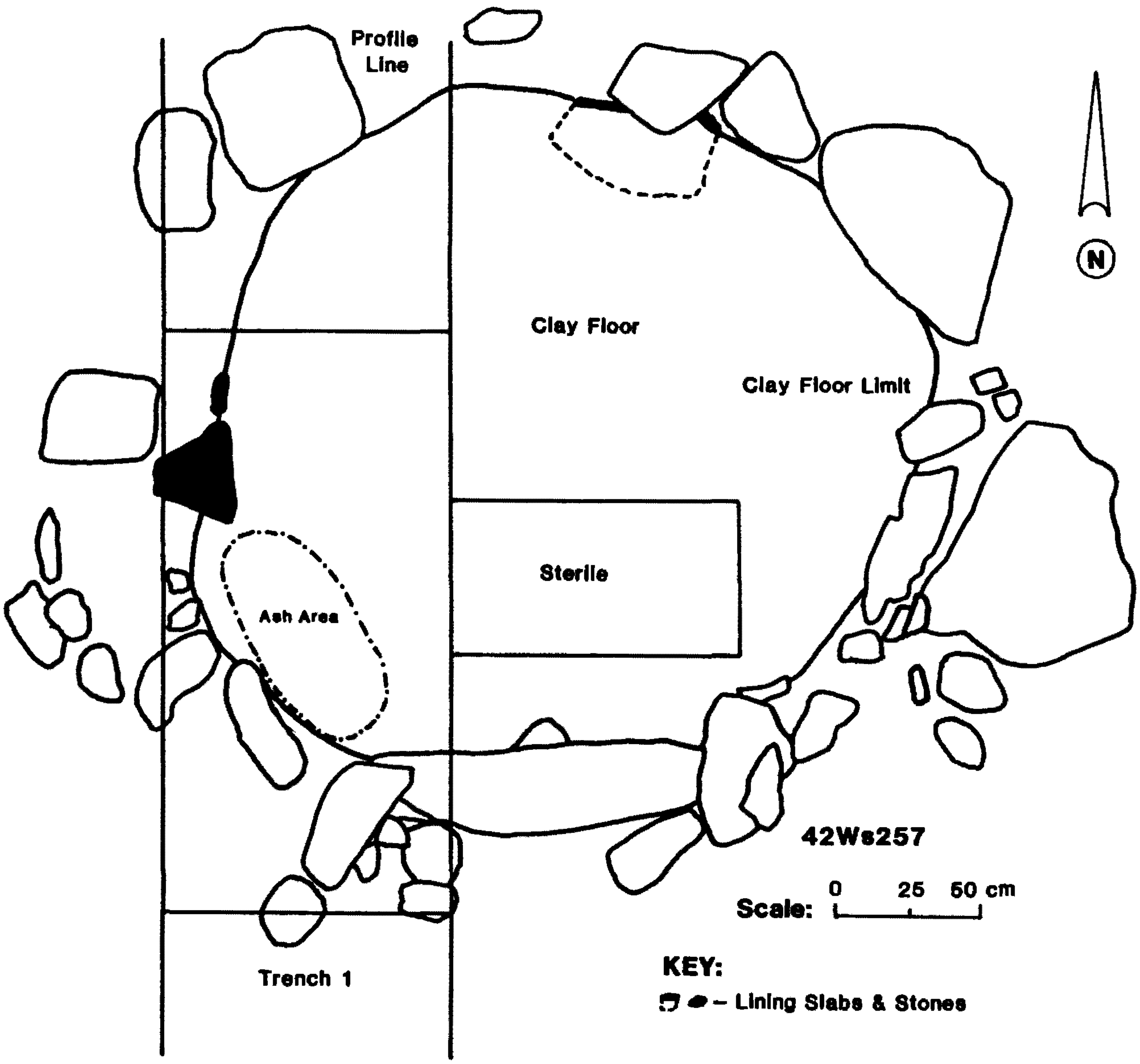



Figure 18. Pithouse plan map, 42Ws257.

not be determined. An ash stain was located near the center of Floor 1 and a very thin ash lens was found in the southwest corner. The surface of the floor was also sprinkled with scattered flecks of charcoal and a thin deposit of aeolian sand. No cultural debris occurred on the floor but pollen and flotation samples were taken from the ash concentration.

A layer of compacted tan sand with charcoal flecks lay above the aeolian sand and was designated Fill 1 (Fig. 19). This material contained elements of clay roof-fall as well. Fill 1 proved to be 25 cm. thick and it yielded some cultural material. The upper limit of the fill was defined by a highly compacted surface labeled Use Surface 1 (Figs. 19,20) which occurred at an average depth of 45 cm. The surface appeared to have been unprepared except for some possible leveling accomplished by removing some of Fill 1.

An ash concentration 10 cm. thick and 30 cm. in diameter was located in the southeastern quarter of Use Surface 1. This possible hearth was filled with gray to black, ashy sand with some charcoal. A single sherd was found as well. Pollen and flotation samples were taken from the feature but no carbon large enough for a sample could be found.

Above Use Surface 1 was Fill 2 (Fig. 19), a deposit 10 cm. thick composed of tan, compacted, charcoal-flecked sand which also contained pieces of clay roof-fall identical to that found in Fill 1. This suggests that a second roof had been built over Use Surface 1. The top of Fill 2 was defined by a thin clay lamina which, though of natural origin, displayed some charcoal and cultural material that were recovered from what was termed Use Surface 2 (Figs. 19,20). It appears that this surface constituted an activity surface even though its origins were not cultural. The surface lay at a depth of 35 cm. and was shown in profile to be slightly concave. Pollen and flotation samples were taken from the area of contact with the surface.

Fill 3 (Fig. 19) lay above Use Surface 2. This layer was composed of slightly compacted, light tan sand which included two thin clay laminae of rain-wash origin. Fill 3 was 35 cm. thick near the center while thinning to 20 cm. at the perimeter of the pit. The absence of clay fragments in the fill argues that Use Surface 2 was never roofed. Cultural debris in Fill 3 was limited to the upper 5 to 10 cm.

## Discussion

The stratigraphy (Figs. 19,20) indicates that there were three periods of limited use of this small pithouse. The structure appeared to have been partially ringed with stones, some of which fell into the pit after use. Clusters of clay found in Fills 1 and 2 suggest that a clay roof was built in association with Floor 1 and with Use Surface 1. It is possible that the pit was originally surrounded with a low stone wall, perhaps no more than a single course high. This may have been topped by wattle-and-daub walls and roof, although no such direct evidence exists. Use Surface 2 produced no evidence of having been covered with a roof.

The ash lenses on Floor 1 and Use Surface 1 did not appear to result from fire within the structure. Similar ash stains (but in association with

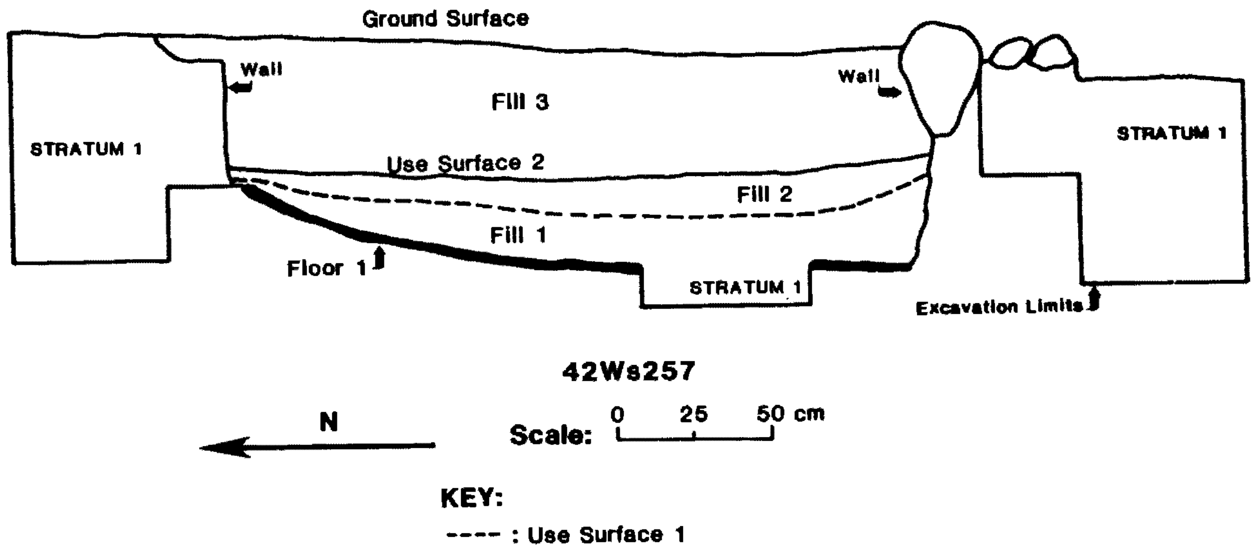



Figure 19. North to south profile through the pithouse, 42Ws257

Figure 20. 42Ws257 pithouse with Floor 1 in right foreground, Use Surface 1 at center, and Use Surface 2 at the left. Facing east.

Figure 21. 42Ws257 pithouse cleared to Floor 1, view to the south.

TABLE 8

COLLECTION SUMMARY, 42WS257

| | |
|---|---|
| **Surface** | |
| North Creek Gray | 26 |
| Mesquite Gray | 11 |
| S - mano frag. | 1 |
| C - utilized flake | 1 |
| C - core shatter flakes (2 cortex) | 5 |
| C - u/i flakes (2 cortex) | 3 |
| SS- core flakes | 3 |
| **Fill 1 45-70 cm.** | |
| North Creek Gray | 1 |
| Mesquite Gray | 1 |
| LL- edge grinder | 1 |
| C4- Parowan Basal-notched | 1 |
| SS- core | 1 |
| C - core shatter flake | 1 |
| C - u/i flake | 1 |
| **Use Surface 1 45 cm.** | |
| North Creek Gray | 1 |
| C - core | 1 |
| Q - core | 1 |
| **Fill 2 35-45 cm.** | |
| North Creek Gray | 15 |
| S - grinding slab frag. | 1 |
| Q - cores | 3 |
| C - core shatter flake | 1 |
| Q - core flakes (2 cortex) | 2 |
| **Use Surface 2 35 cm.** | |
| North Creek Gray | 1 |
| C - core shatter flake | 1 |
| **Fill 3 0-35 cm.** | |
| Mesquite Gray | 6 |
| North Creek Gray | 12 |
| C - core shatter flakes (2 cortex) | 3 |
| C - u/i flakes (1 cortex) | 4 |

heat-altered cobbles) found on use surfaces at 42Ws256 and interpreted as possible evidence of interior radiant heating; in the case at hand, however, the rock was not present. There is also the fact that bringing heated stones into the structure should not be expected to introduce significant amounts of ash. The source of the ash thus remains unknown.

The ceramic collection (Table 8) includes both Mesquite Gray and North Creek Gray sherds found in association in both Fill 1 and Fill 2, as well as on the surface. The association argues for a Pueblo I occupation since this is the period during which the major part of the transition from Mesquite to North Creek took place. The recovery of a Parowan Basal-notched point appears to be contradictory evidence since it usually occurs in Pueblo II contexts although, the point is not dated with great precision. The remaining cultural debris is typical of other Anasazi sites in the project area.

## 42Ws258

### Excavation and Stratigraphy

This limited activity site was located on a bench at the base of the colluvium that slopes down from the western escarpment (Fig. 2). With an elevation of 3000 ft., the site also lay 60 m. west of Quail Creek. On the site as well as around it the vegetation is dominated by creosote bush, bursage, range ratany, hilaria grass, and mesquite. The surface cultural debris included a sherd and lithic scatter along with two slight ash stains, some heat-altered stone and a concentration of sandstone rubble.

TABLE 9

COLLECTION SUMMARY, 42Ws258

| | | | |
|---|---|---|---|
| Surface | | St.George B/G | 1 |
| North Creek Gray | 10 | u/i Virgin Ser. B/G | 1 |
| North Creek Corr. | 16 | Boulder Gray | 1 |
| Hildale B/G | 1 | u/i Tusayan White | 1 |
| u/i Virgin Ser. B/G | 3 | | |
| u/i Tsegi Orange | 1 | Lithic. | |
| Q - polishing stone | 1 | C - point preform frag. | 1 |
| Q - edge grinder | 1 | Q - polishing stone | 1 |
| C - biface flake | 1 | Q - utilized flake | 1 |
| C - u/i flake | 1 | LL- core | 1 |
| LL- core flakes (1 cortex) | 2 | C - core flakes | 2 |
| LL- u/i flake (cortex) | 1 | C - u/i flakes | 3 |
| SS- core flake (cortex) | 1 | Q - core flakes (1 cortex) | 2 |
| Trench 1 Stratum 5. | | LL- core flakes (1 cortex) | 1 |
| | | LL- u/i flakes (1 cortex) | 4 |
| Ceramics. | | | |
| North Creek Gray | 11 | Faunal | |
| North Creek Corr. | 16 | | |
| Washington B/G | 1 | large mammal u/i frag. | 1 |

A single trench 1 by 10 m. was laid out on an east to west orientation in order to sample the site. The trench was subdivided into five 1 by 2 m. units labeled A to E beginning with the uphill or western end. The completed excavation revealed that Stratum 1, the lowest, lay 20 cm. below the surface at the east end while it was found at a depth 100 cm. at the west end. In Trenches 1-C, D, and E, the Stratum 1 gravel was overlain by Stratum 2, a red and white sandy clay which varied from 5 to 40 cm. in depth. In Trench 1-A and part of Trench 1-B these gravels were overlain by an alluvial sand termed Stratum 3 which proved to be 15 cm. thick in Trench 1-A but which pinched out in Trench 1-B. Stratum 3 contained a few flecks of charcoal but no other cultural debris. Stratum 3 was capped by the sterile clay of Stratum 4 which was 10 cm. thick in 1-A and which, like Stratum 3, pinched out in 1-B.

The profile of the five units trenched revealed a thin cultural deposit, termed Stratum 5 of tan-brown, sandy clay exhibiting charcoal flecks and which contained all subsurface cultural materials found in the excavation (Table 9). Stratum 5 was only 5 cm. deep at the eastern end but attained a depth of 75 cm. at the western end. The layer contained several vague ashy areas but, with the exception of a single ash lens 20 cm. deep, the stratum was basically homogeneous. The ash lens was 20 cm. in diameter and was sampled for pollen and flotation. No true hearths were identified while the sandstone rubble noted on the surface proved to be entirely fortuitous.

Discussion

All culturally diagnostic items indicate a Western Anasazi affiliation for the site. The North Creek Corrugated sherds indicate a temporal position some time after A.D. 1050. A single Washington Black-on-gray sherd is diagnostic of Pueblo I and its presence causes no problem. The St.George Black-on-gray sherd represents a design style that overlaps the advent of corrugated while the Hildale Black-on-gray is, of course, an indicator of late Pueblo II and early Pueblo III. The three Tusayan White Ware sherds could come from any time period between A.D. 900 and 1300 and thus pose no problem. The Boulder Gray sherd of the Moapa Series is normally thought of as a temporal equivalent of Mesquite Gray, but it is also a regional variant found mainly in the mountains south of Mt.Trumbull in Mohave County, Arizona. It could have been 'curated', or it is possible that some of this ware was made into Pueblo II. While the Tsegi Orange sherd is generally regarded as a Pueblo III indicator, surveys in the Western Anasazi area have, on a number of occasions, found it in association with late Pueblo II ceramics.

The lithic evidence, as indicated in Table 9 is also diverse. The comparative scarcity of grinding implements and core flake production evidence may be seen as uncommon at a limited activity site in the project area. In sum, it would appear that Ws258 has the characteristics of a transient camp of recurring use over perhaps as much as a 75 year period.

<u>42Ws259</u>

## Introduction

The lithic scatter of this site was confined to an area 30 m. in diameter. It is situated on a narrow bench at the foot of the colluvial slope that drops from the western escarpment just south of the North Gap and some 500 m. west of Quail Creek (Fig. 2). Vegetation in the area is dominated by creosote bush, bursage, three-awn grass, desert marigold, range ratany, Indian ricegrass, sand dropseed and cholla, all characteristic of the 3000 ft. elevation.

The focal point of the site was a large Shinarump boulder some 3 m. high and 5 by 3 m. in circumference. Petroglyphs on the boulder (Fig. 22) consisted of zig-zag lines, linear and curvalinear lines, a few Xs, some stylized anthropomorphs and several equally stylized 'footprints.' A nearby smaller basalt boulder also displayed some abstract designs as well as some triangular motifs typical of some painted ceramic styles.


**On Different Sides of the Same Rock**

Figure 22. Boulder petroglyphs, 42Ws259.

## Excavation

A sparse lithic scatter tended to concentrate on the east and south sides of the boulder. Some 10 m. south of the boulder a small hearth area seemed evident. Three test trenches were considered adequate to study the site. Trench 1 measured 1 by 2 m. and was laid out to bisect the center of the hearth and burned stone area. The trench exposed a layer of ash, charcoal, burned sandstone, and quartzite cobbles. This material extended from the surface to a depth of 15 cm. The charcoal was confined to a poorly defined lens within reddened, coarse sand. Beneath the supposed hearth, the sand became redder and included cobbles and gravel. Carbon, pollen, and flotation samples were taken in the area.

Trench 2 also measured 1 by 2 m. This was placed 25 m. east of the large boulder in order to investigate the possibility that accumulated sandstone debris might represent a small structure. Excavation exposed a grayish stratum some 10 cm. thick. Beneath this the balance of the trench to a depth of 40 cm. cut through red clay impregnated with gravel. No cultural evidence was found in the trench.

Measuring 1 by 2 m., Trench 3 ran north and south just east of the boulder. The entire trench was excavated to a depth of 50 cm. and then the southern 1 m. square was continued to a depth of 160 cm. The upper fill proved to be a loose tan sand with an ashy area being encountered between the 5 and 25 cm. levels. The sandy fill gradually became more moist with depth and it continued to contain very sparse charcoal flecks all the way to the bottom. Except for a large boulder encountered at 130 cm., the fill remained homogeneous sand. The few artifacts were recovered only from the upper 30 cm. of the excavation and included a chert core and two lithographic limestone flakes.

## Discussion

No culturally or temporally diagnostic materials were found at the site and the carbon sample proved too small to be dated. The resemblance of some of the petroglyph designs to some painted ceramic designs may very well suggest an Anasazi presence, but there is no established connection between the excavated material and the rock art.

# 42Ws260

## Introduction

This large camp site was found near the edge of the highest terrace some 500 m. west of Quail Creek (Fig. 3). The elevation was 2870 ft. and the site measured 50 by 25 m. Dominant vegetation included creosote bush, bursage, snakeweed, wolfberry, sand sage, blackbrush, Indian ricegrass, indigo bush, prickly pear cactus, and mesquite. The site is bounded on the south by an historic wall of unknown age which runs east to west.

## Excavation and Site Features

Surface cultural evidence included three concentrations of heat-altered stone, two of which were associated with ash and charcoal stains. The site also yielded a sizeable collection of Paiute sherds, ground stone, and lithics. Each of the three apparent hearth areas were tested.

Trench 1. This 1 by 2 m. unit was located to investigate a concentration of fire-cracked rock at the south end of the site. Excavation revealed that all of the stone lay in the upper 5 cm. of fill but that no ash or charcoal were present. This feature, then, may either represent an eroded hearth or a concentration of discarded boiling stones. Two isolated pockets of charcoal were found in the otherwise sterile, sandy sidewalls of Trench 1. The first lay at a depth of 10 cm. in the northwest corner of the unit while the other was found to be 30 cm. deep in the southern wall. A carbon sample was taken from each feature even though it appeared likely that both were rodent holes. A substantial collection of cultural materials were found between the surface and a depth of 15 cm.

Trench 2. Also measuring 1 by 2 m., this unit was aimed at bisecting an apparent hearth. Excavation revealed that the hearth was lined with assorted sandstone slabs and other stones of varying sizes. The hearth had an internal diameter of 65 cm. and was 12 to 15 cm. deep. It proved to be filled with a mixture of sand, charcoal and ash. An irregular clay layer was present (Fig. 23) over the small slabs that formed the bottom of the hearth and the clay seems to represent a remnant of a prepared lining. Radiocarbon, pollen, and flotation samples were taken from the hearth. The C-14 date was 670±50 years: A.D. 1280 (Beta-8029).

Still in Trench 2, but outside the hearth, the surface ashy sand layer thinned rapidly so that it proved to be only 2 cm. thick. In spite of this, the feature yielded 17 Paiute sherds.

Trench 3. Measuring 1 by 2 m., the final trench was excavated to investigate the third feature, a small scatter of fire-cracked rocks and ash. It was found that both the stone and the ash were limited to the upper 5 cm. of fill. The stone had no discernable arrangement and the charcoal was inadequate for dating. No ceramics were found, but the area produced a polishing stone and four samples of fire-cracked quartzite and lithographic limestone.

## Discussion

The large number of Paiute sherds recovered (Table 11) firmly establishes the cultural affiliation of the site. The single Anasazi sherd found in the collection hardly makes an argument for an earlier use of the site. A good number of artifacts represent various processing activities. This includes items such as edge grinders, ground stone, a polishing stone, a concave scraper, and utilized flakes. The Desert Side-notched point and bone fragments argue hunting in the area while the unfinished Desert Side-notched and Cottonwood Triangular points argue that point manufacture occurred at the site. The bone fragments were from large mammal long bones and, though unburned, the fractures would appear to be of human origin.

Figure 23. Fully exposed hearth, 42Ws260

TABLE 11

COLLECTION SUMMARY, 42WS260

| | | | |
|---|---|---|---|
| Surface. | | S - basin metate frag. | 1 |
| Paiute Plain | 28 | Q - utilized flake (cortex) | 1 |
| Paiute Corr. | 10 | C - concave scraper | 1 |
| North Creek Gray | 1 | C - core flake | 1 |
| SS- basin metate frag. | 1 | Q - core flakes (2 cortex) | 2 |
| C - Desert Side-notched | 1 | CQ- core flake (cortex) | 1 |
| O - Desert Side-notched (inc.) | 1 | SS- core flake (cortex) | 1 |
| O - Cottonwood Triangular | 1 | Q - core shatter flake (cortex) | 1 |
| Q - utilized flake (cortex) | 1 | C - u/i flake (1 cortex) | 2 |
| C - core | 1 | LL- u/i flake | 1 |
| Q - core | 1 | Q - u/i flakes (4 cortex) | 5 |
| LL- core flake (cortex) | 1 | | |
| Q - core flake | 1 | | |
| C - core shatter flake | 1 | Trench 2 0-2 cm. | |
| large mammal long bone frags. | 4 | Paiute Plain | 17 |
| | | | |
| Trench 1 0-15 cm. | | Trench 3 0-5 cm. | |
| Paiute Plain | 14 | Q - polishing stone | 1 |
| Q - edge grinders | 2 | Q - heat-cracked cobbles | 2 |
| S - slab with striations | 1 | L - heat-cracked cobbles | 2 |

The cores, core flakes, and core shatter are all evidence of flake production activity. Most of the unidentifiable flakes have some cortex and are, therefore, evidence of flake production. It should be noted that only 20 percent of the imported chert specimens of unidentified flakes have cortex while at least 50 percent of the other items have cortex. This implies that materials other than chert were collected locally. It is known that both quartzite and lithographic limestone are present in the Quail Creek gravels so that high cortex percentages should be expected. The source of the conglomerate quartzite and silicified sandstone is not known, but the high cortex percentages probably imply a local origin in the gravels along the creek.

The purpose behind the well represented flake production is somewhat obscure since, of all of the lithic tools, only a scraper and one of the utilized flakes could have been made from the flake production output. It is not likely that the flakes produced from locally available materials were taken elsewhere for further reduction because of their relatively poor quality. Apparently, early stage bifaces were not made at the site as is seen in the total lack of biface manufacturing debitage.

Three obsidian artifacts were found at the site. Two of these were unfinished projectile points, a typical use for an imported material. The single obsidian utilized flake is unusual as the material is fragile and not well suited for the inferred task, and it is unusual to see a mundane tool made of rare materials. The source of the obsidian is not certain but it was apparently transported to the site in the form of small cobbles as evidenced by the cortex on the utilized flake.

The two definite hearth areas found in Trenches 2 and 3 yielded very little in the way of cultural materials. The artifact concentration in Trench 1, on the other hand, is much greater and contains a wide range of items (Table 11).

## 42Ws262

### Introduction

The site was confined to a pair of adjacent rooms made of dry-laid masonry and located at the crest of the anticline above the south side of Quail Creek above the South Gap (Fig. 2). The site was actually at the edge of a low cliff in the Shinarump Sandstone at an elevation of 3240 ft. Vegetation in the site area included blackbrush, Mormon tea, snakeweed, brittlebush, spiny hopsage, bursage, three-awn grass, and cholla. The curious location of the site seems to argue it was an observation post of some kind, used sometime after A.D. 1050.

### Excavation

The limited soil over what was essentially bedrock made trenching a simple matter. Two test trenches were used, one in each room, to determine the character of such fill as did exist. Trench 1. This measured 1 by 2 m. north to south and was laid out on the east side of Room 1. Excavation revealed a stratum of small gravel and brown sand 10 cm. thick. Below this the dig encountered a level of sandy clay, the surface of which was apparently use-compacted this was designated Use Surface 1 (Fig. 25). The clay proved to be 10 cm. thick with bedrock immediately beneath it. A narrow extension of Trench 1 was expanded to the west to further explore Use Surface 1.

Trench 2. Also a 1 by 2 m. unit, this was aligned north to south and placed in the southern edge of Room 2. The composition of the upper stratum was identical to that in Trench 1 except that in this instance it proved to be much thinner at the north end, while a layer of hard-packed clay of Use Surface 2 covered bedrock at the south end.

Structure

The contiguous rooms were built of dry-laid Shinarump Sandstone slabs set directly on the bedrock surface. Both rooms were roughly oval and both were open to the north.

Room 1. This unit (Figs. 24,26) measured 5 m. east to west and 4 m. north to south. The remaining wall contained from 2 to 12 courses of stone for a height range of from 0.1 to 1.5 m. A gap in the wall some 3 m. wide was noted on the northern side. The lack of rubble in the area appears to indicate that no wall existed during prehistoric use. There was no evidence of interior wall plaster nor could any sign of a roof be detected. A ramada-type brush shade, however, could have been used without leaving a residue for the archeologist. While Room 1 lacked a prepared clay floor, the sandy clay encountered (see Trench 1, above) appeared to have been use-compacted. Given the fact that the walls were laid directly on bedrock, however, it is quite likely that the clay was introduced.

Cultural debris was found on the surface and was recovered from the fill above Use Surface 1 as well as in contact with that surface. The North Creek Corrugated sherds indicate site use at some time after A.D. 1050. A modern hearth was also found in Room 1 against the eastern wall. The hearth had been lined with fallen wall slabs and still contained ash and charcoal.

Room 2. This room (Figs. 24,26) measured 5.5 m. east to west by 4.5 m. north to south. The remaining wall contained from 4 to 12 courses of stone with a height of from 0.5 to 1.2 m. The north wall was missing leaving a gap 4 m. wide. Again, there was no evidence of interior wall plaster nor was there evidence of a roof. Use Surface 2, a use-compacted clay stratum, was found only in the southern part of the room.

A very small lithic scatter termed Locus 1 was found 1.5 m. northwest of Room 1. This scatter consisted of only a few flakes and because it was found on bedrock near the edge of the cliff, it was simply collected.

The use of these two rooms is not clear but it would seem to be for a rather uncommon purpose. The cultural debris is much too limited to suggest a habitation site and the nature of the structure does not argue well for use as a storage facility. All that can be said is that the site yielded two low, sheltering walls and a remarkable view of the surrounding region. From the

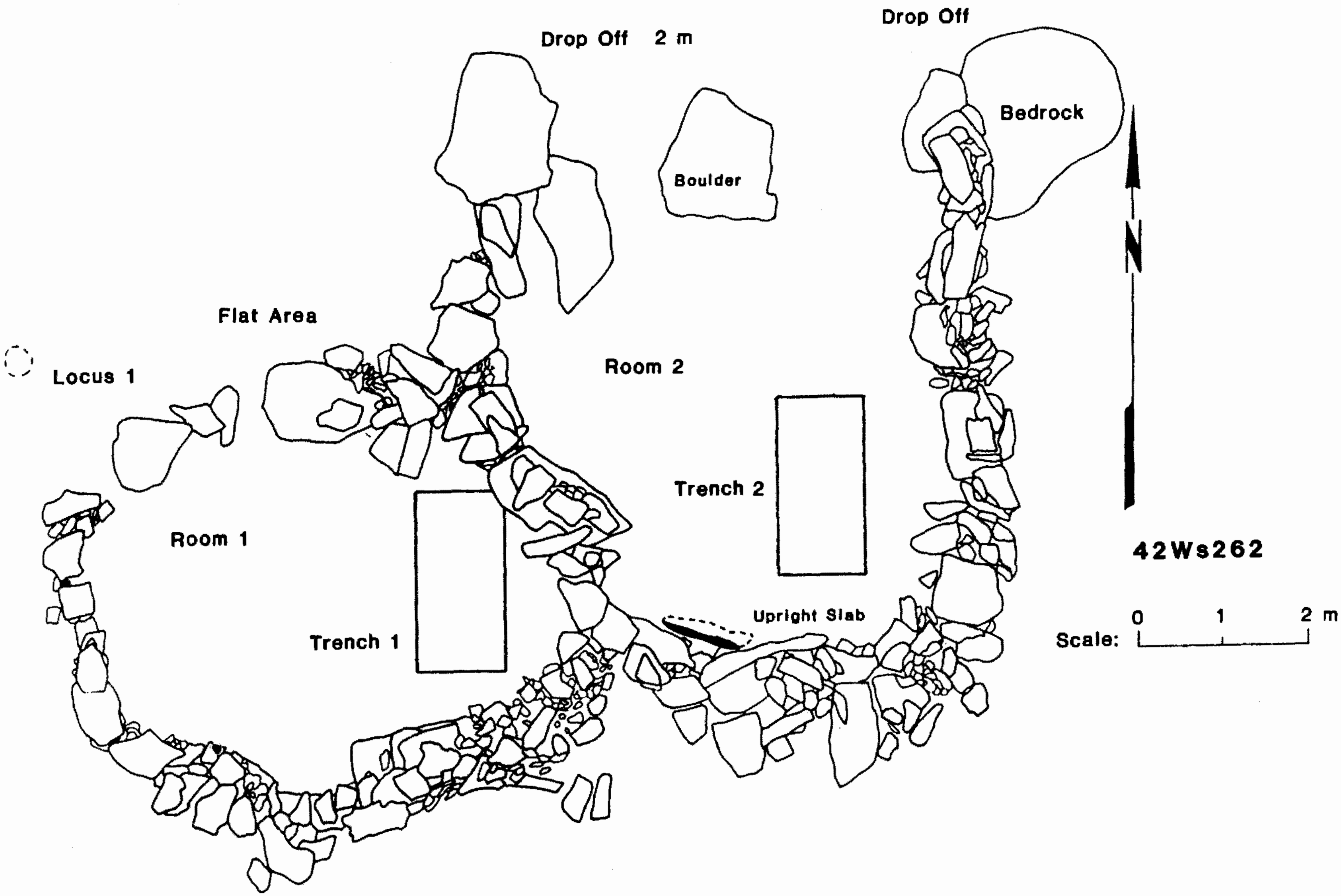



Figure 24. Site plan map, 42Ws262.

Figure 25. Use Surface 1 (foreground) exposed in Trench 1, 42Ws262.

Figure 26. Rooms 1 (foreground) and 2, 42Ws262. View east with Virgin River at the extreme upper right.

vantage point of one of the higher spots in the project area, it is possible to see the Kolob Canyons to the north, Zion and Little Creek Mountain to the east and southeast, the Virgin Mountains to the southwest and the Pine Valley Mountains and the Red Cliffs area to the northwest. A majority of the sites within the Quail Creek project area are also visible from this point, with the exceptions being the sites along the west side of the Virgin River and those located north of the North Gap. Many of the areas visible from the site were ones of significant Western Anasazi population density or commanded a view of other prominent points above well-populated areas.

These considerations lead to the subjective impression that the site was an observation and perhaps a signaling point. The view supports the first suggested use and the absence of the evidence of fire on wind-swept bedrock hardly denies the second assumption.

Collection Summary

Surface: North Creek Corrugated, 18; biface flake (C), 1; unidentified flakes (C), 6. Room 1 Floor Contact: North Creek Corrugated, 2.

## 42Ws263

### Introduction

This multicomponent site might just as well have been recorded as two or even three sites. It has, instead, been treated as a single site with three distinct areas (Fig. 27). Area 1 contains an Anasazi cist; Area 2 also resulted from Anasazi activity as seen in an exceptionally small pithouse and two hearths; Area 3, southeast of Area 2 but adjacent to it, contained four Paiute hearth areas represented in dispersed smears of charcoal and ash.

The site lay near the edge of the upper terrace some 75 m. west of Quail Creek at an elevation of 2870 ft. (Figs. 2,3). The vegetation of the site area was dominated by creosote, bursage, prickly pear cactus, snakeweed, hilaria grass, cheatgrass, blackbrush, indigo bush, range ratany, and Mormon tea.

All of the nine trenches excavated at this site revealed three underlying natural strata. The lowest, Stratum 1, was a culturally sterile gravel deposit with a tan, clay-impregnated sand filling the interstitial spaces between the gravel and small boulders. Stratum 2 was a moderately compacted, light brown sand of considerable clay content and sparse, pea-sized gravel. Stratum 2 was found above Stratum 1 only in Areas 2 and 3 where it ranged from 10 to 35 cm. thick. Stratum 2 was properly a sterile level although it did contain sparse charcoal flecks that seemed to have worked down from Stratum 3 in areas where cultural activity had been most intense. Stratum 3 was a thin, loose, surface deposit of light brown, clay-impregnated sand with pea-sized gravel. It differed from Stratum 2 only in being less compact. Stratum 3 was 30 cm. thick in area A where Stratum 2 was missing, but was only 10 cm. thick in Areas 2 and 3 where Stratum 2 was present.

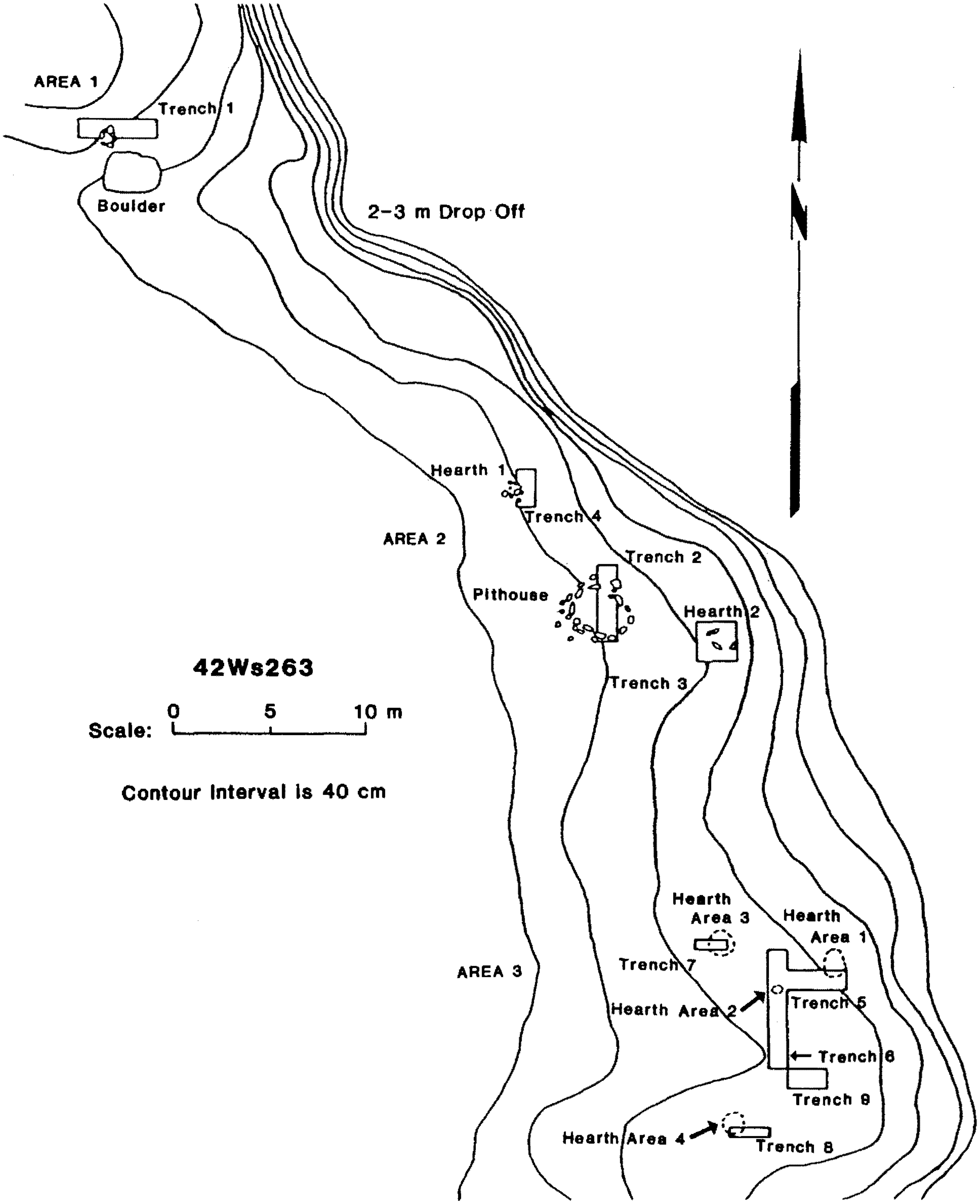



Figure 27. Site plan map, 42Ws263.

Area 1.

The only feature of Area 1 was a slab-lined cist which had been placed next to a Shinarump boulder which rested on the north side of a shallow drainage.

Cist. This feature (Fig. 28) was constructed by digging a pit 30 cm. deep into the top of Stratum 3. The sides of the pit were lined with sandstone slabs and flat-sided boulders. About 5 cm. of Stratum 3-type fill was placed in the bottom and then sandstone slabs of various sizes were used to cover the bottom. The floor slabs were chinked with small sandstone fragments and then covered with tan clay from 5 to 8 cm. thick. The depth to the floor was 25 cm. and the floor area ran 0.81 m. northeast to southwest and 0.55 m. at right angles.

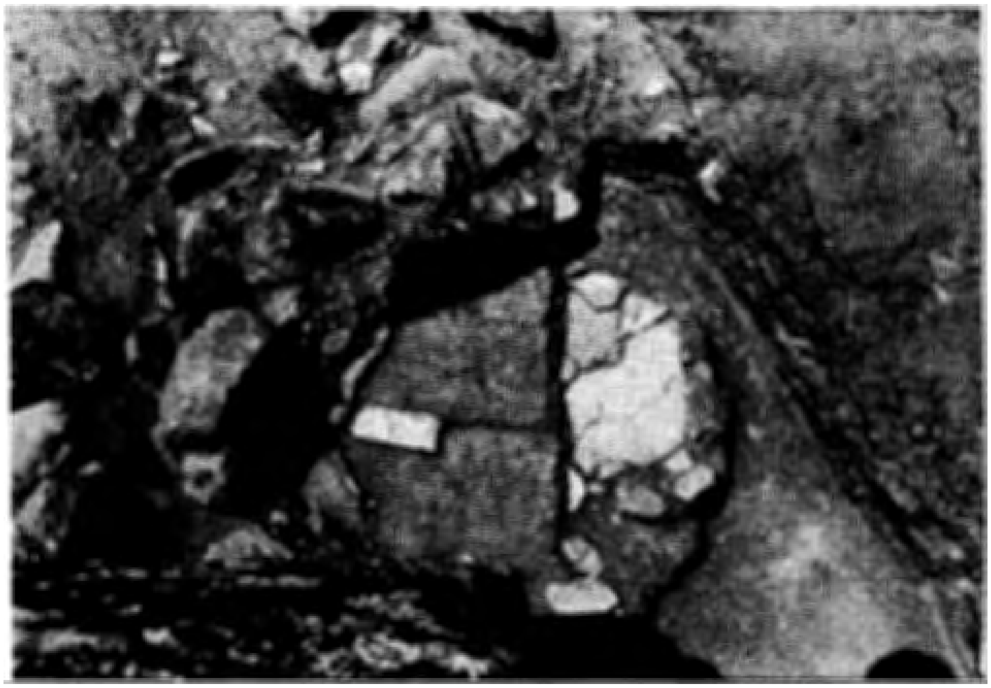


Figure 28. Cist showing slab floor at right, clay floor at left, and Fill 1 at upper left. Area 1, 42Ws263.

A deposit of clay-filled sand 5 cm. thick was termed Fill 1. Although its upper surface was smooth, it could not be determined whether or not it was an aeolian product or had been use-compacted. The general compaction of the fill was so poor the latter seems unlikely. No roof daub appeared in the fill and it is unlikely that the feature had stone walls. The stones outside the slab walls appeared to have been too rounded to have been used as masonry. As is so often the case, common sense insists that this type of cist would be useless without a superstructure, but the feature gave no indication as to what it was. Cist 1 accumulated 15 cm. of Fill 2 after abandonment, the material being the same as the surface Stratum 3.

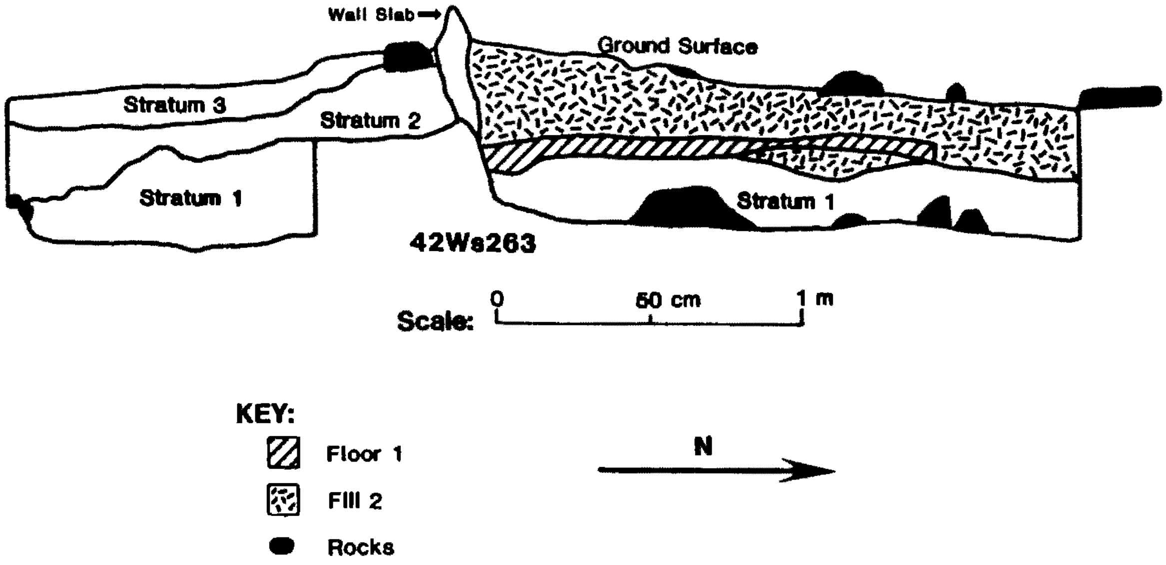



Figure 29. Profile of the Area 2 pithouse, 42Ws263

Figure 30. View of Area 2 pithouse with lower slab layer on the right and upper slab layer on the left. 42Ws263

The limited inventory of cultural materials (Table 12) shows an Anasazi affiliation but its temporal position can be calculated only to the point of saying sometime between A.D. 900 and 1150. The grinding implements are common to this type of feature but the absence of core flake production evidence is not typical of the site type within the project area.

Area 2.

The second trench was located to investigate a circular pile of rubble made up of small boulders with sandstone slab fragments lying in the center. Excavation produced a very small pithouse (Figs. 29,30) of a type well-known in the area.

Pithouses. The building was begun by digging a pit to depths ranging from 40 to 55 cm., or through Stratum 2 and slightly into Stratum 1. The walls of the pit were then ringed with flat-sided boulders to produce a fairly even inner circumference. The lower ends of these stones had been set at quite variable depths. The bottom of the pit was then leveled by filling a small hollow with tan, clay-laced sand. A layer of similar, but more compact material was then spread over the entire bottom of the pit to create Floor 1 which proved to be from 7 to 9 cm. thick.

Evidence of a superstructure was limited to six distinctive clay-lined depressions. Three appeared near the center of the floor while the other three were along the northwestern edge of the floor. The depressions ranged from 4 to 6 cm. in diameter and all had clay rims. None gave evidence of being a post mold and none were more than 2 cm. deep. Similar depressions were found in a non-structural context at 42Ws248. It is possible they may be of natural origin although the source remains unidentified. No clay roof-fall or evidence of masonry walls were found to indicate that a substantial superstructure was ever present. A more ephemeral brush canopy may have served well enough.

Fill 1, a layer of fine sand 1 cm. thick overlay Floor 1. The even deposition of the sand extended to the parts of the floor which sloped up to meet the walls. The sand seemed, in other words, to have been deliberately layed. Pollen and flotation samples were taken from the Fill 1 sand.

Soon after the sand of Fill 1 had been deposited, a number of thin sandstone slabs 2 to 4 cm. thick were placed over it (Fig. 30). Although a few of the slabs had been slightly shaped, their random and sometimes overlapping distribution argued against a structural purpose. The slab layer was completely covered by Fill 2, a tan sand of fair clay content. No use surface could be identified above the slabs and, since Fill 2 was indistinguishable from Stratum 1, it could not be determined whether the material was of natural origin or had resulted from human activity. Evidence of continued use was evident, however, in the limited collection of cultural material found in Fill 2 (Table 12).

The remainder of the pithouse depression was filled with another layer of sandstone slabs (Fig. 30). Some of these upper slabs had also been slightly shaped and the spaces between them contained Fill 2 material. The upper slab

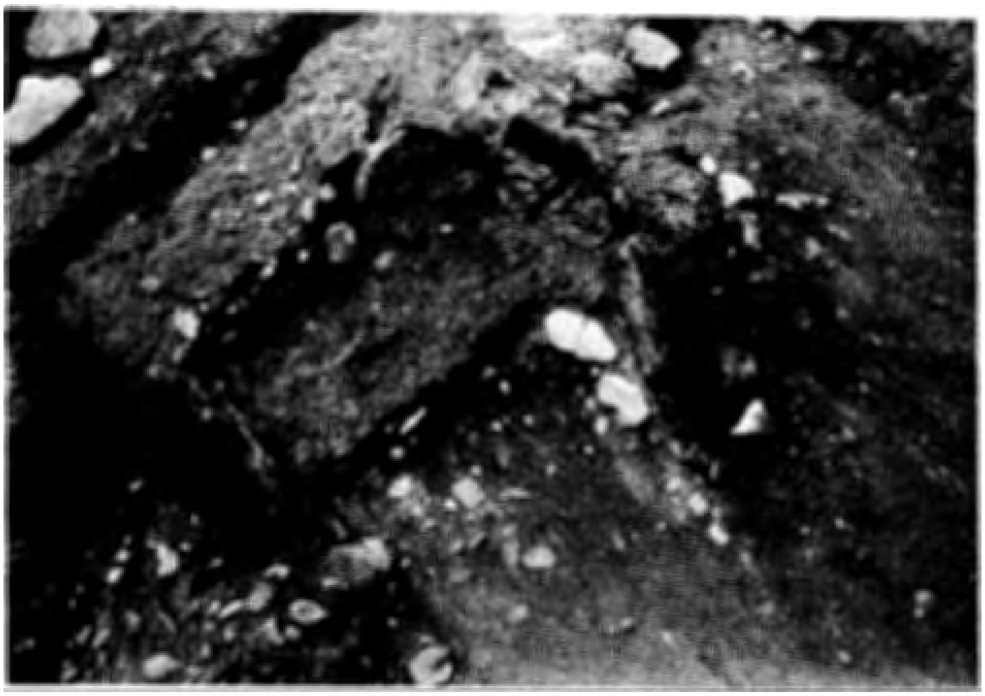


Figure 31. View of Hearth 2, Area 2, 42Ws263. Clay floor cut away to expose Stratum 1

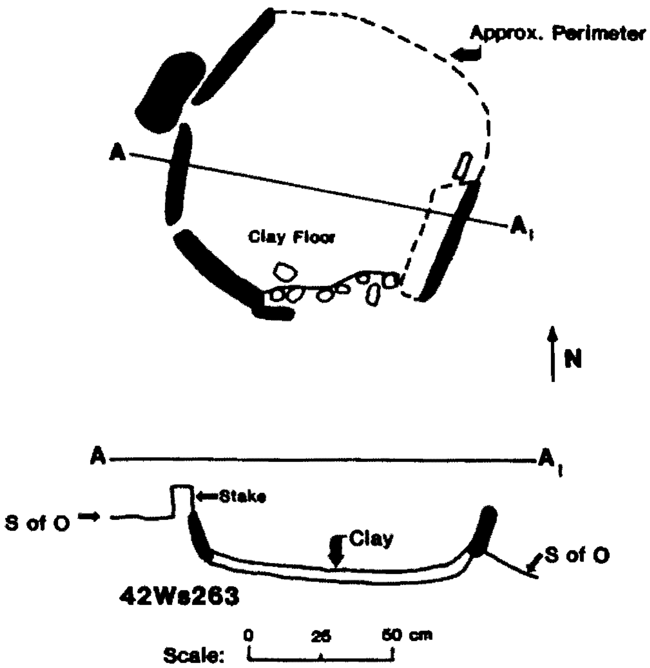



Figure 32. Plan and cross section of Hearth 2, Area 2, 42Ws263.

layer must also have been the result of cultural activity but the Fill 2 in which the slabs were embedded appears to have been of natural origin. Two North Creek Gray sherds were recovered from the upper slabs.

Hearth 1. In addition to the pithouse, Area 1 yielded two outdoor slab-lined hearths. Hearth 1 (Figs. 27,33) lay 7 m. northwest of the pithouse. It had been made by first digging a pit from 10 to 15 cm. deep. The sides were then lined with sandstone slabs and flat-sided basalt boulders to form a roughly circular hearth with an internal diameter of 0.45 m. The bottom of the hearth was the exposed Stratum 1.

A thin layer of sandy ash and charcoal 2 cm. thick lay on top of Stratum 1. A large, fire-blackened slab (Fig. 33) lay directly above this layer while, above the slab, was layer of sandy ash and charcoal 5 cm. thick. This ash layer had been capped by a few sandstone slabs. Pollen and flotation samples were taken from the fill between the two slab layers but the area produced no charcoal large enough to date. Above the thin slabs lay aeolian sand some 2 cm. thick which contained sparse flecks of charcoal.

The small sandstone slabs appear to have sealed the ash and charcoal layer as had been observed in the case of roasting pits in the project area. Unlike the roasting pits, however, Hearth 1 contained only very small charcoal flecks and is quite shallow. No cultural material was found within the hearth or close to it.

Hearth 2. This proved to be a slab-lined feature near the edge of the terrace 7 m. east of the pithouse (Figs. 27,31,32). The pit had been dug through Stratum 3 directly into Stratum 1, since Stratum 2 was missing in this area. Erosion appeared to have obliterated the surface of origin which was probably fairly high in Stratum 3. The sides of the hearth were lined with unshaped slaps,some of which did not reach the bottom of the pit. Prepared, reddish-white clay had been spread over Stratum 1 material and up the sides to meet the slabs. It is estimated that the floor of the hearth was originally some 20 cm. deep, while it appeared to have been 90 cm. in diameter. This is a bit uncertain since erosion had removed the downhill slabs on the southern part of the clay floor (Fig. 32). No evidence of fire could be detected on the clay floor or the surrounding walls. Although it may not have been used, it is still considered a hearth because of the lack of floor slabs. Pollen and flotation samples were taken from the fill immediately above the clay floor.

A surface collection made in Area 2 produced seven North Creek Gray sherds and seven Paiute Plain sherds, a ground sandstone fragment, a quartzite chopper, and a quartzite core. The Paiute sherds probably relate to Area 3 just to the southwest.

Area 3.

This locus abutted Area 2 (Fig. 27) and appeared to reflect Southern Paiute use. Four ash concentrations were identified as Hearths 1 through 4.

Figure 33. Hearth 1, Area 3, 42Ws263. Large, burned slab exposed in hearth bottom.

TABLE 12

COLLECTION SUMMARY, 42WS263

| | |
|---|---|
| Surface. | |
| North Creek Gray | 9 |
| Paiute Plain | 7 |
| D - cobble mano | 1 |
| S - ground stone frag. | 1 |
| SS- edge pounder | 1 |
| Q - edge pounder | 1 |
| Q - edge grinders | 4 |
| Q - hammerstones | 2 |
| Q - cores | 3 |
| C - core shatter flakes (2 cortex) | 2 |
| Q - core flakes (2 cortex) | 2 |
| Q - core shatter flakes (2 cortex) | 3 |
| Q - u/i flakes (2 cortex) | 2 |
| Pithouse Floor Contact and Fill 1. | |
| North Creek Gray | 6 |
| C - core flake | 1 |
| Pithouse Fill 2. | |
| North Creek Gray | 4 |
| C - utilized flake (cortex) | 1 |
| C - core flake | 1 |
| Hearth 2 Floor Contact. | |
| North Creek Gray | 1 |
| Hearth 2 Fill. | |
| S - grinding slab frag. | 1 |
| Cist 1 Fill 2 0-20 cm. | |
| North Creek Gray | 11 |
| S - grinding slab frag. | 1 |
| Trench 1 Stratum 3. | |
| North Creek Gray | 1 |

Hearth 1. This feature was an oval concentration of sandy ash, charcoal, and numerous heat-altered cobbles. It measured 1.5 m. in diameter at the contemporary surface. The ash and charcoal deposit proved to be 10 cm. thick and the cobbles lay on top of this material. A pollen and a flotation sample were taken from the lower part of the ash. The assay on the C-14 sample termed it "modern" (Beta 8030). A broken piece of ground limestone was the only cultural item recovered.

Hearth 2. Also visible on the surface, this hearth measured 0.8 m. east to west and 0.5 m. north to south. The feature proved to be a concentration of sandy ash and charcoal 4 cm. thick that contained three fire-blackened cobbles. Pollen and flotation samples were taken while cultural evidence was limited to two sherds of Paiute Plain.

Hearth 3. This was a concentration of ash and charcoal visible on the surface. It measured 1.6 m. east to west and 1.3 m. north to south and proved to have a depth of 15 cm. Three Paiute Plain sherds were recovered from the fill.

Hearth 4. Again, this feature was visible on the surface as a concentration of ash, charcoal, and reddened sand. With a maximum depth of 10 cm., the hearth measured 5 m. east to west and 3 m. north to south. Pollen and flotation samples were taken but no cultural materials were recovered.

Area 3 is thought to have been a Southern Paiute limited activity site. One hearth produced a C-14 date of no more than 100 years old. Two hearths produced Paiute ceramics. Since all four hearths were visible on the surface, it is likely that all were used in the historic period. These hearths were distinctive because of their large area and shallow fill. From Hearth 1 a number of heat-altered cobbles suggest stone boiling although this is not beyond question.

## 42Ws264

This site focused on a small, north-facing rockshelter found under a Shinarump boulder halfway up the colluvial slope below the western escarpment. The site lay 250 m. west of Quail Creek (Fig. 2) at an elevation of 3080 ft. The surrounding vegetation included creosote bush, hilaria grass, Mormon tea, winterfat, and Indian ricegrass.

The overhang measured 4 m. wide, 1 m. high and 2 m. deep. A 1 by 2 m. trench was located so as to investigate the fill under the overhang as well as that outside the dripline. The upper deposit in the trench ranged from 20 cm. thick at the mouth of the overhang to 50 cm. at its rear. This consisted of loose sand mixed with pack rat debris.

Below the loose sand was a culturally sterile layer of yellow-red clay and decomposing mudstone. An edge grinder and a complete basin metate were found on the surface while three large pieces of cottonwood bark were recovered from the upper stratum at a depth of 35 cm. One of the pieces was partially burned and all three were too large, about 15 by 40 cm. each, to have been deposited by rodents. The bark showed no evidence of use.

A second small trench was excavated along the west side of the boulder to a depth of 30 cm. through more loose, undifferentiated sand. No cultural evidence was found.

## 42Ws265

This locus was thought to be a site when burned sandstone was discovered next to the east side of a boulder that lay at the foot of the colluvial slope created by the western escarpment some 200 m. west of Quail Creek (Fig. 2). The site was found to be at an elevation of 3040 ft. and characteristically dominated by creosote bush, bursage, hilaria grass, and prickly pear cactus. The boulder had a hole, measuring 1 by 1 m. at the level of the ground surface. It was immediately outside this hole that the scatter of burned stone, 50 cm. in diameter, was noted.

A test trench was run along the east side of the boulder to cross the burned stone. Excavation demonstrated that the stone was confined to the surface and that no charcoal remained. Subsurface fill was loose, undifferentiate sand . Two white ceramic four-hole buttons were found among the sandstone fragments and seemingly attest to the modern origin of the site.

## 42Ws266

This limited activity site was found at the edge of a sandy bench overlooking the west side of Cottonwood Creek some 400 m. above its confluence with Quail Creek (Fig. 3). With an elevation of 3000 ft, the site was 30 m. in diameter and consisted of two ash stains, ground stone, lithics and Paiute ceramics (Table 13). The dominant vegetation included creosote bush, sandsage, range ratany, Mormon tea, wolfberry, sand dropseed, prickly pear, and fluffgrass. Two, 1 by 2 m. trenches were excavated to examine the site.

TABLE 13

COLLECTION SUMMARY, 42WS266

| | |
|---|---|
| **Surface.** | |
| Paiute Plain | 2 |
| Paiute Marked | 5 |
| S - grinding slab frags. | 2 |
| C - u/i flake | 1 |
| **Trench 1 0-5 cm.** | |
| Paiute Plain | 2 |
| Q - edge grinder | 1 |
| C - core shatter flake | 1 |
| **Trench 2 0-15 cm.** | |
| Paiute Plain | 8 |
| C - point preform | 1 |
| C - u/i flakes | 2 |
| O - core flakes(cortex) | 2 |
| O - u/i flakes (1 cortex) | 2 |
| L - heat-cracked rock | 1 |

Trench 1 revealed a thin, surface layer of ashy sand 5 cm. thick. Beneath this the trench profile showed only sterile sand. The limited collection of cultural material (Table 13) came only from the ashy layer.

Trench 2 was designed to sample the more dense contraction of ash located at the center of the site. The trench profile exposed an upper ashy sand deposit ranging up to 10 to 17 cm. in depth.

In the southwest corner of the trench, a basin-shaped area was designated as Hearth 1. The feature was definable by a slightly higher concentration of charcoal. Hearth 1 was exposed from the surface to a depth of 13 cm., penetrating through the ashy sand. The trench appeared to have removed about one quarter of the hearth and, on this assumption, it was calculated that the hearth was about 70 cm. in diameter. Below the ashy material lay sterile, tan sand with a high gravel content. In its turn, this material was deposited on a boulder and gravel bed found at a depth of 40 cm.

The excavation and the inventory of cultural materials (Table 13) suggests that the site was used at least twice by the Southern Piaute. The edge grinder and grinding slab fragments are minimal evidence of plant processing activity. Knapping activity appears to have also been minimal but it did generate a few items characteristic of core flake production as well as a point preform.

## 42Ws267

### Introduction

This limited activity site was located at the confluence of a small arroyo and Cottonwood Creek about 300 m. above the point where Cottonwood and Quail Creeks join (Fig. 3). The site was located on a large sand dune of combined aeolian and alluvial origin which formed the floodplain at the mouth of the tributary arroyo. The site elevation was 3010 ft. and the dominant vegetation included sand sage, wolfberry, creosote bush, juniper, cottonwood, prickly pear, sand dropseed, four-wing saltbush, desert willow, dove-weed, and grasses. The juniper at the site were a part of a small, sparse patch found along the west slope of the escarpment which forms the southern half of the north gap. Measuring 50 m. in diameter, the site was characterized by four discreet ash and charcoal stains, two of which were located in the ruts of a vehicle track. Occasional passing vehicles had caused an aeolian deflation some 50 cm. deep in both cases. A single 1 by 2 m. trench was excavated at each of the four charcoal stains.

### Excavations and Site Features

Trench 1. This was located in an attempt to bisect a small area of ashy sand containing charcoal flecks. This Hearth 1 proved to be limited to the upper 5 cm. of tan sand fill. Below the upper, cultural stratum, the trench exposed sand with very sparse, tiny charcoal flecks which continued to the 40 cm. bottom of the trench. Most cultural material was recovered from the upper stratum although a few items were found to a depth of 30 cm. (Table 14). This locus appeared to have been mechanically disturbed and severely deflated.

Trench 2. This unit was excavated to a depth of 50 cm. in order to investigate a concentration of ash and charcoal designated Hearth 2. Cultural indications ended at a depth of 15 cm. with the lower 10 cm. of this stratum consisting of dense charcoal from which a radiocarbon and a flotation sample were taken. The C-14 sample assayed as "modern" (Beta 8031). While this feature may have lost an undetermined portion of its upper areas due to deflation, the balance exposed in the trench profile was clearly intact and represented an undisturbed hearth. No cultural materials were recovered. Because of the absence of cultural diagnostics and the "modern" carbon date, the hearth could have been either historic Paiute or Euro-American in origin.

TABLE 14

COLLECTION SUMMARY, 42WS267

| | |
|---|---|
| Surface. | |
| Paiute Plain | 1 |
| Paiute Marked | 1 |
| Q - edge grinder | 1 |
| C - biface blank | 1 |
| C - core | 1 |
| LL- cores | 3 |
| O - biface flake | 1 |
| C - core shatter flake (cortex) | 1 |
| C - biface flakes | 2 |
| C - core flakes | 6 |
| C - core shatter flakes (2 cortex) | 1 |
| C - u/i flakes (2 cortex) | 8 |
| Trench 1 0-30 cm. | |
| Q - edge grinder | 1 |
| Trench 3 0-5 cm. | |
| LL- scraper (cortex) | 1 |
| C - core flake | 1 |
| C - core shatter flakes | 3 |
| Trench 4 0-7 cm. | |
| O - u/i flake | 1 |

Trench 3. Excavation here bisected Hearth 3, a small concentration of charcoal and ash. The concentration was confined to the upper 5 cm. of fill, below which was sterile sand. Hearth 3 also lay within the ruts of the vehicle track and appears to have been severely deflated. A limited collection of cultural debris (Table 14) was obtained, however.

Trench 4. This final unit was excavated to examine Hearth 4, a limited concentration of ash, charcoal, and fire-cracked sandstone and quartzite from which carbon, flotation and pollen samples were collected. This layer proved to be 7 cm. deep and below it ran a stratum 10 cm. thick composed of hard-packed but slightly ashy sand. From a depth of 17 cm. to the bottom of the trench at 130 cm., the fill consisted of a loose, reddish-tan sand which was sterile except for a few rodent holes. Hearth 4 was located in the ruts of the vehicle track but, although somewhat disarranged, it was basically intact. It proved impossible to determine whether or not the heat-altered stone had once formed the hearth lining.

## Discussion

The entire site yielded only two Paiute sherds as culturally and temporally diagnostic items and they were not associated with any of the hearths. The two edge grinders were both made of locally available quartzite, while the single scraper was made of locally abundant lithographic limestone. These were the only pieces considered characteristic of processing activity. Biface manufacture was done at the site as seen in the biface blank and biface flakes. All were either of local chert or of imported obsidian. Core flake production accounts for most of the lithic material, however.

The four hearths at this site were probably all of Paiute origin, including Hearth 2 which produced the "modern" date. The confidence level of this conclusion is, however, lowered by the limited number of culturally diagnostic articles (Table 14) and their inconclusive association with any cultural features.

# 42Ws268

## Introduction

This Western Anasazi habitation and storage complex was located on a point overlooking the confluence of Quail and Cottonwood Creeks which unite just above the North Gap (Fig. 2). Measuring 50 m. north to south and 200 m. east to west, the site elevation was 3020 ft. while it lay 75 m. south of Quail Creek. Dominant vegetation included creosote bush, snakeweed, sand sage, Mormon tea, fluffgrass, sand dropseed, cheatgrass, burro-brush, and mesquite. Juniper were present on the west slope of the anticline just across Cottonwood Creek. Although the survey recorded only a single cist, excavation revealed a three room storage structure, a pithouse, and a slab-lined roasting pit.

## Excavation and Stratigraphy

The exploration of the site required eight test trenches. Three of these were dug by the crew with shovels and smaller tools while five were dug with a backhoe to search for features well below the modern surface (Fig. 34). Trenches 1, 2, and 3 were dug by the crew to expose the storage cists, to determine the stratigraphy and in an attempt to find a pithouse which it was thought should be close at hand. Trenches 4 through 8 were dug with a backhoe in the search for the pithouse and to examine the site area "behind" the storage units. The pithouse and roasting pit were conveniently sectioned by Trench 4.

Trench 1. Measuring 1 by 16 m. and run north to south, this trench was subdivided into eight units, each 2 m. long and designated A through H. The southern portion of Trench 1 revealed the stratigraphy of the site. It was found that three strata were present, two of which were culturally sterile.

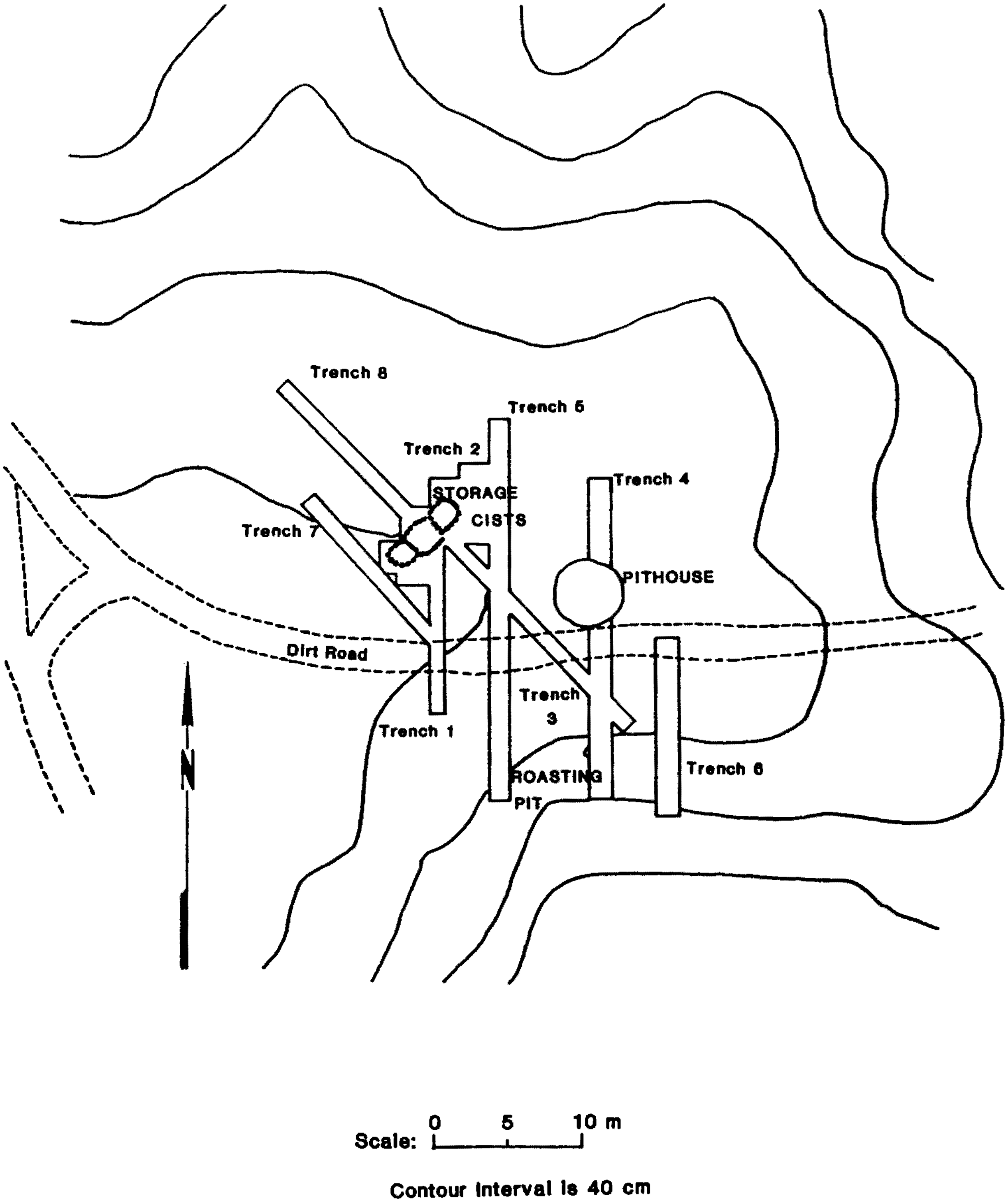



Figure 34. Plan and excavation map, 42Ws268.

The lowest level, Stratum 1, consisted of a hard, reddish, sandy clay with a substantial inclusion of caliche. Stratum 2 was similar to Stratum 1 except that the caliche concentration was greatly reduced. The interface between the two strata was quite easily defined. Stratum 3, the highest deposit, was a loose, light red sand of significant clay content. No cultural material was recovered from Strata 1 or 2. Stratum 3 was the cultural level and it proved to be thickest near the storage cists where it attained a depth of 30 cm. This deposit decreased to 15 cm. at the south end of Trench 1.

Trench 2. This measured 1 by 4 m. and was contiguous with the east side of the north end of Trench 1. It was excavated in order to expose the northern end of the storage cists and discussion is included with Cist 3, below.

Trench 3. One meter wide and 18 m. long, Trench 3 was excavated in an attempt to locate the pithouse which the crew felt certain must be in the area. The trench was subdivided into 2 m. units, but only units A. C, D, F, and I were tested. As in the case of Trench 1, Trench 3 showed that Stratum 3 decreased in thickness with distance from the storage cist area. The cultural layer ranged from 30 to 60 cm. deep in the vicinity of the cists, but at the south end of the trench the depth fell to 10 cm., as it did in Trench 1.

Artifacts were recovered only in Stratum 3 (Table 15) and the collection indicates that there was considerable activity in the area between the storage features and the pithouse. The collections from all parts of the trench were essentially alike, no specialized activity areas could be identified.

Trench 4. A backhoe trench 22 m. long and 1.5 m. wide with a north to south alignment exposed both a roasting pit and a pithouse with a hearth. Strata 1 and 2 were also identified. The features are discussed under later headings.

Trench 5. This backhoe excavation ran north to south and was 26 m. long and 1.5 m. wide. Trench 6 was similarly aligned while measuring 12 by 1.5 m. Trench 7 explored "behind" the cists and was 12 m. long by 1.5 m. wide and attained a depth of 85 cm. Trench 8 was parallel to Trench 7. Except for Trench 4, none of the backhoe trenches found cultural features and all produced the same stratigraphy.

Storage Cists.

Three contiguous storage cists (Fig. 35) were found in a linear arrangement (Fig. 35) in which they aligned 35° east of north. Each of the cists had been built with large sandstone subsurface wall slabs while the smaller slabs that formed the floor were covered with a prepared clay layer. Low masonry walls rose from the apparent surface of origin upon which they rested to surround the slabs of the cist. While it was not in evidence, the availability of clay for other purposes argues these were set in some form of an adobe mortar, since the storage would have to be waterproof. The clay-covered roofs were doubtless supported by crossbeams.

Cist 1. This unit (Figs. 35-37) measured 1.91 by 1.47 m. at the floor and 2.22 by 1.77 m. at the top of the outward slanting slabs. The cist was begun by digging a pit into Stratum 1 to a depth of from 90 to 95 cm. (Fig. 36). The pit was then partially refilled with a gray-tan sand called Fill 1.

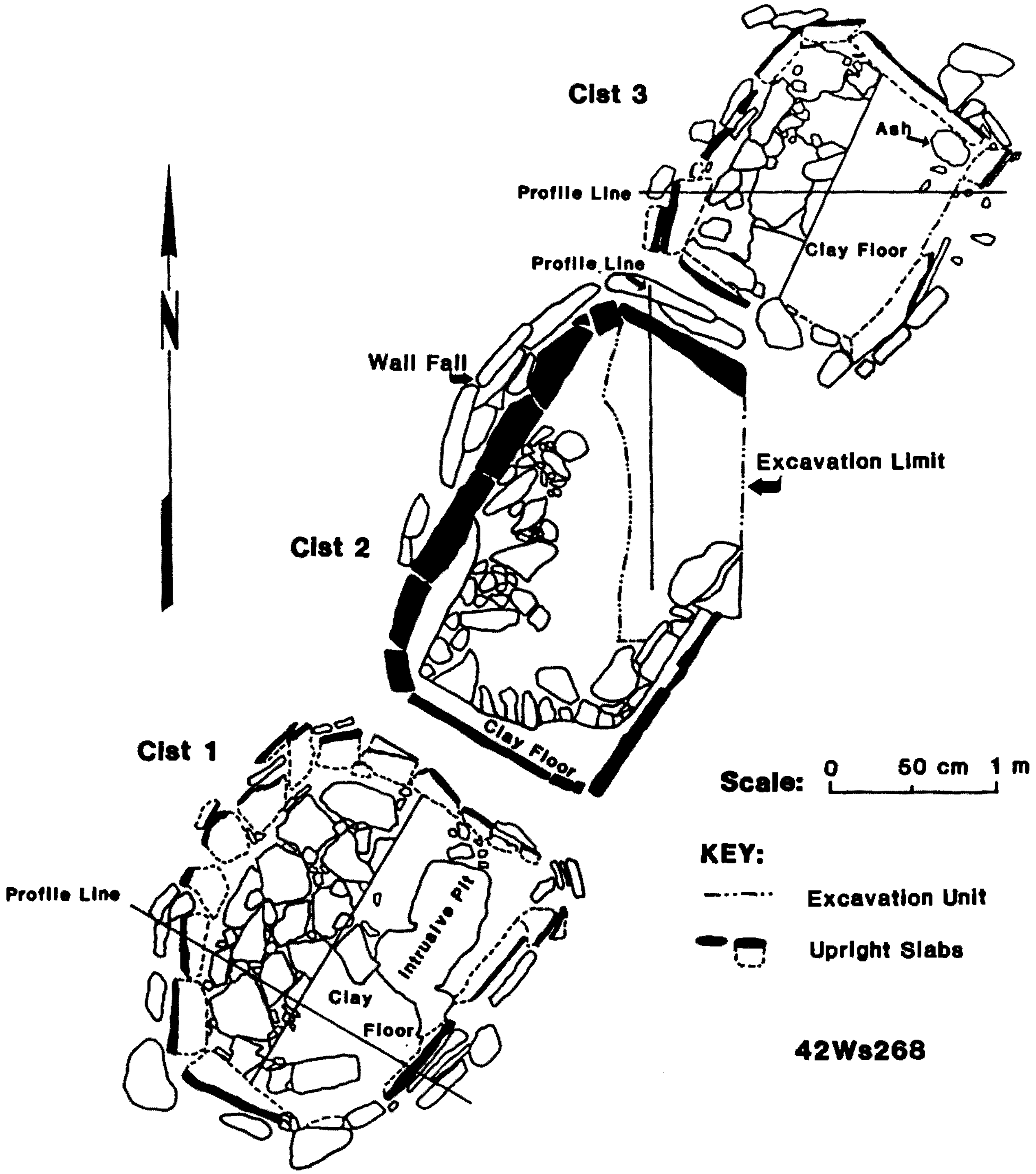



Figure 35. Cist alignment, 42Ws268.

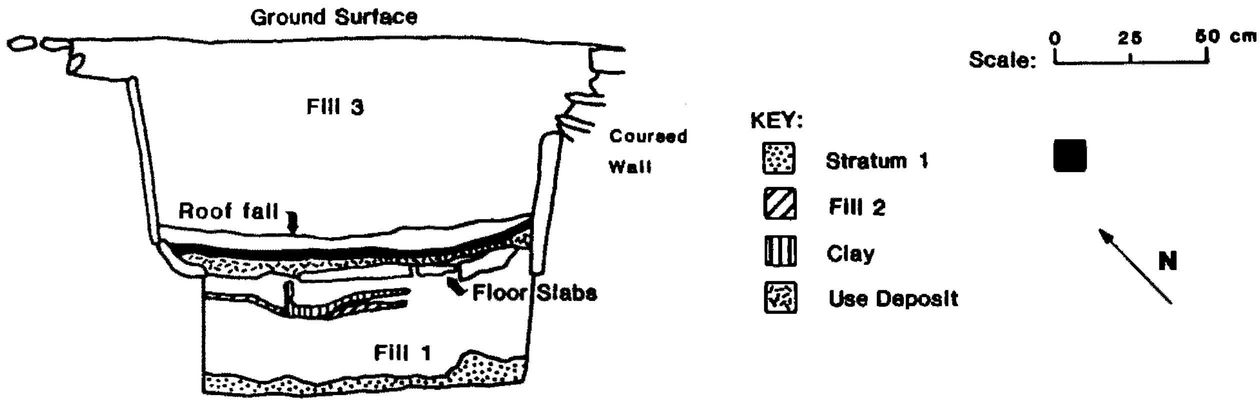



Figure 36. Profile of Cist 1, 42Ws268.

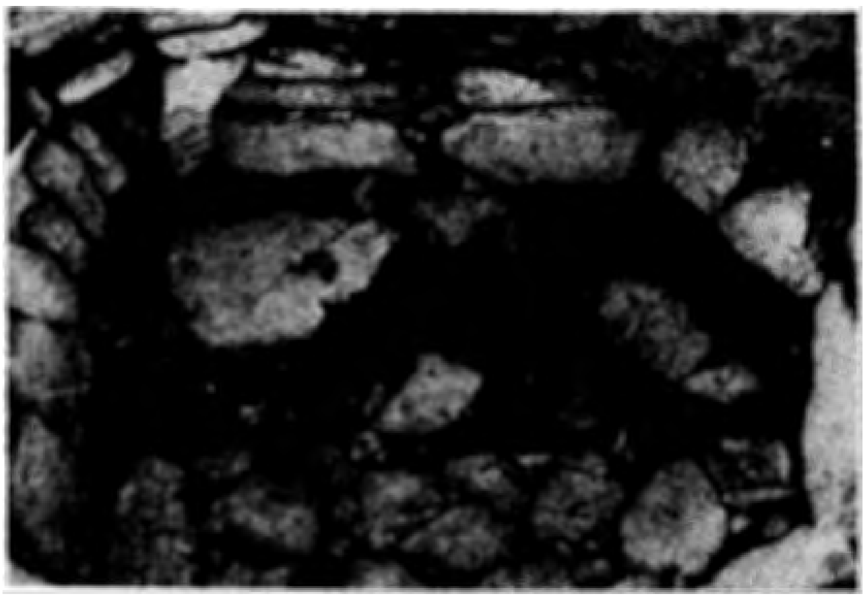


Figure 37. View of Cist 1 with clay floor removed exposing floor slabs (foreground), 42Ws268.

Some period of time seems to have then elapsed because a series of three natural clay laminae called Fill 2 were deposited in a small hollow in Fill 1. A thin clay 'floor' was then laid in the hollow on top of the natural clay. The so-called floor was tan and ranged from 0.8 to 1.1 cm. thick. The clay followed the contour of the hollow but turned up sharply around the edges. Although definitely of cultural origin, no function could be assigned to the basin. The horizonal extent of the feature remains uncertain since it pinched out in the profile.

Additional Fill 1 sand was later deposited in the pit, the wall slabs were set and the floor slabs laid on Fill 1. The floor (Fig. 37) consisted of sandstone slabs laid to form a concave surface. The slabs were chinked with small pieces of sandstone and cobble fragments. The slabs were coated with a layer of sandy clay from 1 to 3 cm. thick. They clay lapped up at the base of the wall slabs to round off the point of intersection between the walls and the floor. The average depth to the surface of the clay floor was 55 cm. A thin layer of pinkish sand and several North Creek Gray sherds were found on the surface of the floor.

The clay floor did not extend over the entire cist. In the eastern corner, a large slab remained exposed with the floor clay laid flush with its top. The clay floor was also missing just south of this slab. This area was underlain by Fill 1 (Fig. 36) that was considerably softer than the Fill 1 in other parts of the structure. It was riddled with rodent holes and yielded two North Creek Gray sherds. A pollen and a flotation sample were taken from the fill below the slab. It is possible that this portion of the floor had been torn up and replaced, but no evidence of patching in the surrounding clay could be detected.

The evidence is purely circumstantial, but it is assumed that the coursed masonry was set, if not in mortar, then in mud made from the material removed in the initial excavation and that it was built only after the upright slabs were in place and the floor was laid. In a few areas the lower portion of the wall remained intact. These tended to be the areas where the slabs were the shortest. Evidence indicates that the masonry was a single stone wide and that it was plastered with gray clay. The wall footing was invariably placed just outside the vertical slabs, generally at the same level as the upper edge of each slab.

The original height of the masonry walls was estimated by collecting and stacking all of the wall-fall from the entire cist area. Because of the narrow space between the cists, it was assumed that the cists shared walls between them. It was also assumed that the walls were a single stone thick and that all three cists were of similar height. Based on these assumptions, a height of 0.27 m. was calculated with the walls being 0.15 m. thick. This, of course, assumes that all stone was collected and that none had been carried off for other uses. It also fails to take into account the possible use of mortar.

Direct evidence of the roof form was not found but it appears likely that the basic frame was made of juniper poles laid across the walls. Lighter branches would have been laid over the poles at right angles and, ultimately a layer of brush was laid to receive the clay. This construction method is known for nearby areas of the southwest and may well have been used here. The evidence for the clay was found in a reddish clay layer, 10 cm. thick, that lay above the floor of the cist (Fig. 36).

During its use, the cist accumulated a sandy layer of brown clay between 2 and 4 cm. thick which contained a few scattered charcoal flakes. This layer did not cover the exposed slab or the gap on the floor. The layer overlapped the exposed slabs and it was reasoned that only a slowly accumulating deposit would adhere to the clay floor while not clinging to the stone slabs or the floor gap. A total of 13 North Creek Gray sherds were found in floor contact, largely concentrated in the southern corner.

The reddish clay roof-fall noted above lay directly over the floor. Because there was little aeolian sand between the floor and the roof-fall, the cist roof either collapsed soon after abandonment, or the structure remained sealed until collapse. Above the roof-fall was an undifferentiated, compact, reddish and sandy clay called Fill 3 (Fig. 36) which extended to the modern surface and contained cultural debris including tabular stone from the walls. The lack of stone in the roof-fall clay indicated that the roof collapsed well before the walls. The significance of this is perhaps found in the fact that juniper deteriorates more rapidly than sandstone. The absence of a hatch cover may, but not necessarily indicate the lack of a roof entrance. Wall deterioration was too advanced to determine if a lateral entry was used.

Cist 2. This structure (Figs. 35,38-39) was contiguous with the northeast end of Cist 1. The floor dimensions were 2.40 m. by 1.43 m., while at the top of the slightly slanted lower wall slabs, the measurements were 2.59 m. by 1.61 m. The maximum depth to the floor was 70 cm. The subterranean portions of Cists 1 and 2 were constructed independently and thus the two features do not share common vertical wall slabs.

Prehistoric builders began the unit by digging a pit into Stratum 1. The pit was then partially refilled with a loose, clay-impregnated sand identified as Fill 1 (Fig. 38). As noted in Cist 1, as much as 50 cm. of fill was placed in the pit before the lower floor was laid. The unusual nature of the technique prompted excavations outside the cist in Trenches 3 and 8. As noted earlier, the bottom of Stratum 3 was much deeper along the east side of Cist 2, but even though Stratum 3 and Fill 1 have similar components, Fill 1 is more loosely packed.

Trench 8, which was run on the west side of Cist 2, failed to show unusual dipping in any of the strata. Fill 1 extended to a depth of 140 cm. while Stratum 3 outside the cist was only 60 cm. deep. These considerations appeared to indicate that there must have been a depression in Strata 1 and 2 which had filled with Stratum 3. This deeper area of Stratum 3 seems to have coincided roughly with the pit dug for Cist 2.

After the pit had been excavated and then partially refilled with Fill 1, the vertical wall slabs were set into the pit edges with a slight outward lean. The next step was to lay a sandy red clay floor directly on top of Fill 1. This so-called lower floor was about 1 cm. thick and had an irregular surface with a gap that may have been a horizontal rodent or root hole. A sporadic layer of fine aeolian sand lay upon the floor but no cultural material was encountered.

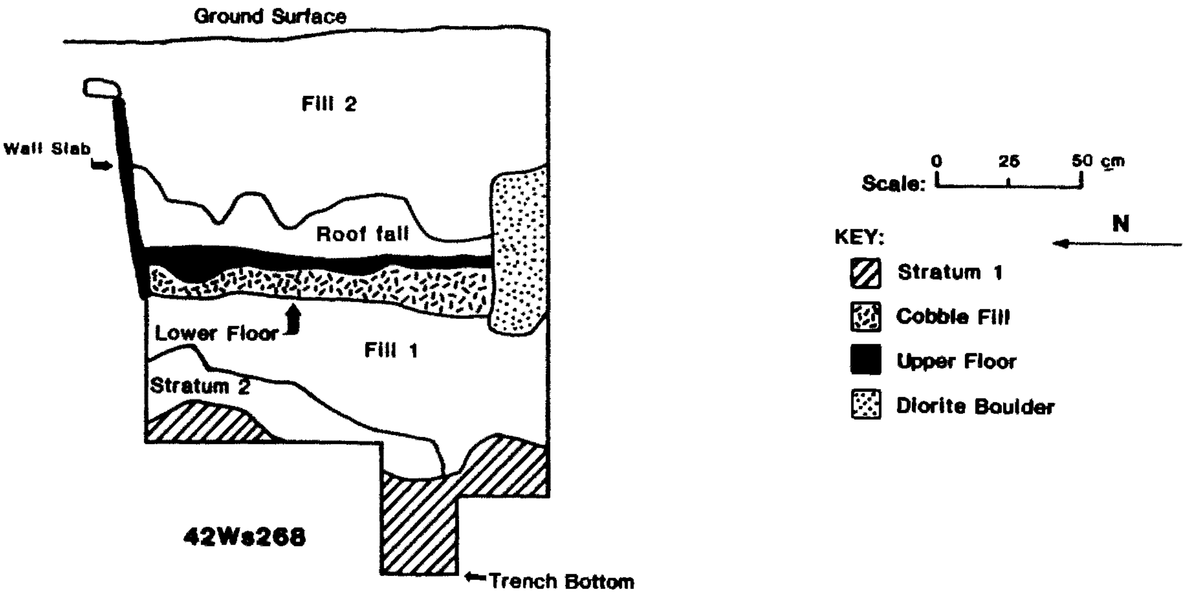



Figure 38. Profile of Cist 2, 42Ws268.

Figure 39. View of cleared Cist 2, 42Ws268. Floor clay intact at far end. Test pit into Stratum 1 at lower left.

The contact edges of the vertical wall slabs were filled with hard, red-tan clay and one section of the wall revealed a completely plastered surface. Further inspection showed that a thick plaster cover lay over a recessed slab set behind and overlapped by the slabs on each side. The recessed slab probably marks the beginning and end point of slab placement and the builders found it simpler to set one slab behind the other two than to peck it into a reduced size. The plaster was meant to produce an even interior surface.

Some time after the construction of the lower floor, a layer of stream cobbles and small sandstone slabs was laid on top of it (Fig. 38). The close spacing of the stone and the presence of chinking in the interspaces argue an intent to rodent-proof the cist. The cobbles were covered with a layer of red-tan clay which contained a few small pebbles. The clay did not cover all cobbles while at some places it was as much as 10 cm. thick.

The upper clay floor was covered over most, but not all of its area by a layer of fine sand that proved to be only a maximum of 0.2 cm. thick. Only a single flake was found on the upper clay floor but pollen and flotation samples were taken from floor contact materials. A radiocarbon sample was also collected from floor contact. The carbon, culturally deposited but not burned within the cist produced a date of 1110±70 years: A.D. 840 (Beta 8470).

The masonry wall surrounding the upper rim of the cist was seated just outside the vertical slabs and had been heavily plastered with light gray clay. Because some of the slabs were shorter than others, one section of the wall was embedded more deeply in the fill around the cist. This part of the wall was one stone wide and six courses in height. In the narrow space between the lower portions of Cists 1 and 2, the wall remained a single stone wide, thus indicating that the cists shared a common wall. None of the wall was sufficiently well preserved to determine construction sequence nor evidence of the means by which entry was obtained. As noted, the wall was estimated to be at least 27 cm. high. The surface of origin is inferred circumstantially as being the base of the surrounding wall although in one place, the wall may have gone below the original surface.

The roof of the cist was covered with clay which, after collapsing, was deposited on top of the upper clay floor (Fig. 38). The roof-fall consisted of hard packed, light red, sandy clay which contained small sandstone and granite pebbles. In profile the roof-fall exhibited a characteristic undulatory upper surface and, at its maximum, was 23 cm. thick. A substantial collection of cultural debris was recovered from the roof material (Table 15).

Above the roof-fall, Cist 2 contained a light red, clay-impregnated sand, identified as Fill 2, in which some wall slabs were found. No cultural material came from this layer.

Cist 3. Contiguous with the northeast end of Cist 2, interior floor measurements of this cist were 1.43 by 1.20 m. while at the top of the outward-slanting wall slabs, the measurements were 1.71 by 1.45 m. (Fig. 35). The cist attained a maximum depth of 37 cm. below the top of the wall slabs.

Figure 40. Cist 3, 42Ws268, with clay floor intact at left and removed at right to expose floor slabs. Dark area at lower left marks ash stain.

Construction was begun by excavating a pit through Stratum 3 into Stratum 2. As with the other two cists, the pit was partially refilled with loose sand, and termed Fill 1. The vertical wall slabs were then set in place, and a partially overlapping layer of sandstone slabs was placed on Fill 1. The gaps between the floor slabs were sealed by covering them with small slab fragments. Two North Creek Gray sherds and a piece of core shatter had been dropped on the slabs before the sandy clay floor was laid. The clay floor ranged from 0.5 to 4.0 cm. thick.

A masonry wall estimated to have been at least 27 cm. high surrounded the cist. Its few intact footings were set just outside of and level with the tops of the vertical wall slabs. Cists 2 and 3 apparently shared a common wall. Although no stone remained in place, the narrow space available and the similar situation between Cists 1 and 2 argue that this was the case. The roof material consisted of clay with a few charcoal flakes.

A thin layer of aeolian sand containing a few flakes of charcoal accumulated on the floor during the period of use. An ash lens, 20 cm. in diameter, was also deposited on the floor of the northeast corner of the cist. The lack of signs of heat on the clay and stone in the area indicated that the ash had been introduced and that no fire had been built within the cist.

Pollen and flotation samples were taken from both the surface of the floor and from the ash deposit. No cultural materials came from floor contact but a bowl fragment, a ground stone fragment and a large mammal long bone fragment were found in the ash deposit.

The collapse of the roof left a layer of hard-packed clay some 10 cm. thick atop the floor and the ash deposit. Immediately above the roof-fall in the center of the cist, an inverted basin metate was found. The remainder of the fill within the cist consisted of an undifferentiated, brown, sandy clay termed Fill 2. Actually, three substrata could be identified within Fill 2, the distinctions being based on the presence or absence of fallen masonry wall slabs. The first 10 cm. of Fill 2 above the roof-fall contained numerous slabs and rocks. Above this some 15 cm. of Fill 2 lacked stone of any kind. Finally, the upper 15 cm. contained sparsely distributed wall-fall and this was capped by a thin, gray clay wash.

The presence of fallen wall stone immediately above the roof material suggests a different sequence of collapse for Cist 3 than for the first two cists. Like Cists 1 and 2, the Cist 3 roof collapsed first but part of the upper wall fell very soon after the roof gave way. Then a period of time elapsed before more of the wall fell into the cist. The metate found on top of the roof-fall may have been lying on the roof at the time it collapsed although it could also have been placed in the cist after the roof fell.

The gray wash which covered Fill 2 in Cist 3 was also found on the surface surrounding all three cists, among the scattered wall slabs. No sign of this clay was found in the fill of the cists. This may suggest that the masonry walls were plastered only on their exterior surfaces because, had there been interior plaster, it would be expected that this clay should have appeared at least along the edges of each cist just above the roof material

When the area surrounding the storage cists was explored to obtain wall stone, numerous cultural materials were also collected. These are summarized in Table 15.

Pithouse

The western edge of the pithouse (Figs. 34,41) was located 8.4 m. southeast of the storage cists. Its builders began by digging through Stratum 2 into the top of Stratum 1 (Fig. 42). The bottom of the pit was estimated to have been from 40 to 45 cm. below a presumed surface of origin and it was partially leveled with sand and clay. An orange-brown clay was then spread over the entire floor at a thickness that varied from 2 to 3.5 cm. in the center but which thinned to 0.5 cm near the edges. The clay floor area was roughly circular, measuring 4.0 m. by 3.9 m. The clay floor also extended up the wall for as much as 10 cm., except along a small segment of the east wall where it reached 20 cm.

The pithouse had a bench (Fig. 42) although it proved difficult to define in most areas. A sufficient number of sections of the bench could be identified with assurance and it was thus possible to determine that it was not plastered and that it had been continuous around the entire room. The surface of the bench was 30 cm. above the pit floor which was at about the

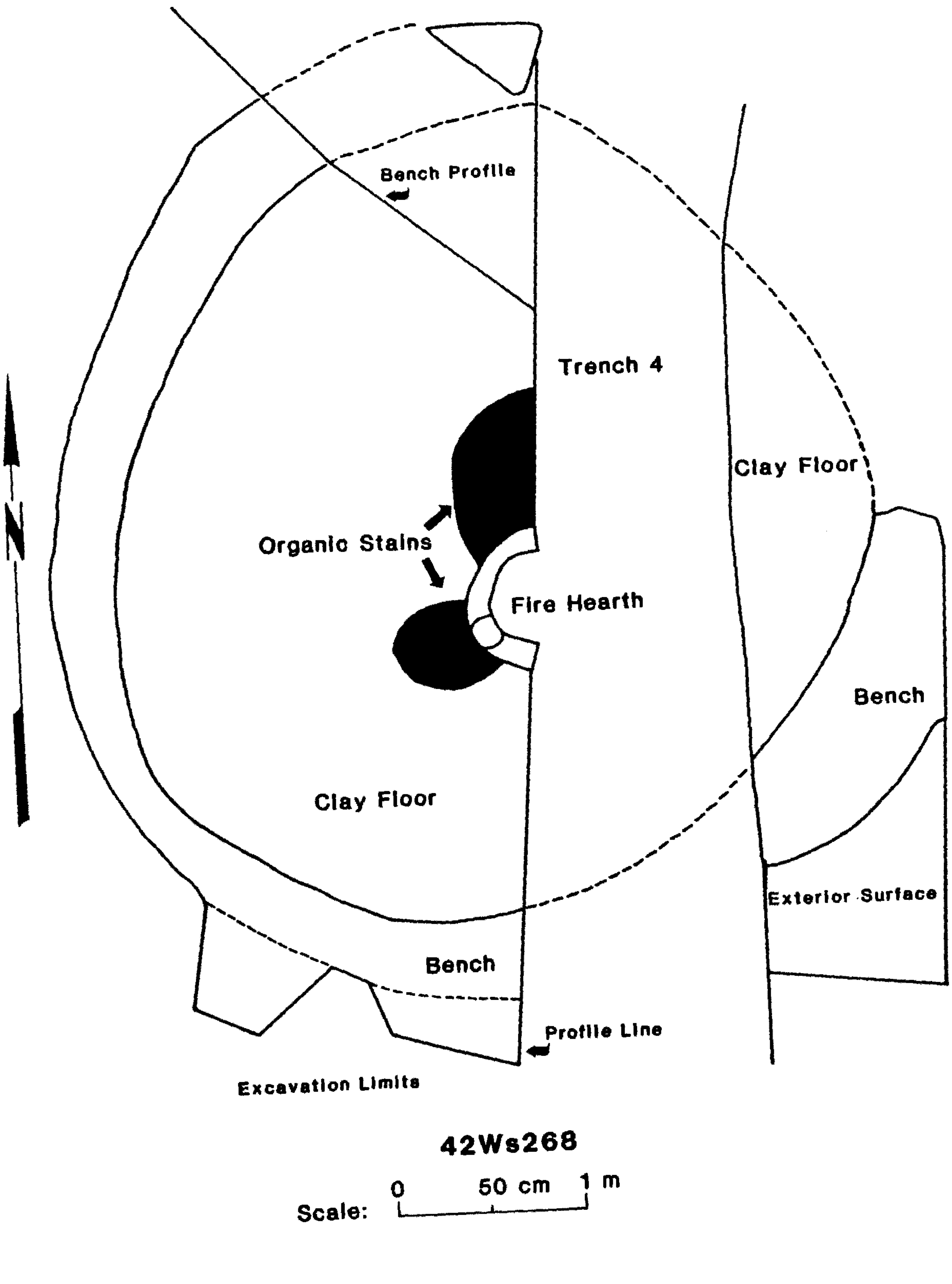



Figure 41. Plan map of the pithouse, 42Ws268.

general level of the top of Stratum 2. The rear wall of the bench proved even more difficult to find, but it was sharp enough in one area to estimate that the bench was 55 cm. wide. A few small, scattered sandstone slabs found lying horizontally in the fill immediately above the apparent level of the bench may be remnants of a limited wall lining.

Postholes could not be found either in the pithouse floor or on the bench, although in the case of the bench, its poor definition means that they could have been missed. Comparable sites such as 42Ws388 in the project area and 42Ws1319 on Little Creek Mountain, both within the same time frame, had jacal walls and postholes in the benches. No sign of jacal was in evidence in this instance, but this was a shallow pithouse which would mean the upper walls would remain well above the surface of origin and might thus be subject to more complete deterioration. The matter is certainly not resolved.

A clay-lined firepit was the only floor feature found. It was formed by excavating a hemispherical basin into Stratum 1 (Fig. 42) and then the basin was given a clay lining of from 0.2 to 0.3 cm. thick. The pit extended 22 cm. below the pithouse floor and its interior diameter was 46 cm. The firepit also had a rim of clay which gradually blended in with the surrounding floor. The pit was clearly built as an integral part of the floor with a rim that rose from 2.5 to 3.5 cm. above the floor and which was from 10 to 12 cm. wide. The southwest quadrant of the rim contained a small depression.

The pit showed signs of intensive use with the clay lining being heavily oxidized and hardened. The zone of fire-alteration also extended below the pit lining for some 3 cm. into Stratum 1. The hearth fill was a fine gray ash mixed with a small amount of brown sand from which pollen and flotation samples were taken.

Although no other floor features were found, two apparently organic stains were noted adjacent to the firepit. A compacted, coarse brown sand was deposited on the pithouse floor during occupation. Some 5 cm. thick, this sand layer yielded a fair collection of cultural materials (Table 15).

While exploring the bench in the southeast quadrant of the pithouse, an apparent use-compacted surface was found just outside the pithouse. The bench wall was somewhat slanted and irregular in this area but well packed. The packed surface was followed upwards to a point where it become horizontal but it remained hard packed and irregular. The horizontal surface lay in Stratum 3 at a depth of 20 cm. An area of some three-quarters of a square meter was cleared before ending the excavation. Since no other hard-packed surfaces were found at any other point on the pithouse perimeter, it is suggested that this surface marks the entryway. Such an interpretation appears to be supported by the deteriorated but firmly packed character of the bench and bench wall adjacent to the feature.

The pithouse roof appeared to have collapsed relatively soon after abandonment since there was little aeolian sand between the compact brown sand and the roof-fall. The roofing material contained no charcoal, a fact which may indicate that the structure did not burn. The red, sandy clay from the roof attained a maximum thickness of 20 cm. (Fig. 42) and it proved difficult to distinguish from the fill above it. The roof-fall was quite compact and high in clay content while the material deposited on top of it (Fig. 42)

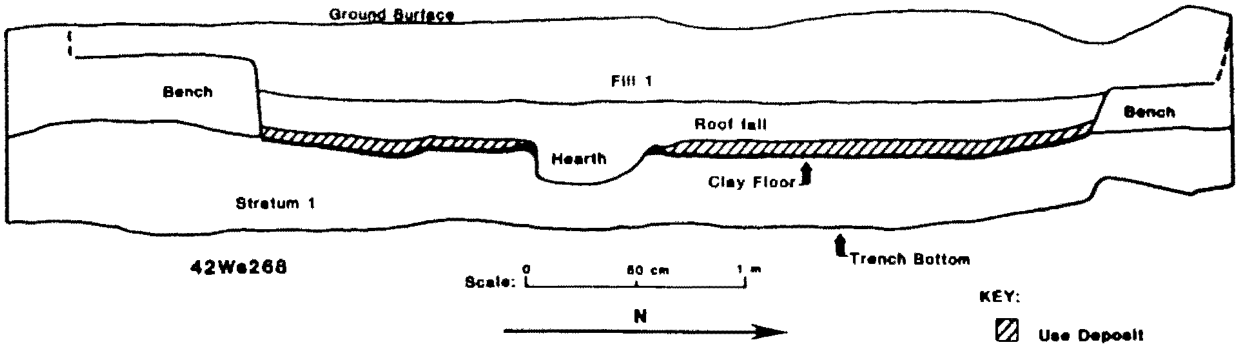



Figure 42. Profile of the pithouse, 42Ws268.

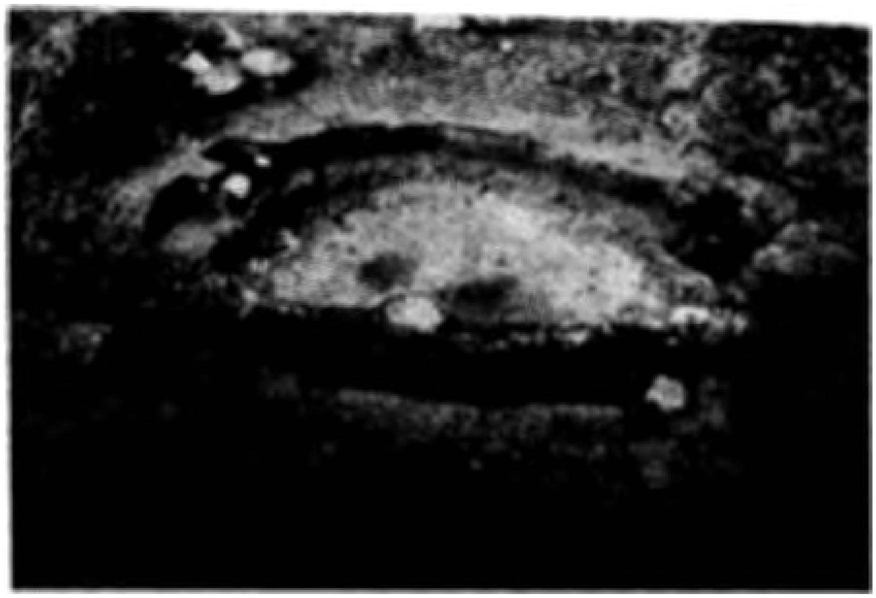


Figure 43. View west of the 42Ws268 pithouse as bisected by Trench 4.

consisted of a brown, moderately compacted, clay-filled sand which contained numerous artifacts (Table 15). Since the roof material was only 20 cm. thick, it was not sufficiently deep to protect the benches from being exposed to weathering, a fact which made them difficult to define and which may also explain the lack of evidence of jacal which is a common trait in pithouses of the period.

A C-14 sample was obtained from a point just above the roof material in the northeast corner of the pithouse. The sample included several small chunks of charcoal not associated with any evident cultural feature, but the charcoal did not have the characteristics of a natural fire. But at best, the sample can only be declared as coming from a cultural deposit of unknown origin. Analysis provided a date of 730±50 years: A.D. 1220 (Beta 8471). This would have been plausible for some very late Western Anasazi sites, but it is not acceptable as a date for the occupation of this site.

The inventory of cultural materials from the pithouse (Table 15) seemed a bit uncommon at least for what seemed omitted. There was a fair collection of sherds, but cutting and scraping utensils were rare. There were only limited signs of biface manufacture, but numerous specimens reflecting core flake production activities were present. The floor contact assemblage contained no grinding or pounding equipment. The dart point stem found in floor contact need not be regarded as aberrant since such points were often used as knives during the Archaic period of their origin as well as by later people (Jennings, et al., 1980:44). A Pinto dart point found at a depth of only 5 cm. in the pithouse fill was unusual for the context, however. Pinto points are diagnostic of the Archaic from about 5,500 to 2,000 B.P. in this region (Hauck, et al., 1979:40).

Roasting Pit

In addition to the pithouse, Backhoe Trench 4 also cut across a roasting pit 8.25 m. south of the pithouse (Figs. 34,44). Because the existing surface as well as the upper part of the roasting pit were disturbed by the backhoe, the exact surface of origin could not be determined, yet it appeared to be within Stratum 3 which was 10 cm. thick in the area. The roasting pit was made (Fig. 44) by excavating a hole 79 cm. in diameter and 55 cm. deep. Sandstone slabs were then placed around the pit. These were set against the Stratum 2 clay on the south side while a 10 cm. gap between the northern wall slabs and the northern edge of the pit had been filled with clay. The floor slabs were then set in place and the entire interior was plastered with clay which varied from 1.5 to 2.5 cm. thick on the floor and from 0.5 to 1.0 cm. on the walls. The wall plaster was still evident as high as 19 cm. above the floor when the pit was exposed. The resulting pit interior measured 50 cm. deep with an interior diameter of 59 cm.

The clay floor and walls of the pit were fire-hardened and blackened and the blackening on the floor penetrated at least 0.5 cm. into the clay below. At the bottom of the pit and in a lens immediately above it, was a sandy charcoal and charred-wood deposit from which pollen, flotation and carbon samples were taken. A small ash lens was also present, surrounded by an orange-brown, charcoal-flecked sand fill intermixed with orange clay daub

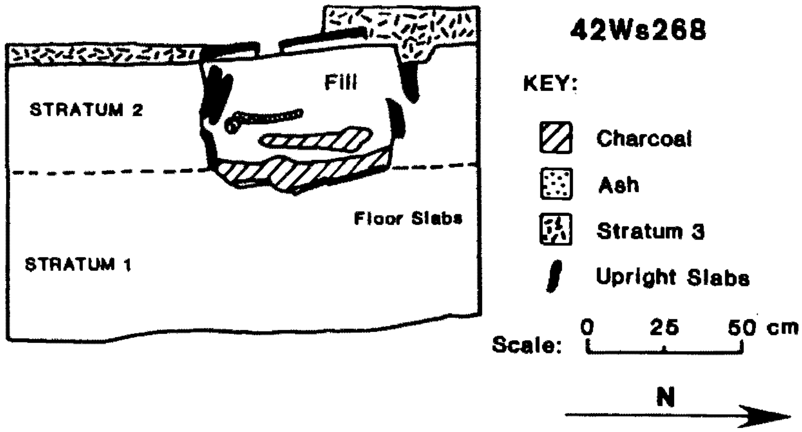



Figure 44. Profile of the roasting pit, 42Ws268.

Table 15

COLLECTION SUMMARY, 42WS268

**Surface.**

| | |
|---|---|
| **Ceramics** | |
| North Creek Gray | 150 |
| Washington B/G | 1 |
| St.George B/G | 5 |
| u/i Virgin Ser. B/G | 3 |
| **Lithics** | |
| S - manos (2 frags.) | 4 |
| S - metate frag | 1 |
| S - grinding slab frag. | 1 |
| S - abrading stone | 1 |
| Q - polishing stone | 1 |
| Q - edge pounder | 1 |
| Q - edge grinders | 4 |
| LL- edge grinder | 1 |
| SS- edge grinder | 1 |
| C - scraper | 2 |
| C - utilized flake (cortex) | 1 |
| C - core | 1 |
| C - biface blank | 1 |
| Q - hammerstone | 1 |
| LL- core | 1 |
| SS- biface flake (cortex) | 1 |
| C - core flakes | 6 |
| C - core shatter flakes (5 cortex) | 25 |
| C - u/i flakes | 6 |
| LL- core flakes (5 cortex) | 5 |
| LL- core shatter flakes (4 cortex) | 4 |
| LL- u/i flakes (4 cortex) | 7 |
| Q - core flakes (6 cortex) | 7 |
| Q - u/i flake | 1 |
| SS- core flakes (2 cortex) | 2 |
| SS- core shatter flakes (cortex) | 1 |
| SS- u/i flakes (1 cortex) | 4 |
| Ql- core flake | 1 |
| Ql- core shatter flake (cortex) | 1 |
| L - core shatter flake (cortex) | 1 |
| L - u/i flake | 2 |
| CQ- core flake | 1 |

**Units 3-A,3-C,3-D. 0-30 cm.**

| | |
|---|---|
| North Creek Gray | 21 |
| Q - edge grinders | 2 |
| C - core shatter flake | 1 |
| C - u/i flake | 1 |
| L - core flake (cortex) | 1 |
| L - u/i flake (cortex) | 1 |

**Unit 3-F 0-10 cm.**

| | |
|---|---|
| Q - hammerstones | 2 |
| C - u/i flakes (2 cortex) | 3 |
| O - u/i flake | 1 |

**Unit 3-I 0-5 cm.**

| | |
|---|---|
| North Creek Gray | 3 |
| SS- hammerstone | 1 |

**Cist 1**

**Fill 1 below slab floor.**

| | |
|---|---|
| North Creek Gray | 2 |

**Clay floor contact.**

| | |
|---|---|
| North Creek Gray | 5 |

**Use surface contact.**

| | |
|---|---|
| North Creek Gray | 13 |

**Fill 2 roof-fall.**

| | |
|---|---|
| North Creek Gray | 8 |

**Fill 3.**

| | |
|---|---|
| North Creek Gray | 13 |
| C - drill | 1 |
| LL- core | 1 |
| C - biface flake | 1 |
| C - core flake | 1 |
| C - core shatter flake | 1 |

**Cist 2.**

**Upper clay floor contact.**

| | |
|---|---|
| C - u/i flake | 1 |

## TABLE 15 (continued)

| | |
|---|---|
| Roof-fall. | |
| North Creek Gray | 126 |
| u/i Virgin Ser. B/G | 4 |
| C - utilized flake | 1 |
| C - core flakes (1 cortex) | 3 |
| C - core shatter flakes (2 cortex) | 3 |
| C - u/i flakes | 2 |
| Cist 3. | |
| Slab floor contact. | |
| North Creek Gray | 2 |
| C - core shatter flake (cortex) | 1 |
| Floor contact ash deposit. | |
| North Creek Gray | 1 |
| S - ground stone frag. | 1 |
| large mammal long bone frag. | 1 |
| Roof-fall. | |
| S - basin metate | 1 |
| Fill 2. | |
| North Creek Gray | 15 |
| u/i Virgin Ser. B/G | 1 |
| C - core flake | 1 |
| C - core shatter flake (cortex) | 1 |
| C - u/i flake | 1 |
| LL- core flake (cortex) | 1 |
| Pithouse. | |
| Floor contact. | |
| North Creek Gray | 8 |
| C - utilized flake | 1 |
| C - point stem | 1 |
| C - biface preform frag. | 1 |
| C - biface flake | 1 |
| C - core flakes | 4 |
| C - core shatter flake | 1 |
| C - u/i flakes | 2 |
| LL- core shatter flakes (1 cortex) | 3 |
| Q - core flake (cortex) | 1 |
| Bench contact. | |
| North Creek Gray | 1 |
| SS- core flake | 1 |
| Fill. | |
| North Creek Gray | 78 |
| St.George B/G | 1 |
| u/i Virgin Ser. B/G | 10 |
| S - mano | 1 |
| D - mano | 1 |
| C - utilized flake | 1 |
| LL- utilized flake | 1 |
| SS- scraper | 1 |
| Q - Pinto | 1 |
| C - point preform frag. | 1 |
| C - core flakes (3 cortex) | 9 |
| C - core shatter flakes (8 cortex) | 17 |
| C - u/i flakes (1 cortex) | 4 |
| LL- core flakes (2 cortex) | 2 |
| LL- u/i flake (cortex) | 1 |
| Q - u/i flake (cortex) | 1 |
| SS- core flakes (2 cortex) | 4 |
| SS- u/i flake (cortex) | 1 |
| large mammal long bone frags. | 11 |
| large mammal u/i frags. | 5 |
| u/i frags. | 8 |

fragments which continued to the present surface. The large fragments of charcoal and charred wood as well as the extensive blackening of the interior plaster argue that a reducing atmosphere predominated. This probably resulted from intentional sealing of the pit at repeated intervals.

The ash lens associated with the burned wood and charcoal suggests that the roasting pit was probably filled to about this level when it was abandoned. This view is supported by the fact that the clay lining on the walls at its highest point was at about the same level as the ash lens.

### Discussion

This habitation and storage site (Fig. 34) consisting of a pithouse, a three-unit storage structure, and an exterior roasting pit was in use during the Pueblo I period. It is architecturally similar to 42Ws388. A C-14 determination from the storage complex indicated a data of ca. A.D. 840. The collection of cultural material (Table 15) included implements for grinding, and pounding, as well as reflecting core flake production. There was much less evidence of cutting, scraping, and biface manufacture activity.

Spatial distribution indicates that the area surrounding the storage cists was the most heavily used artifact-generating locus, although similar assemblages were present in lower concentrations at other areas of the site. Collections from the pithouse were much the same except for the rather curious absence of grinding and pounding implements.

The greater part of the ceramic collection consisted of North Creek Gray sherds. Identifiable painted types were extremely rare. Analysis shows that four sherds were identified as St. George Black-on-gray and one as Washington Black-on-gray. The Washington Black-on-gray represents the design style to be expected at this site and it should be noted that all of the Pueblo II St. George Black-on-gray sherds are from potentially ambiguous contexts; that is, near the surface cist wall-fall and the pithouse fill. The later sherds could, then, have been deposited after the structures were abandoned. Only the Washington Black-on-gray sherd from the ash of Cist 3 was confidently associated with the occupation of the site's structures.

## 42Ws269

### Introduction and Excavation

This site centered on two unfinished surface storage rooms found on the west terrace of Quail Creek (Figs. 2,45) at an elevation of 2840 ft. on a defined area of only 85 $m^2$. Dominant vegetation consisted of creosote bush and bursage. A number of potholes were found in the sandstone rubble but only two North Creek Gray sherds and one unidentified Moapa Black-on-gray sherd were found during the survey.

The site was opened with two trenches laid out to determine general site stratigraphy and to document the existence of structures.

Trench 1. This was laid out on a north to south alignment and measured 1 by 10 m. It was then divided into five, 1 by 2 m. units, designated 1-A through 1-F. All but 1-D and 1-E were excavated into the sterile substratum . No structures were found but the natural stratigraphy was defined.

Stratum 1 was a well-compacted, orange-brown sand with fair clay content which contained decomposing sandstone and limestone as well as gravel. Stratum 1 was encountered at a depth varying from 18 to 30 cm. and was visible in the bottom of all units.

Stratum 2 was a loosely compacted brown sand which overlay Stratum 1 and extended to the present surface. An ashy, charcoal-flecked sand lens appeared in Units 1-A and 1-B but, due to heavy vandalism, the extent and nature of the lens could not be determined. It appeared to have been associated with a concentration of sandstone rubble which had also been vandalized. All cultural materials were recovered from Stratum 2 (Table 16) in all units.

Trench 2. measured 1 m. by 12 m. in length and it ran west to east, bisecting Trench 1 in Unit 1-D Three units were excavated, these being 2-A, 2-C, and 2-E but only natural stratigraphy was exposed. A very small collection of cultural material was gathered (Table 16).

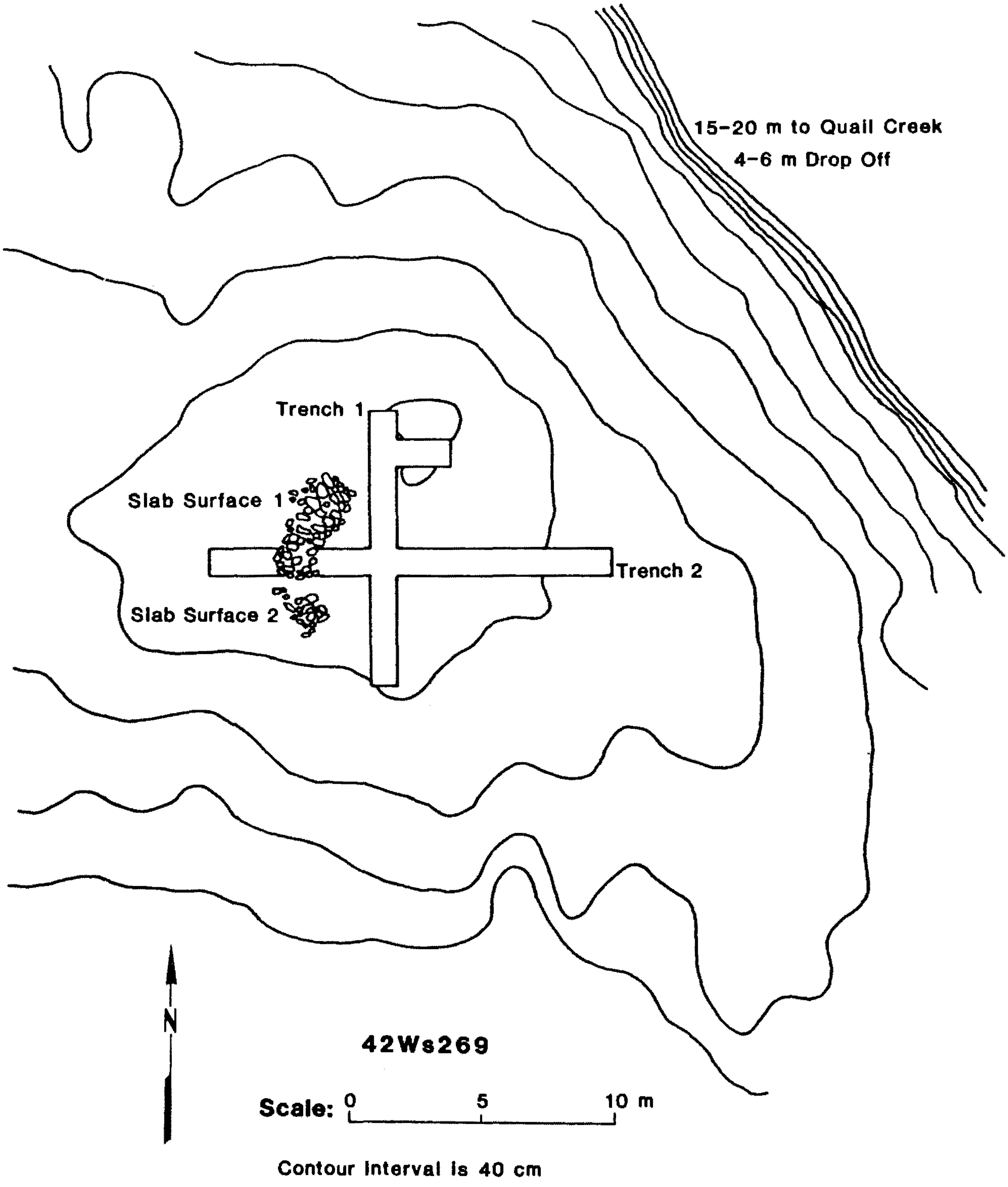



Figure 45. Site plan and excavation map, 42Ws269.

Two sandstone slab surfaces (Figs. 45-47) were found north of and inside Unit 2-F by using an auger. Further testing with the auger was completed across the site in an effort to identify additional structural features but no others were found.

Slab Surface 1

It was found that Slab Surface 1 (Fig. 46) was in and to the south of Unit 2-F at a depth of 10 to 15 cm. It was composed of horizontally laid and irregularly shaped sandstone slabs which created a fairly level surface. The roughly triangular-shaped feature was aligned from southeast to northwest and measured 1.45 m. by 1.05 m. The outer slabs at the northwest end sloped slightly upward. There was no evidence of a surrounding wall alignment nor was a prepared clay floor found on the slab surface. Fill 1 directly overlay the slabs and was composed of hard-packed, tan sand with a good clay content. The fill ranged from 2 to 5 cm. thick and was overlain by Stratum 2. Only a limited collection of cultural debris came from Fill 1.

Slab Surface 2

Slab Surface 2 (Figs. 45-47) was found to be partly within Unit 1-F while the balance extended to the northeast. The feature measured 3.7 m. southwest to northeast while it was 1.5 m. wide. There was evidence of a wall remnant at the northeastern end and at the western corner (Fig. 47). The base of the wall was composed of sandstone slabs and diorite cobbles. Slab Surface 2 lay at a depth of from 10 to 15 cm.

The post-occupation fills were observed above Slab Surface 2. Fill 1 was composed of hard-packed, tan, clay-impregnated sand similar to that noted above Slab Surface 1 Artifacts, a pollen and a flotation sample were recovered from Fill 1. Fill 1 was, in turn, overlain by Stratum 2 which also yielded a small collection (Table 16) of cultural materials.

Twenty-five centimeters north of the northeast corner of Slab Surface 2 (Fig. 46) a small, circular, charcoal stain 8 cm. in diameter was found at a depth of 12 cm. This stain could have been a post which had burned on the outside and then decayed in the interior. The feature proved to be too shallow for investigation, however. The possible post mold originated at the same level as Slab Surface 2.

Discussion

The northeast to southwest orientation of the two slab surfaces were thought to indicate that they were intended to be surface storage rooms in a pattern which would place a pithouse somewhere to the southeast. No pithouse could be found, however. The slab features were both thought to be storerooms because of their small size and because slab floors are uncommon in most habitation units. The absence of prepared clay on either surface and the lack of significant wall rubble argue that the structures were never completed as does the small collection of cultural items.

Slab Surface 2 had a single course of small wall slabs along its northeastern end. This could have been an unfinished wall, or the remnant of a once-complete coursed wall. It is possible, of course, that the structure was

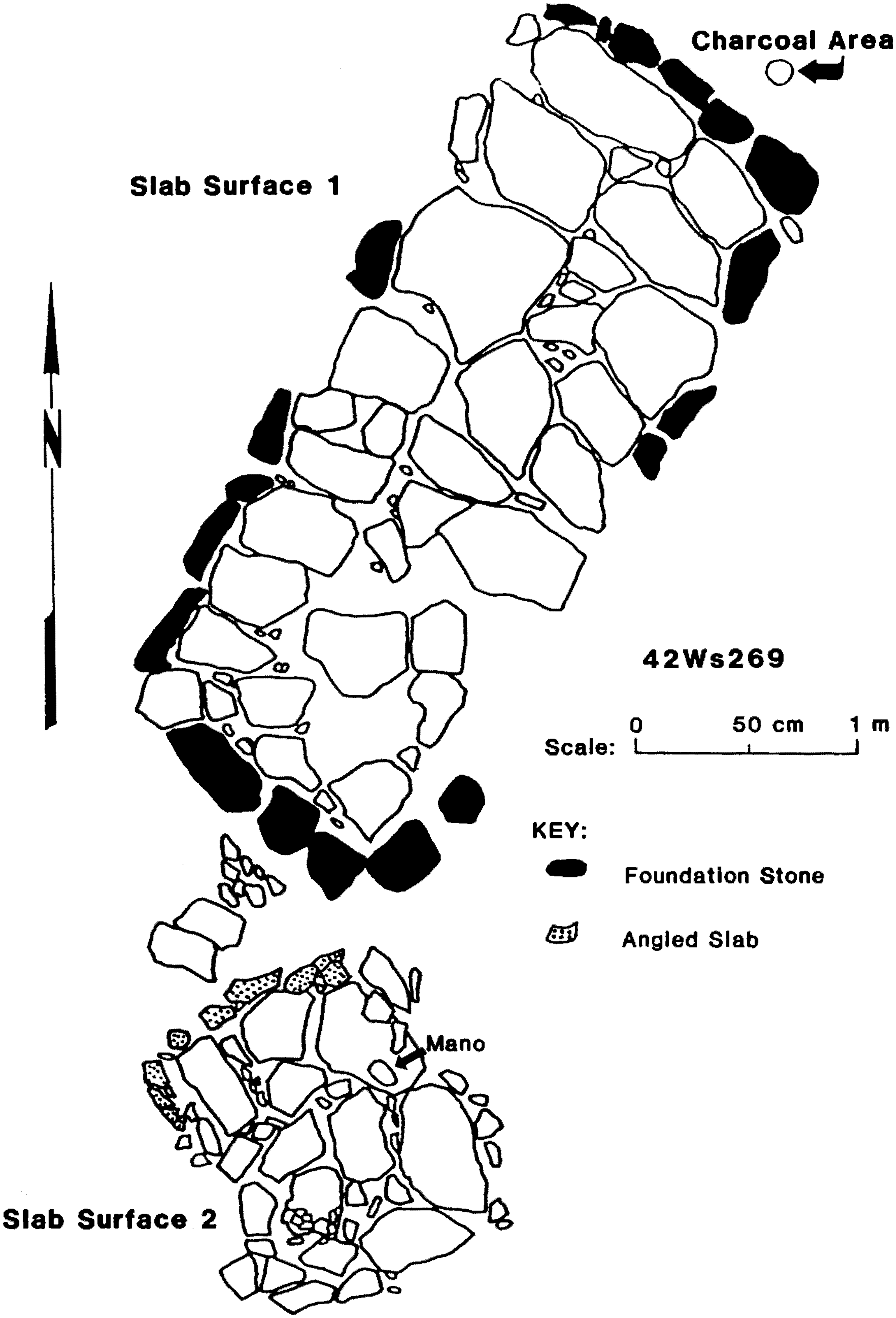



Figure 46. Plan map of slab surfaces, 42Ws269.

Figure 47. View south of slab surfaces, 42Ws269. Larger Slab Surface 2 in the foreground.

TABLE 16

COLLECTION SUMMARY, 42WS269

| | |
|---|---|
| Surface. | |
| North Creek Gray | 4 |
| u/i Moapa Ser. B/G | 1 |
| Boulder Gray | 2 |
| C - scraper | 1 |
| Q - hammerstone | 1 |
| Q - core | 1 |
| C - u/i flake | 1 |
| Trench 1. | |
| North Creek Gray | 1 |
| St.George B/G | 1 |
| Boulder Gray | 1 |
| Trumbull B/G | 1 |
| S - manos (1 frag.) | 2 |
| S - metate | 1 |
| S - ground stone frag. | 1 |
| Q - edge grinders | 2 |
| Q - polishing stone | 1 |
| C - core flake (cortex) | 1 |
| C - core | 1 |
| C - core shatter flake (cortex) | 1 |
| Trench 2 Stratum 2. | |
| St.George B/G | 1 |
| C - core | 1 |
| C - core shatter flake | 1 |
| Slab Surfaces. | |
| Slab surface 1. | |
| St.George B/G | 1 |
| D - mano | 1 |
| C - core shatter flake | 1 |
| Slab surface 2 Fill 1. | |
| North Creek Gray smoother | 1 |
| Q - core flake | 1 |
| Slab surface 2 Stratum 2. | |
| St.George B/G | 4 |

completed at one time, used, and then 'mined' for building material at some later site nearby. Such a process would anticipate that materials needed were taken, and the balance simply left. Storage structures without habitation elements are well-documented in the Western Anasazi and such sites traditionally yield very little cultural debris. In the final analysis, of course, none of the evidence weights strongly for either argument.

It is significant that the only identifiable painted sherds found in association with the slab surfaces were St.George Black-on-gray. Traditionally these sherds are regarded as markers for the period from about A.D. 900 to around A.D. 1075. The absence of corrugated sherds in the collection would put the termination of site use at some time prior to A.D. 1050. Some St. George Black-on-gray sherds have supposedly been identified in late Pueblo I contexts, but the known cases have involved the cists found on this project at 42Ws268 and 42Ws388. The structural form here would appear to have been one of surface rooms, strengthening the case for a later occupation.

A number of Moapa Series sherds also appeared in the collection. Their associations with the structural elements is not well-established but they suggest nothing to alter the suggested time frame. Trumbull Black-on-gray is the rather precise analogue of St. George Black-on-gray and it carries the same temporal implication. Boulder Gray appears as early as Basketmaker III but it remains the dominant utility ware until the end of Pueblo II and perhaps into early Pueblo III.

The balance of the assemblage contains common constituents including grinding equipment and evidence of core flake production. The latter is quite limited but this would not be unexpected at a site lacking a habitation element. The worked sherd may, as some have thought, relate to pottery production but it is also known that such artifacts had numerous other uses as well.

## 42Ws271

The area was first recorded as a site on the basis of a darkly stained area measuring 5 by 15 m. found on the first sandy terrace above the floodplain 25 m. west of Quail Creek (Fig. 2). The site is at an elevation of 2820 ft. and vegetation is dominated by creosote bush, arrow-weed, willow, sand sage, indigo bush, sand dropseed, four-wing saltbush, cholla and some unidentified grasses.

A single 1 by 2 m. test trench was excavated to a depth of 65 cm. in order to investigate the stain. The trench profile revealed a 5-cm.-thick layer of very dark, ashy sand lying essentially on the surface. Close examination showed that the dark color was due to finely divided charcoal, very much unlike that which would be found in a hearth. The chance that the stratum could have been a hearth that was trampled by animals seemed to be unlikely since the lower limit of the stain remained quite distinct. Three rodent intrusions originated in the ashy layer and extended into the stratum below. It seemed most likely that the ash layer originated in a natural brush fire. No cultural materials were found at any point below the surface. The surface find of a chert flake 5 m. north of the trench is not evidence of site-specific activity.

A layer of sandy clay and ash averaging 15 cm. thick lay below the ash stain. Below this, in turn, was a layer of coarse sand and gravel from 15 to 20 cm. thick that was probably of alluvial origin. Beneath this was a 5 to 10 cm. thick stratum of tan sand and then, at the bottom of the profile, a deposit of mixed sand and clay with very sparse charcoal flecks. This was some 10 to 15 cm. thick.

The conclusion reached as a result of this brief investigation was that none of the evidence first noted was of cultural origin.

## 42Ws272

### Introduction

The site was a multi-locus campsite that consisted of various combinations of ash stains, fire-altered stone, lithics, ground stone, and ceramics of both Anasazi and Paiute origin. The site was located at an elevation of 2860 ft. on a slope between the highest terrace and the Quail Creek floodplain to the east (Figs. 2-3).

The site (Fig. 48) measured 60 m. north to south and it was 20 m. wide. Area vegetation was dominated by creosote bush, sand sage, indigo bush, dove weed, sand dropseed, willow, arrow-weed, desert marigold, Indian ricegrass, snakeweed, Mormon tea, range ratany, and cholla. Seven loci were included in the site. Four were investigated by 1 by 1 m. test pits and all seven were surface collected (Table 17).

### Excavation and Site Features

Test Pit 1 was placed in the center of Locus 1 in order to investigate a scatter of fire-altered rock and ash. The profile of Test Pit 1 showed that the ash, which contained sparse charcoal flakes and fire-altered rock, was limited to the upper 10 cm. A pollen and a flotation sample were taken from this layer, but there was not enough carbon for dating purposes. All lithics found in the pit came from the upper 15 cm. At a depth ranging from 10 to 40 cm., the sand contained sparse charcoal flecks and a few North Creek Gray sherds. There had also been North Creek Gray sherds in the upper level. From a depth of 40 cm., the sand proved to be culturally sterile.

Test Pit 2 was placed at the center of Locus 2 to examine a scatter of ash and heat-cracked rocks. The pit was excavated to a depth of 75 cm. but cultural material was limited to the upper 5 cm. and the remainder proved to be sterile sand.

Test Pit 3 sought to investigate a scatter of heat-altered rock which defined Locus 3. The pit was dug to a depth of 100 cm. It revealed that the stone was confined to the surface and no ash, charcoal or other materials were found.

Test Pit 4, placed at the center of Locus 4, sought to examine a lithic and ceramic concentration. The upper 10 cm. of the sandy fill contained numerous North Creek Gray sherds, a core and a core flake, but it was in all

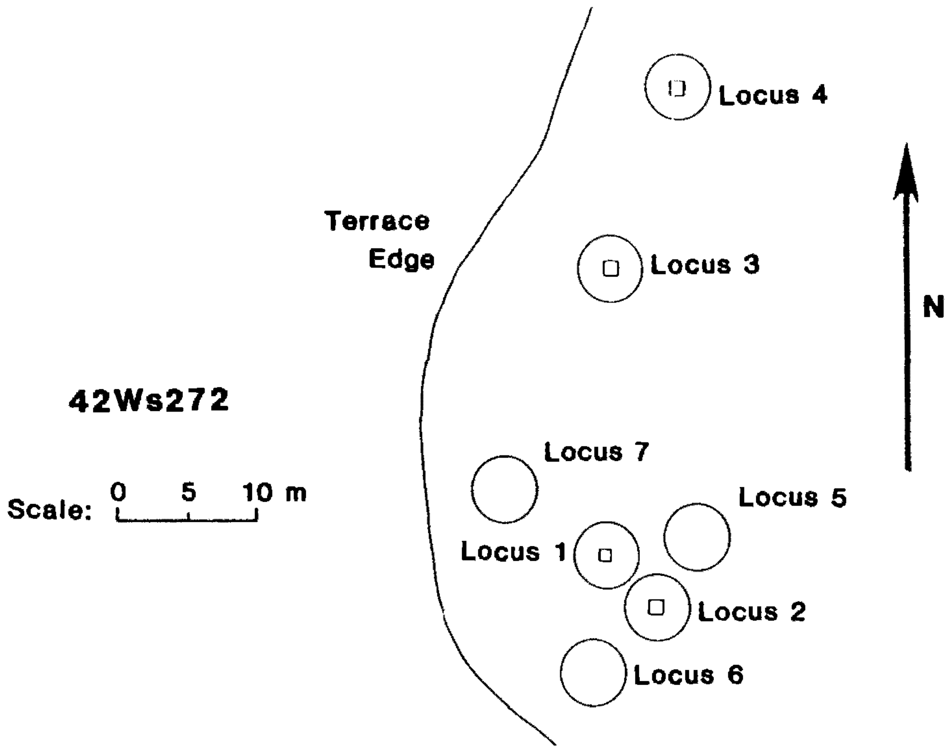



Figure 48. Site plan map, 42Ws272.

Table 17

COLLECTION SUMMARY, 42WS272

| | |
|---|---|
| Surface. | |
| North Creek Gray | 36 |
| Washington B/G | 1 |
| Paiute Plain | 7 |
| malchite/azurite frag. | 1 |
| S - grinding slab frags. | 5 |
| S - basin metate frag. | 1 |
| S - mano frag. | 1 |
| Q - edge grinders | 5 |
| L - edge pounders | 2 |
| C - Desert Side-notched (inc.) | 1 |
| C - Elko Side-notched | 1 |
| Q - hammerstones | 4 |
| L - hammerstone | 1 |
| C - core | 1 |
| LL- cores | 3 |
| Q - cores | 3 |
| SS- cores | 2 |
| SS- biface flake | 1 |
| C - core flakes (3 cortex) | 4 |
| C - core shatter flakes( 1 cortex) | 3 |
| C - u/i flakes (1 cortex) | 3 |
| LL- core flakes (13 cortex) | 24 |

| | |
|---|---|
| LL- u/i flakes (6 cortex) | 7 |
| Q - core flakes (2 cortex) | 4 |
| Q - u/i flakes (2 cortex) | 4 |
| SS- core flakes (3 cortex) | 3 |
| SS- u/i flakes (2 cortex) | 3 |
| L - core flakes (1 cortex) | 4 |
| O - u/i flake (cortex) | 1 |
| Test Pit 1 0-40 cm. | |
| North Creek Gray | 5 |
| LL- edge pounder | 1 |
| LL- core | 1 |
| LL- core flakes (2 cortex) | 3 |
| LL- core shatter flake (cortex) | 1 |
| LL- u/i flake (cortex) | 1 |
| Test Pit 2 0-5 cm. | |
| North Creek Gray | 6 |
| Test Pit 4 0-40 cm. | |
| North Creek Gray | 14 |
| LL- core | 1 |
| C - core flake | 1 |

other respects indistinguishable from the 30 cm. of sterile sand which lay below. At 40 cm., however, a small concentration of charcoal and a few North Creek Gray sherds were recovered from the east side of the pit. This charcoal appeared to result from a rodent intrusion. At a depth of 65 cm., a gravel deposit 3 cm. thick appeared in the eastern site of the pit. Below the gravel lay another 10 cm. of heavy sand. Excavation of the pit was halted at 75 cm. when cobbles and gravel were exposed.

Locus 5, a ceramic, lithic, and ground stone scatter was completely collected but not tested. The artifacts recovered are listed below in Table 17.

Locus 6 was also surface collected without testing. The collection of cultural material was similar to Locus 5 (Table 17).

Locus 7 was also completely collected but not tested. The recovered cultural debris is presented in Table 17.

Discussion

Recovered ceramics make it possible to assign Loci 1, 2, 4, 5, and 6 to the Western Anasazi. Loci 1 and 2 had hearths at one time but these loci were too disturbed to determine whether or not the hearths were stone lined. All of the Western Anasazi loci were marked by evidence of core flake production, and all but Locus 4 had grinding or pounding implements. Locus 1 and 5 each yielded a single utilized flake. Since utilized flakes are commonly core flakes used with little use retouch, it is likely that many core flakes at the site were used for periods of time insufficient to develop edge damage.

A more refined temporal placement of the Western Anasazi loci is impossible because of the broad time range covered by North Creek Gray. The Washington Black-on-gray sherd recovered from the inventory and a rim sherd from Locus 5 argue a Pueblo I use while the single North Creek Corrugated sherd from Locus 5 indicates use after A.D. 1050.

Locus 3 lacked cultural materials save for the heat-altered stone and thus no cultural affiliation could be assigned. Because of the absence of associated ash or charcoal at this point, Locus 3 may be a discard pile although it is some distance from either of the two well-defined hearth areas.

A few sherds recovered from Locus 7 and the unfinished Desert Side-notched points collected during the inventory indicate a Southern Paiute presence at the site. A single Southern Paiute sherd was also found at Locus 1, but its occurrence may be fortuitous because of the predominance of Western Anasazi ceramics at this locus.

The Elko Side-notched point collected during the survey can produce many forms of entertaining conjecture. Elko points are well known in both Archaic and post-Archaic contexts, later use is usually accompanied by evidence of a use wear polish that suggests that later peoples used them as cutting implements. The Elko Side-notched point from 42Ws272 does not display wear polish but has an impact fracture at its tip.

## 42Ws274

The site was formed by a cluster of diverse loci found within an area measuring 20 by 40 m. and located on the edge of the highest terrace some 75 m. west of Quail Creek (Fig. 2). The elevation was 2920 ft. and the vegetation on and around the site included creosote bush, range ratany, bursage, indigo bush, cholla, prickly pear, Mormon tea, and Indian ricegrass. Six loci were present at the site. These included an ash-stained area, a ground stone scatter, a scatter of quartzite cobbles, an isolated metate, a boulder grinding stone, and a boulder with a petroglyph.

Locus 1 was an ash-stained area lacking associated artifacts. A 1 by 2 m. test trench was excavated at the center of the locus to a depth of 50 cm. From the surface to a depth of 5 cm. an ashy sand appeared and, immediately below it was a dense charcoal stratum extending from 5 to 10 cm. deep. Both of these features were present in all four trench profiles, suggesting a large fire of some duration. A pollen and flotation sample were taken. A C-14 sample assayed as "modern," (Beta 8032) which may be read to indicate an age of 100 years or less. A single unidentified Virgin Series painted sherd came from the ash stratum. Below the charcoal layer was a stratum of reddish sand with sparse charcoal flecks which varied from 20 to 30 cm. in thickness. The bottom of the trench profile revealed a stratum of sterile gravel and caliche 10 to 20 cm. thick.

Locus 2 was a small scatter of ground stone fragments some 5 m. in diameter and located 4 m. northwest of Locus 1. The scatter consisted of several small ground stone fragments and some quartzite cobble fragments. A single grinding slab fragment was collected. Because of their proximity, Loci 1 and 2 may be related.

Locus 3 was a small, quartzite cobble scatter from which an edge pounder was collected.

Locus 4 was an isolated sandstone basin metate which was not collected. It measured 25 by 35 cm. and was 4. cm. thick.

Locus 5 was a small basalt boulder with a possible grinding surface measuring 15 by 20 cm. The ground area contained large air bubbles in it.

Locus 6 was a pair of anthropomorphic petroglyphs on the east face of a basalt boulder found on the edge of the terrace overlooking Quail Creek. Immediately adjacent to each other, the figures were 20 cm. high.

The site was characterized by a diffuse aggregation of cultural activity. Locus 1 was a charcoal deposit which, because of its limited depth and broad a real extent, might be considered to have been of natural origin although some cultural purpose may have been served. The other loci contained only the most limited evidence of human activity and they were devoid of temporally significant artifacts. In spite of its ephemeral nature, however, the site seemed to have the basic characteristics of limited activity sites in the project area.

## 42Ws275

This small camp site, measuring 15 m. in diameter, was found near the edge of the highest terrace 100 m. west of Quail Creek (Fig. 2). With an elevation of 2920 ft., the site vegetation included cresote bush, bursage, range ratany, prickly pear, and cholla. Cultural evidence included ground stone, quartzite cobbles, and a few fire-cracked rocks. No ash or charcoal was visible on the surface.

A trench was excavated to investigate the fire-cracked stone. The work exposed a basin-shaped, unlined hearth in otherwise undifferentiated sand. The hearth lay at a depth of from 5 to 15 cm. and consisted of ash and charcoal. It had been made by scooping the sand from a basin-shaped hole.

The hole was well defined because fire had hardened the sand. Three stones were present in the fill of the hearth, and may have been intentionally included. Their position indicates that they had never formed part of a stone lining. Pollen and flotation samples were taken while a carbon sample was assayed as "modern," (Beta 8033).

A basin metate measuring 34 by 28 cm. and 12 cm. thick was recorded but not collected. A core and a polishing stone, both of quartzite, were collected.

Although the material observed and collected was very limited, it includes ground stone and core flake production categories which are typical of limited activity sites in the area. No culturally or temporally sensitive objects were found but the C-14 date suggests the camp represents a late nineteenth century Paiute occupation.

## 42Ws277

This limited activity site was found along the upper edge of the floodplain 20 m. east of Quail Creek (Fig. 2) at an elevation of 2880 ft. The site measured 25 by 10 m. and focused on a small concentration of fire-altered stone, lithics, and North Creek Gray sherds. The vegetation of the area included creosote bush, range ratany, cholla, snakeweed, sand sage, and arrow weed. Two trenches set 6 m. apart were used to examine the site.

Trench 1 measured 1 by 2 m. and was cleared to a depth of 100 cm. The upper 10 to 20 cm of fill consisted of sand, pea gravel, and sparse flecks of charcoal. The lower fill was identical to the upper except that it lacked the charcoal. No cultural materials were found in the trench.

Trench 2 also measured 1 by 2 m. and was excavated to a depth of 100 cm. As in Trench 1, the upper 10 to 20 cm. consisted of sand, pea gravel, and very sparse charcoal flecks, while the lower sterile stratum was the same gravelly sand. A limited number of artifacts was collected from the upper stratum.

Collected material included: Surface. North Creek Gray, 8. Trench 2 0-02 cm. North Creek Gray, 2; grinding slab fragment (S), 1; edge pounder (Q), 1; edge pounder (SS); unidentified flake w/cortex (LL); core shatter flake (SS), 1.

The ceramic collection indicated a Western Anasazi affiliation for the site while the balance of the assemblage was typical of other limited activity sites in the project area: ground stone and core flake production items. No source for the charcoal of the upper stratum could be found but there is some evidence of recent cattle grazing in the area. Such use might have dispersed the hearth and churned it into the loose alluvial sands of the site.

## 42Ws278

The evidence for this limited activity site was a locus containing a small concentration of heat-altered stone, ground stone fragments, lithics, and an ash stain. The site lay at an elevation of 2840 ft. and was found on an alluvial sand flat slightly above the most frequently inundated floodplain. (Fig. 2). The site measured 30 by 15 m. and lay some 30 m. east of Quail Creek. Area vegetation included creosote bush, snakeweed, sand sage, arrow weed, filaree, and cholla. A single test trench measuring 1 by 12 m. was excavated to a depth of 100 cm. to investigate the area of ground stone and the locus of fire-cracked stone and ashy sand.

In most of the trench profile, the upper 20 cm. consisted of coarse alluvial sand with sparse charcoal flecks; beneath this, the sterile sand was identical in composition.

In the southern end of the trench, nearest the stream, the upper stratum revealed the same sand with scattered charcoal flecks but with more ash for a depth of 10 cm. Immediately below this material was a thin, gray-yellow clay layer. The depth and appearance of the clay indicated that it was of natural alluvial derivation. The ashy sand above the clay was so disturbed that the original hearth could not be identified. No culturally diagnostic cultural material was recovered. Thus, the cultural affiliation and temporal position of the site could not be determined.

## 42Ws280

This small camp site measured 30 m. in diameter and was found on the terrace 200 m. east of Quail Creek at an elevation of 2900 ft. (Fig. 3). Vegetation on and around the site included creosote bush, bursage, hilaria grass, snakeweed, prickly pear, indigo bush, desert marigold, fluffgrass, and three-awn grass.

Cultural evidence at this site included two charcoal stained areas, a concentration of cores and lithic waste, and 15 Paiute sherds recovered from the surface. One stained area had suffered some vandalism and two other potholes were noted towards the northern and western edges of the site. Trenches 1 through 5 (Fig. 49) were excavated in order to determine site stratigraphy and the nature of the charcoal stained areas as well as to explore for possible subsurface features.

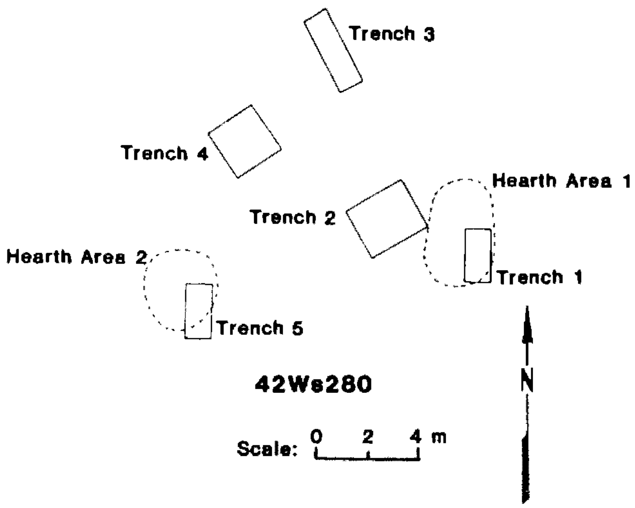
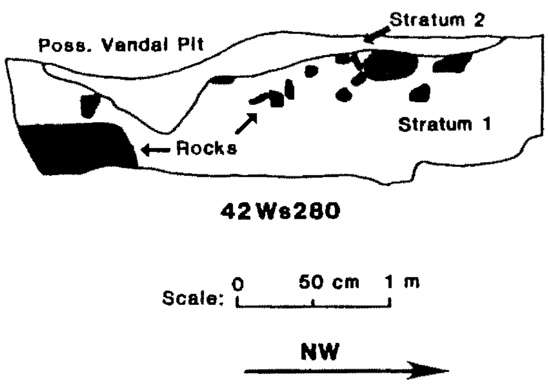



Figure 49. Site plan map, 42Ws280.



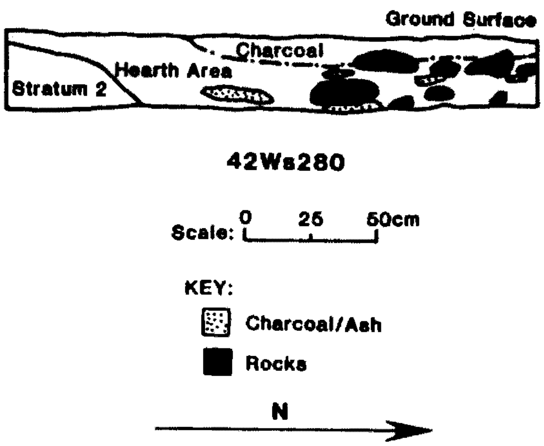




Figure 50. Trench profiles, 42Ws280. Trench 3 left, Trench 1 right.

Trench 3, a 1 by 3 m. unit (Fig. 50) aligned southeast to northwest, was excavated to an 85 cm. depth in order to investigate the stained surface area which had an associated dip. This trench revealed the site stratigraphy in its profile as well as an apparent pothole which explained the dip in the stained surface. Stratum 1, also observed in Trenches 3, 4, and 5, was composed of medium to highly compacted, orange-brown sand intermixed with a high concentration of small to medium sized pebbles, rocks, and a few boulders.

Stratum 2 was also found in all trenches and proved to be similar in composition to Stratum 1, but it was more loosely compacted and lacked stone concentrations. In some instances, the upper 13 to 15 cm. of Stratum 2 was flecked with charcoal. Stratum 2 reached a depth of 45 cm. while Stratum 1, the alluvially deposited terrace gravel substratum was noted at depths of 45 to 85 cm. Although Stratum 2 was culturally significant, few artifacts were found in association with it. It did, however, serve as the surface for Hearths 1 and 2.

Trenches 2 and 4 were culturally sterile but did expose similar stratigraphy. Trench 2 measured 2 by 2.5 m. and was aligned southeast to northwest. Trench 4 was a 2 m. square. Both were excavated to a 50 cm. depth and both encountered large quantities of stone and cobbles.

Trench 1 measured 4 m. north to south and 2.7 m. east to west. This was located so as to investigate Hearth 1. The hearth produced a heavy concentration of charcoal, barely visible on the surface because of vandalism. Charcoal, ash, and blackened sand were shown in the trench profile (Fig. 50) to attain a depth of 28 cm. Stratum 2 showed the effects of fire in the hearth area by the orange color of the sand. Stone observed in the ash and charcoal fill may have been parts of the hearth but no arrangement could be discerned during excavation. A trough metate fragment was the only artifact recovered from the trench. Pollen and flotation samples were taken from the hearth, and two carbon samples were found. One was recovered at the surface while the other was found at a depth of 26 to 28 cm. The deeper sample produced an assay of 200±50 years: A.D. 1750 (Beta 8034).

Trench 5 was a 1 by 2 m. unit running north to south, laid out in a fashion to cut the eastern edge of Hearth 2. The trench was dug to a depth of 48 cm. and both Strata 1 and 2 were noted. The hearth was a locus of finely divided charcoal and ash visible on the surface and measuring some 2.5 m. in diameter. This material proved to be restricted to the surface but a small ash lens 2 to 6 cm. thick was recorded in the northwestern corner of the trench at a depth of 25 to 31 cm. This proved to be the only evidence of fire found intact and even this proved too amorphous to determine its function.

The A.D. 1750 assay for carbon, accompanied by the 15 Paiute Plain sherds found on the surface argue that this was a limited activity site used by the Paiute at some time prior to the European intrusion. Vandalism prevented more precise assessment of the activities conducted at the site.

## 42Ws283

This apparent site was located on the bench at the base of the colluvial slope just upstream from the southern gap on the west side of Quail Creek (Fig. 2). At an elevation of 2840 ft., the site was some 10 m. in diameter, while vegetation in the area consisted of creosote bush, bursage, bush muhly grass, and cholla. The surface of the site yielded three North Creek Gray sherds and very scant lithic debris. A 1 by 2 m. test pit was excavated adjacent to the south side of a large sandstone boulder in an effort to investigate an apparent concentration of sandstone slabs, two of which were somewhat reddened.

The trench attained a depth of 70 cm. In the section of the trench farthest from the boulder, the profile showed a loose, reddish-tan, sterile sand extending to the bottom of the trench. Within 50 cm. of the boulder, however, a number of thin sandstone slab fragments ranging from 1 to 5 cm. thick were uncovered at a depth of 5 cm. Although none of the slabs were reddened, one had been dressed along one edge. For from 10 to 15 cm. below the surface, a vague charcoal stain was discernable. The slabs and the faint evidence of charcoal indicate that a slab-lined hearth may have existed on the south side of the boulder but was apparently disturbed by an unknown agency. The three sherds found on the surface suggest the Western Anasazi but the sherds cannot, of course, be definitely associated with the possible hearth.

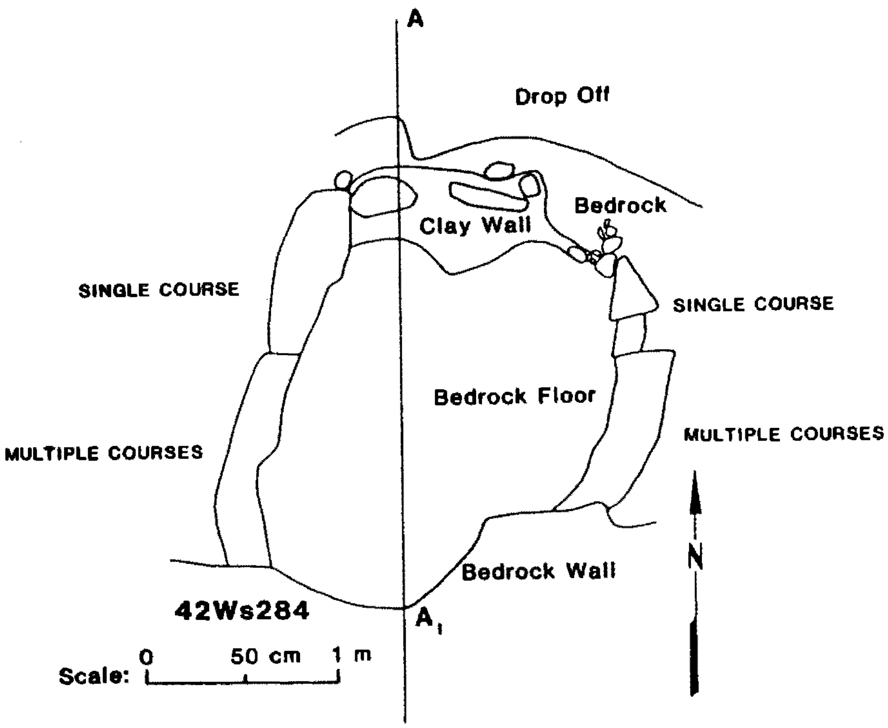
## 42Ws284

### Introduction

A masonry granary, found in an overhang at this site, proved to be the only example of the type within the entire project area. The rockshelter was found just above the interface between the soft Upper Red Member mudstone of the Moenkopi and the overlying and more resistant Shinarump Sandstone. The granary overlooks most of the sites and the anticline basin, and it lies at an elevation of 3000 ft. and some 150 ft. above Quail Creek ( Fig. 2). The vegetation on the steep, north-facing slope below the site included Mormon tea, cheatgrass, prickly pear, and some desert trumpet. This slope produced the only dense concentration of Mormon tea within the project area.

### Granary

The Granary (Fig. 51) had deteriorated badly with only parts of two walls still standing. Numerous slabs lay nearby to indicate what had once been the front wall. The two sidewalls were both constructed of irregular, unshaped sandstone slabs and blocks and were dry-laid one course wide. The walls were placed directly on the sandstone bedrock and had been extended up to the overhang roof as well as back to the rear of the shelter so that the shelter formed the floor, rear wall, and ceiling of the granary. Because of the irregular form of the slabs used, small sandstone spalls were used as chinking. The masonry was covered with clay plaster that ranged from 5 to 10 cm. thick on both the interior and exterior surfaces of the walls. The plaster contained large amounts of grass and some stream pebbles. At the time the site was excavated, only the west wall retained a significant amount of plaster, some of which was taken for a pollen and a flotation sample.



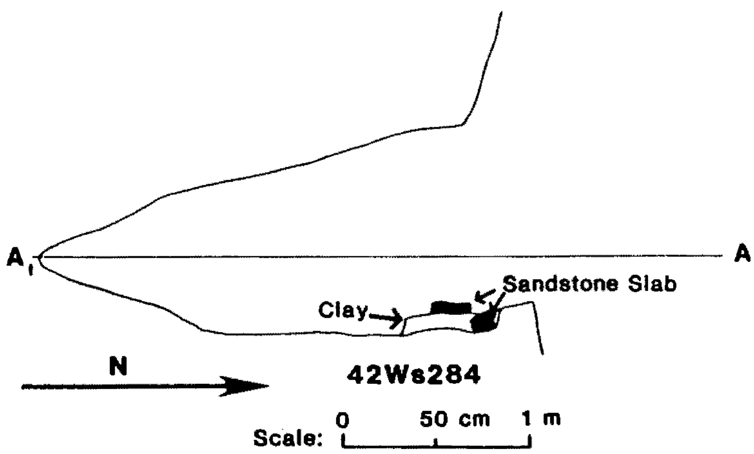




Figure 51. Granary plan and profile, 42Ws284.

The west wall of the granary was originally about 2 m. long, 0.3 to 0.5 m. wide and, at maximum, 1 m. high. The east wall had similar dimensions except that it was only 1.2 m. long. The maximum interior width of the granary was 1.6 m.

Excavation within the granary revealed a vandalized, coarse sandy fill of aeolian and detrital origin as deep as 20 cm. The fill was thickest near the front of the structure where it was found to be underlain by small patches of sandy clay. This clay was probably plaster washed from the walls of the collapsed anterior portion of the granary. Thus, the clay and sand fill at the front of the granary was sectioned to determine its nature. This process exposed not only more wall wash, but also the construction method employed on the front wall. The wall was begun by laying several slabs and a course of clay 10 cm. thick on the bedrock floor just inside the dripline of the shelter. The masonry was then placed on top the the clay footing. It was found,in fact, that a single course of stone remained in situ.

Discussion

Collected materials were all from the surface and included: North Creek Gray, 1; core shatter flake with cortex (C), 1; core shatter flake with cortex (LL), 1; unidentified flake with cortex (C), 1; unidentified flake with cortex (LL), 1.

The single sherd recovered can be associated with the granary only in the most tentative way. The granary fill was thin and it had been exposed to both natural and human disturbance so that the original granary contents remain a matter of conjecture. The balance of the collection was composed of evidence of core flake production activities.

## 42Ws285

The site is a very small overhang at the base of the Shinarump Sandstone in the narrowest point of the southern gap some 20 m. west of Quail Creek (Fig. 2). The site was at an elevation of 2800 ft. and it was surrounded by a plant community which included Mormon tea, creosote bush, and cottonwood. The vegetation in the site area had been affected by a modern irrigation ditch which lay 2 m. east of the shelter. The shelter itself was 2.5 m. wide, 1.5 m. high and only 0.5 m. deep. A single test trench 1 by 2 m. in size was excavated at the mouth of the overhang and parallel to it.

The excavation exposed an undifferentiated, dark loam which was 17 cm. thick over sandstone bedrock at the west end. At the east end of the trench, the loam dropped to a depth of 30 cm. Although it contained heavy root intrusions, the fill at the eastern end was the same as that at the west. A few small charcoal flecks were noted, but no carbon of size sufficient to date was found.

Recovered materials were limited to: Trench 1 0-30 cm. hematite fragment, 1; core shatter flake (C), 1; unidentified flake (C), 1; corncob fragments, 4.

Since no diagnostic materials were recovered from the test, it was impossible to assign a cultural affiliation or temporal placement to the site. Corncob fragments were found in subsurface context but were unburned and, based on a partial reconstruction, were part of a cob with more than 10 rows. The moisture of the soil and the high row count would appear to argue that the cob was not prehistoric.

## 42Ws287

The focus of this site, as well as its entire content, was a series of 16 bedrock mortars found at the lower edge of the Shinarump Conglomerate just below the large petroglyph site 42Ws286 and above the habitation site 42Ws288 (Fig. 2). The Shinarump Conglomerate in the site area consisted of well-cemented, coarse sandstone without the cobble inclusions found lower in this member. The mortars were found on a slightly sloping bench with a steeper rock slope above and a short riser downslope which dove into the colluvium. The mortars were divided into two clusters (Fig. 52), an eastern group (Fig. 54) of nine located at the edge of the terrace overlooking Quail Creek, and a western group (Fig. 53) of seven.

The mortars were first cleaned out and their positions plotted. The lack of adequate fill and the presence of rainwater in some of the features precluded taking pollen and flotation samples. No artifacts were found in any of the mortars nor were diagnostic materials found in the immediate area.

The mortars were either circular or slightly oval in cross section and they tapered gradually to a point. A few of the mortar holes were quite shallow and had rounded bases, however. The dimensions of each mortar is shown in Table 18.

As the table reveals, the mortars in the western group were generally larger and more similar to each other than the mortars in the eastern group. Although the diameters of all mortars were similar in both groups, the western examples were measurably deeper. The eastern examples have more variability with a few that were quite deep and some that were shallow. These differences could be shown to be statistically valid, but there is little reason to pursue the matter because of the lack of artifacts or pollen and flotation samples which might explain the variability.

Because of the proximity to 42Ws288, it is tempting to assume that the mortars are associated with an Anasazi occupation. Perhaps arguing against such an interpretation is the lack of fill in the holes. In view of the area Paiute occupation, bedrock mortars were known to have been used by a related group of Numic speakers, the Kawaiisu of the area west of Death Valley. Such facilities have, however, been used by peoples of many different and unrelated cultures. The course of reason simply indicates that neither a temporal position nor cultural affiliation can be assigned.

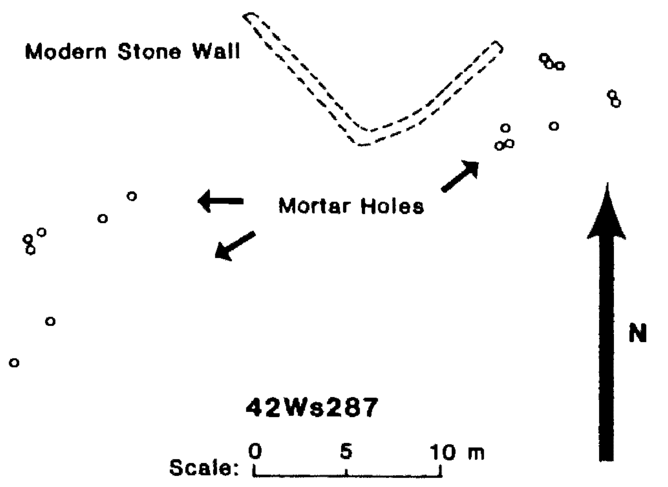



Figure 52. Site plan map, 42Ws287.

TABLE 18

BEDROCK MORTAR SUMMARY

| Mortar No. | Surface Diameter | Depth |
|---|---|---|
| | Western Group | |
| 1 | 24.5 cm. | 45 cm. |
| 2 | 24 x 27 cm. | 33.5 cm. |
| 3 | 25 x 29 cm. | 29 cm. |
| 4 | 23 x 23 cm. | 27 cm. |
| 5 | 29 cm. | 30 cm. |
| 6 | 24 x 25 cm. | 39 cm. |
| 7 | 22 cm. | 26 cm. |
| | Eastern Group | |
| 8 | 12.5 x 13 cm. | 5.5 cm. |
| 9 | 20 x 21 cm. | 13 cm. |
| 10 | 22 cm. | 24 cm. |
| 11 | 17 x 19 cm. | 10 cm. |
| 12 | 25 x 27 cm. | 28.5 cm. |
| 13 | 25 x 27 cm. | 28.5 cm. |
| 14 | 24 x 25 cm. | 17.5 cm. |
| 15 | 20 x 20.5 cm. | 24 cm. |
| 16 | 23 x 24 cm. | 31.5 cm. |

Figure 53. View to south of Mortars 1-5 (right to left), 42Ws287. Quail Creek Ranch and Virgin River in background.

Figure 54. Mortars 8-10, 42Ws287. Detail view showing variations.

## 42Ws288

### Introduction

With an area covering some 1500 square meters, this Anasazi habitation site was located 75 m. west of Quail Creek at an elevation of 2820 ft. on the southern slope of a remnant terrace some 300 m. north of the Virgin River (Fig. 2). The dominant vegetation in the site area was creosote bush accompanied by some mesquite, burro-brush, and filaree. Surface indications of prehistoric activity included vandalized structural remnants, scatters of stone rubble, and a good collection of cultural debris (Table 19). Ceramics suggested a late Pueblo II occupation for the period from A.D. 1050 to 1150. Excavations at the site were destined to expose a four-room semisubterranean storage facility, an associated pithouse, two outdoor hearths, a roasting pit, an isolated room, a cist, a refuse pit, prehistoric use areas and an historic slab surface (Figs. 55-56).

### Excavation and Stratigraphy

A total of 16 trenches were laid out to explore for structural and other cultural features as well as to identify the natural and cultural stratigraphy (Fig. 55).

Trench 1. This initial trench measured 1 by 38 m. and ran north to south. The trench was subdivided into 19, 1 by 2 m. units designated 1-A to 1-S beginning in the north. Most of the other trenches on the site ran east to west and began at some point along Trench 1 (Fig. 55).

The natural stratigraphy (Fig. 57) was first defined in 1-O, 1-Q, and 1-S where two units were identified. Stratum 1 was a sterile substratum associated with the majority of structural features noted on the site. It was composed of alternating bands of orange sand containing clay and a matrix of small pebbles and rocks and a fairly clean layer of brown-orange sand. The sand layers became progressively thicker in the northern half of the site and they tended to grade into Stratum 2 in that area. Stratum 1 was found at a depth of 35 cm. in the southern half of the site while it lay 55 cm. below the surface in the northern area.

Composed of orange-brown, medium to loosely compacted sand with some clay, Stratum 2 extended from the top of Stratum 1 to the modern surface and averaged 35 to 40 cm. thick. It was sparsely flecked with charcoal and it contained structural stone rubble when the latter was associated with the room block. Most cultural materials were found in Stratum 2, much as the result of down-slope wash and other depositional processes, both cultural and natural.

The excavation of additional units of Trench 1 resulted in the location of structural features while adding detail to an understanding of the natural stratigraphy. Units C, D, and E were excavated to the level of the clay floor of Room 2 and all revealed the interior strata of the feature. Unit E not only exposed part of Room 2, but it was expanded 2 m. west for the exposure of Rooms 3 and 6. Unit F was dug to a depth of 50 cm. and Hearth 1 was discovered in the eastern profile. This unit was then expanded 1 m. west to expose the hearth.

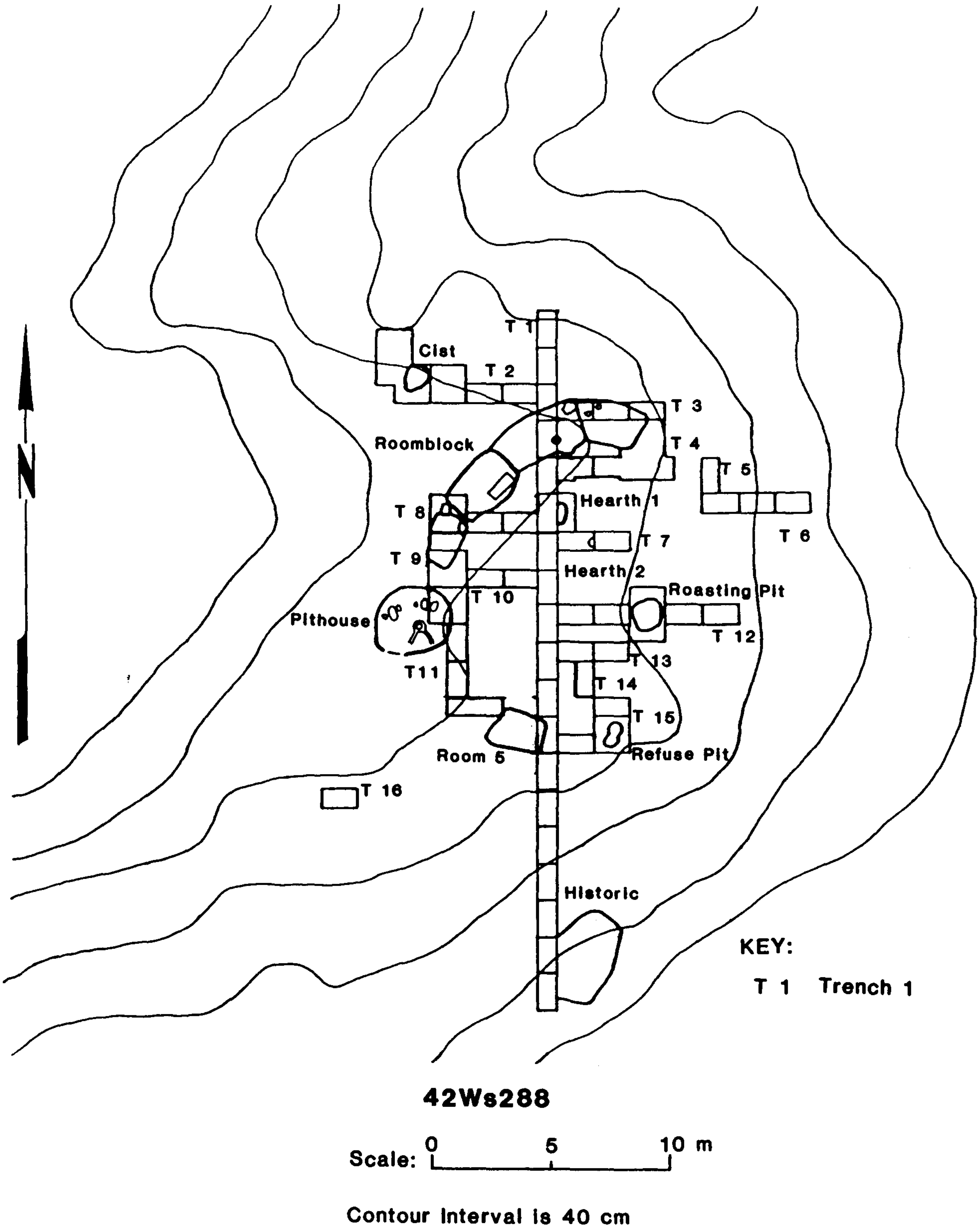



Figure 55. Plan and excavation map, 42Ws288.

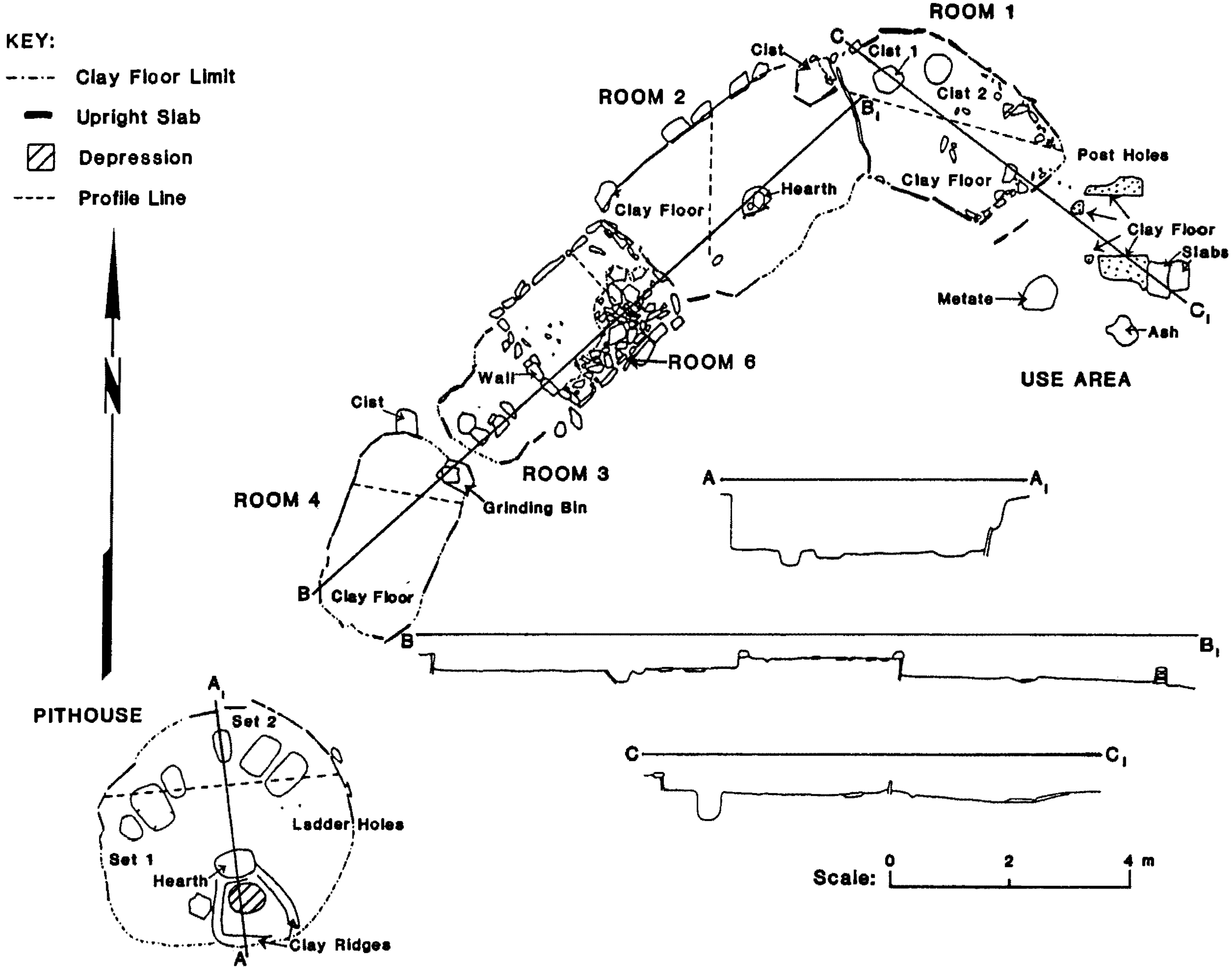



Figure 56. Plans and profiles for the room block, pithouse, and use area, 42Ws288.

Unit L was excavated to 30 cm., or just into Stratum 1 gravels, in order to expose the southeastern end of Room 5. Unit 1-M was dug to a depth of 60 cm. to correlate natural strata with the construction of Room 5. Units 1-R and 1-S were then excavated in the area of an historic slab surface found at the southern end of the site.

Units 1-A, 1-J, and 1-H contained no structures and thus replicated the stratigraphy. At the southern edge of the site, Unit 1-J was dug to a depth of 40 cm. with Stratum 1 becoming visible at 20 cm. while 1-H, dug to 50 cm., revealed Stratum 1 gravels only in the trench bottom. At the northern end of the site, meanwhile, Unit A was dug to 75 cm. with Stratum 1 appearing at 35 cm.

Trench 2. This ran east to west and measured 1 by 8 m. It was divided into four, 1 by 2 m. units designated 2-A, 2-B, 2-C, and 2-D beginning at the eastern end of the trench. The trench was begun in order to investigate a cist that was noted within what became Unit 2-D. Both Units 2-C and 2-D were expanded to the north for an additional meter in order to explore the cist. Units 2-A and 2-B were excavated to 50 cm. in order to trace the stratigraphic connection between Trench 1 and the cist. Only Strata 1 and 2 were found.

Trench 3. Also 1 by 8 m., this trench ran east off the southern meter of 1-C. Units 3-A and 3-B were located mainly in Room 2 while 3-C and 3-D were within Room 1. All were excavated to the floor levels of the rooms. Cultural materials collected (Table 19) are included in the descriptions of these rooms.

Trench 4. This began at the northern meter of 1-E and extended 8 m. east. It was further subdivided into four, 1 by 2 m. units designated 4-A through 4-D. Units 4-C and 4-D were expanded 2 m. north to explore Use Area 1 while 4-A and 4-B were dug to 50 cm. to expose the stratigraphy.

Trench 5. Measuring only 1 by 2 m., Trench 5 ran north from the western meter of Trench 6, Unit A. It was excavated to a depth of 45 cm. in order to examine the area east of the room block and to expose more of Use Area 1. Only the natural strata were identified. Stratum 1 was quite heavy with gravel and stone.

Trench 6. Running east to west, and measuring 1 by 6 m., this was aimed to explore the area southeast of the room block, particularly around Room 1. The trench was on an easterly slope where Stratum 1 could be seen sloping down to the east.

Trench 7. This ran east from the northern meter of 1-G and measured 1 by 4 m. Hearth 2 was identified in the western end of 7-B and was also exposed in the eastern meter of 7-A. Unit 7-B was excavated to 45 cm. and natural strata were noted as in other units. Only the eastern meter of 7-A was excavated to expose Hearth 2.

Trench 8. This was extended west from Unit 1-F, and measured 1 by 8 m. Unit 8-A was dug to a depth of 50 cm. and only natural strata were found. Excavation in 8-B and 8-C exposed both Rooms 3 and 4 so that 8-C was expanded 1 meter both to the north and to the south in order of further expose these rooms.

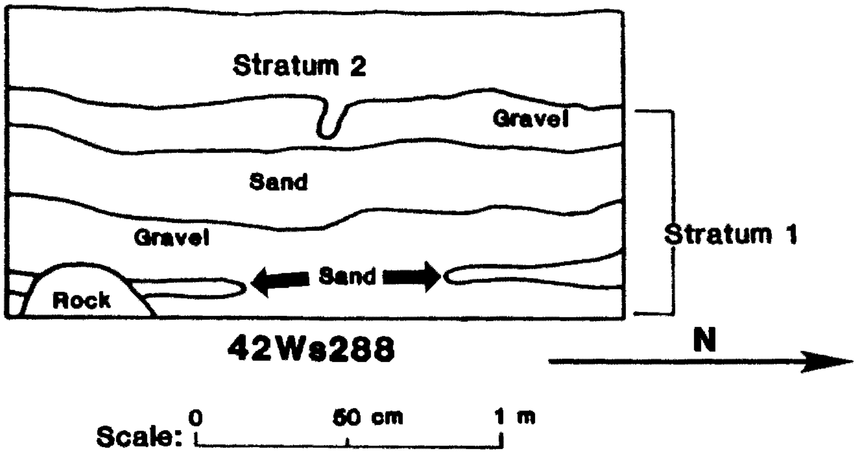



Figure 57. Profile of Trench 1, Unit 0, 42Ws288.

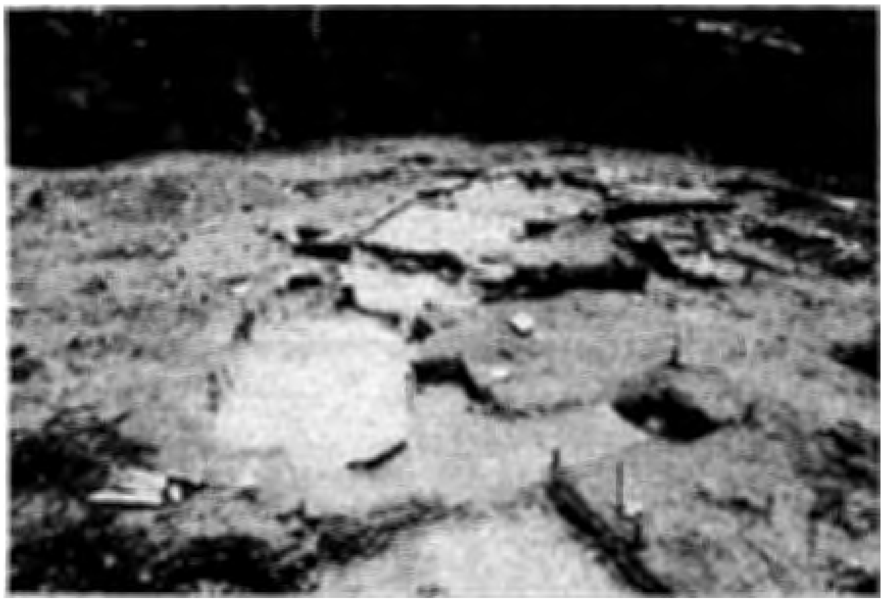


Figure 58. General view northeast of room block, 42Ws288.

Trench 9. Running east from the northern meter of Unit 1-H to define the limits of Room 4, the eastern meter of 9-B was dug to 75 cm. to reveal natural strata and a possible use-compacted surface seen at a depth of 30 cm. The surface was followed into 9-C where a slab of the Room 4 wall was encountered. Unit 9-C was then extended 1 m. north to define the southern end of this room. Unit 9-D was partially excavated to expose Room 4 and to reveal more of an exterior use surface.

Trench 10. Measuring 2 by 6 m. and running east to west, its purpose was to investigate the area south of Room 4. In the process, the sandstone slab walls of the pithouse were identified in the northwest corner of 10-A at a depth of 70 cm. Excavation continued west within the trench in order to expose the interior stratigraphy of the pithouse.

Trench 11. This trench was run south from the southeastern meter of Unit 10-A. Units 11-A and 11 B were 1 by 2 m. units running north to south while Unit 11-C measured 1 by 3 m. and ran at right angles to the east. Unit 11-A was excavated to define the eastern side of the pithouse. The northern meter of the unit was pushed to a depth of 90 cm. to find Stratum 1 exposed at 30 cm. The southern meter of 11-A, as well as all of 11-B, were excavated to a depth of 30 cm. Units B and C were excavated to search for possible features between the pithouse and Room 5. Only Stratum 2 was found at a depth of 20 cm.

Trench 12. Extending east from the northern meter of Unit 1-I and measuring 1 by 10 m. Units 12-B and 12-C of the trench were cleared to expose the roasting pit, with 12-C being opened 1 m. to the north and another to the south in order to allow a full view of the feature. Unit 12-E was dug to 65 cm. with only natural strata evident.

Trenches 13 and 14. These were used to explore the southern portion of the site. Trench 13 was a 1 by 4 m. trench directed east from the northern meter of Unit 1-J. It was dug to 30 cm. with Stratum 1 appearing at about 25 cm. Trench 14 was only 1 by 2 m., running south from the western meter of Unit 13-B. Again, Stratum 1 appeared at 25 cm.

Trench 15. Measured 1 by 8 m. and subdivided into four, 1 by 2 m. units, the trench revealed two small pits generally confined to the areas of 15-B and 15-C. All four units were excavated to 50 cm. and the pits proved to be the only features. Stratum 2 appeared to dip down in this area possibly as result of the excavation of the refuse pits.

Trench 16. This was aligned on an east to west axis and measured 1 by 2 m. Again, the purpose was the exploration of the southwestern part of the site. The trench was dug to a depth of 80 cm. and Stratum 1 was identified only at the bottom of the trench.

## Site Features

A variety of architectural features were identified at 42Ws288 (Fig. 55). These included a block of slab-lined rooms (Fig. 56) forming an arc open to the southwest. One room of the group revealed a second occupation. The pithouse (Fig. 56) was located just south of the room block (Fig. 56) while an isolated slab-lined room, Room 5, was found southeast of the pithouse. There was also an exterior slab-lined roasting pit some 8 m. south of the room block. Two small outdoor hearths were identified in the general area circumscribed by all of these features. There was also a possible ramada southwest of and adjacent to Room 1 of the room block. Behind or northwest of the room block, a vandalized cist was also cleared.

Room 1

Room 1 was the most easterly unit in the room block (Figs. 56,59,61). It was kidney-shaped in plan view, measuring 3.9 m. long and 2.7 m. at its widest. Construction was begun by excavating through Stratum 2 and some 10 to 15 cm. into Stratum 1. Vertical sandstone wall slabs were then set on top of Stratum 1 so that the exteriors of the slabs were braced by both Stratum 1 and 2. The upright slabs formed three of the walls, the fourth being made of masonary slabs laid in horizontal courses and mortared with a thick, white clay mixed with considerable gravel. The sandstone and cobble floor was laid as the walls were completed. The floor surface was covered with highly compacted, red, sandy clay which was gray on its upper surface. The clay floor varied from 1 to 4 cm. thick and it was found at a depth of 12 to 30 cm. The floor sloped up and covered the bottom of the upright slabs as well as the coursed wall.

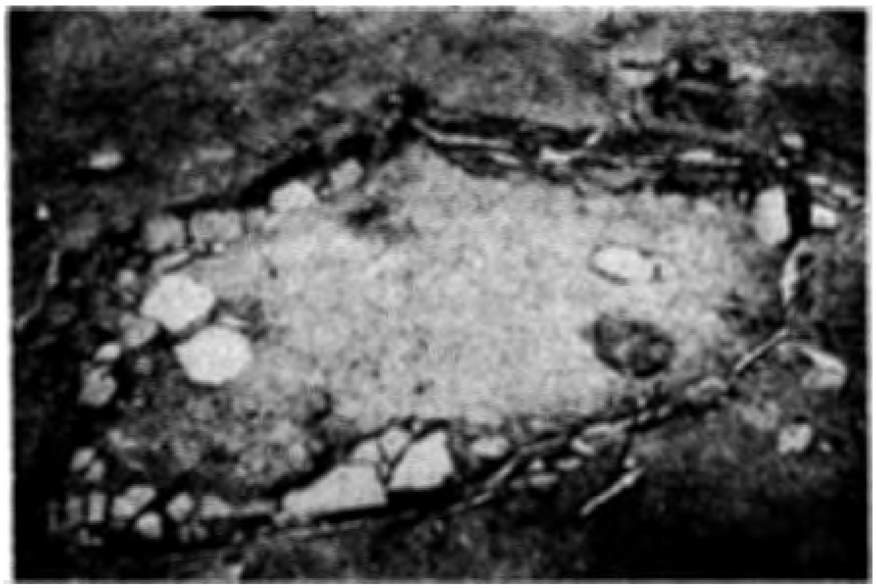


Figure 59. View WSW of Room 1, 42Ws288. Floor cist at right.

Erosion down the slope to the east appeared to have destroyed most of the eastern wall. At the southeast, the vertical slabs have fallen both inward and outward, but it seemed likely that the slabs in the area had a coursed masonry wall set just behind their top slabs as did the walls of other rooms in the structure.

Two circular floor cists (Figs. 56,59) were found in the northwestern corner of the room. Both appear to have been features in the original room. Cist 1 was dug into Stratum 1 to a depth of 36 cm. below the floor. It was nearly circular in shape, measuring 38 by 40 cm. Although the sidewalls did not seem to have been coated, a possible clay surface was found at the bottom of the pit. Cist fill consisted of loosely compacted, clean, orange sand and a couple of stones. The fill appeared to have been placed in the pit by the users of the room.

Cist 2 was located 30 cm. east of Cist 1. It was oval in shape, measuring 46 by 36 cm. Its interior proved to be straight sided and it was dug into Stratum 1 to a depth of 58 cm. below the floor. The orange sand fill was identical to that found in Cist 1, but in Cist 2, a circular, sandstone hatch cover had been placed over the cist, lending support to the view that the pits had been filled with sand by the prehistoric occupants.

Fill 1, apparently the burned roof-fall of Room 1, was composed of a highly compact, white, sandy clay overlain by a red clay of medium compaction. The white clay was not continuous within Fill 1. The red clay contained evidence of burned sticks, pieces of stick-impressed adobe as well as some charcoal lenses. The fill was 10 to 25 cm. thick and suggests that the superstructure was a pole form covered with small branches and brush upon which the clay had been laid. A carbon sample collected from the fill in contact with the floor yielded a date of $1020 \pm 50$ years: A.D. 930 (Beta 8036).

Fill 2 overlay Fill 1. It was a layer 4 to 12 cm. thick of mediumly compacted, brown, clay-impregnated sand generally similar to the composition of Stratum 2.

Use Area

Just outside the east wall of Room 1 was a compacted and probably prepared prehistoric use surface called Use Area 1 (Fig. 56), which was first noted as a 1 to 3 cm. thick layer of highly compact, orange-tan clay which overlay Stratum 1 sands. This clay surface graded into a compact gray clay and then into highly compacted Stratum 2 sands, particularly in the southwestern part of the feature. Use Area 1 was found at a depth of 20 cm. Two large metates were found on the surface, but they were stolen prior to collection.

Three small depressions were noted originating in the use surface and south of the east end of Room 1. They could be postholes of a ramada superstructure for the Use Area 1. Fill Levels 1 and 2 over the use area may represent a burned and collapsed ramada.

Fill Level 1 was observed only within a 2 m. area and was composed of loosely to medium compacted, darkly stained, ashy sand that varied in thickness from 7 to 10 cm. The level contained a concentrated charcoal deposit as well. Fill Level 2 was a red-brown, clay-impregnated sand of medium compaction which also contained some concentrations of red, sandy clay and charcoal. Its thickness averaged 10 cm. These fill levels were found only over the areas of the gray, prepared clay surface.

The deteriorated condition of the southeastern wall of Room 1 and the location of the prehistoric activity area at the same end suggest that the entrance to Room 1 may have been located in this area, although there is little to demonstrate that the entrance was not through the roof.

Room 2

Room 2 was contiguous with Room 1, sharing the coursed stone wall of the latter. Room 2 (FIgs. 56,61) appeared to have been built on the crest of a rise in the area of the site with the ground leveled and excavated to a depth of 30 cm., or only 10 cm. below the apparent surface of origin. The room was rectangular in shape, measuring 4.25 m. long by 2.7 m. wide, with a slight arc along the northern wall. The walls of the room were made of sandstone slabs which were set an average of 15 cm. into Stratum 1 and braced on the outside by Stratum 2. There was also evidence on the northern, western,and southwestern corner walls of a coursed masonry wall having been laid outside the top of the slabs. At the time of excavation, only a single basal course remained in situ.

After the walls had been set, a discontinuous layer of cobbles was laid on the interior surface. Following this, a layer of dark red, sandy clay was spread over the stone and the surface of the clay became a gray use surface. The clay floor averaged 2 cm. thick, except in the eastern end and against the coursed stone wall shared with Room 1 where it averaged 5 to 15 cm. thick. Because of the easterly slope of the surface, more clay was laid at the eastern end of the room in order to maintain a level surface. The clay floor also sloped up to the walls. The floor was identified at 30 to 40 cm. or perhaps from 0 to 10 cm. below the surface of origin.

A small firepit was found centrally located within the room (Fig. 56) and originating at the floor. It appeared to have been constructed at the time the structure was built. Two vertical layers of sandstone slabs were set into Stratum 2 along the southern edge of the hearth which penetrated only 10 cm. below the floor. The hearth was 45 cm. in diameter and the bottom was indifferently line with two small, tilted sandstone slabs. The pit was basically basin-shaped and the western edge showed some of a gray clay prepared surface. The fill of the hearth contained a well-compacted layer of gray ash mixed with brown sand and flecked with charcoal. Pollen and flotation samples were taken. The edges of the hearth showed evidence of heavy prehistoric use.

A slab-lined cist (Fig. 56), mostly above the floor, was found in the northeast corner of the room against the wall shared with Room 1. The walls were formed of single and double sandstone slabs which were set on top of the room floor and were anchored by clay that sloped up from the floor. The clay outside the cist was identical to that used for the floor and it probably covered the cist exterior. The bottom of the cist was some 10 cm. below the Room 2 floor and, while an eroded gray floor was present, there was no evidence of an inner lining on the walls. The cist diameter was 66 cm. and it appeared to have been constructed when the room was built.

Within Room 2, Fill Level 1 consisted of a thick, 3 to 8 cm., discontinuous layer of mediumly compacted, clean orange sand which overlay the clay floor (Fig. 61). This material was apparently deposited after the room was abandoned but prior to its collapse. Fill Level 2 was formed of red-brown clay of medium compaction with sparse charcoal flecks. This appeared to be the remnant of the roof. The layer was 8 to 18 cm. thick and it contained stone and slab rubble from the collapsed walls within the upper 5 cm. Fill Level 2 did not provide information concerning roof construction although it was probably similar to that of Room 1.

Fill Level 3, 10 to 21 cm. thick, was composed of loose to medium compacted, brown, clay-impregnated sand which was similar to Stratum 2. This level also contained most of the stone rubble from the walls of the room. There was, in fact, more structural rubble within this room than in any of the others.

Post-occupation erosion and perhaps vandalism had destroyed much of the wall on the southeastern side of the room. The dimensions of the room had to be calculated by following the edge of the floor in this area. It is possible that an entrance was located along the southeastern wall.

Room 3

Room 3 was contiguous with Room 2 (Fig. 56, 60). Measuring 4.1 by 1.9 m., the room attached to the western wall of Room 2 and then slanted south southwest. This room displayed some of the most complex construction techniques noted on the site. Part of the room appeared to have been set over a natural depression in an earlier site surface. Room 3 was build on a Stratum 1 surface which had probably been leveled except in the northeastern end where the depression existed.

Around the depression large sandstone wall slabs had been placed. They extended into Stratum 1 for 10 to 15 cm. and they were not visible at the level of the clay floor. The depression proved to be 45 cm. deep and it was filled with stone and nearly horizontal slabs packed with red-brown clay (Fig. 61). The fill in the depression ranged from 15 to 45 cm. thick and it abutted the slab wall. It appeared that the fill was placed in the depression after the wall slabs of Room 3 had been placed. The slabs were set quite deeply along the northeastern end of the room but were placed at shallow depths at the southwestern end where they existed. Within the northeast end of Room 2, the tops of the vertical slabs were barely discernable above the floor while an associated masonry wall ran four or five courses above them. The southern end of the room was defined by slabs on both the western and eastern sides while on the southern or southwestern end wall, most of the slabs were missing. The northern and western part of the slab lining was capped by two or three courses of masonry wall. The absence of defining slabs at the southern end suggest that an entrance may have been located in this area.

Once the depression in Room 3 had been filled, a flagstone floor was laid and then covered by a highly compacted, orange clay that measured from 1.5 to 7 cm. thick. Three sandstone slabs were set flush with the clay at the southwestern end, suggesting an area of heavy use. Room 3 was used for some period of time, and then another room was built within and on top of it. Further discussion will be included under Room 6, below.

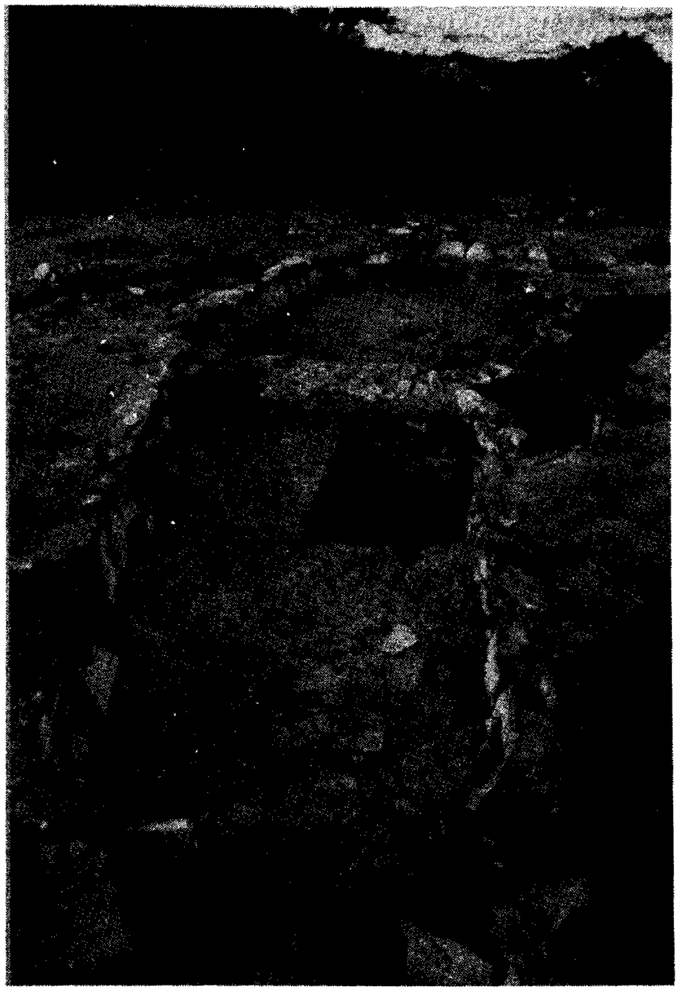
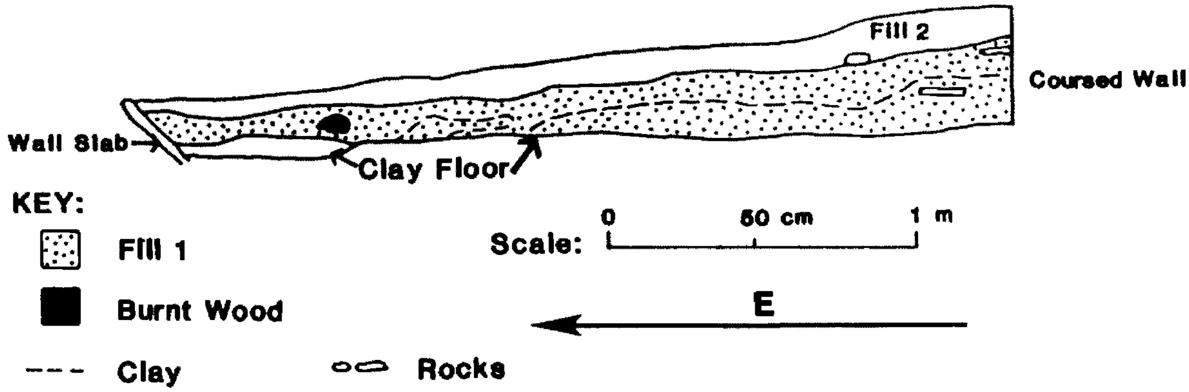


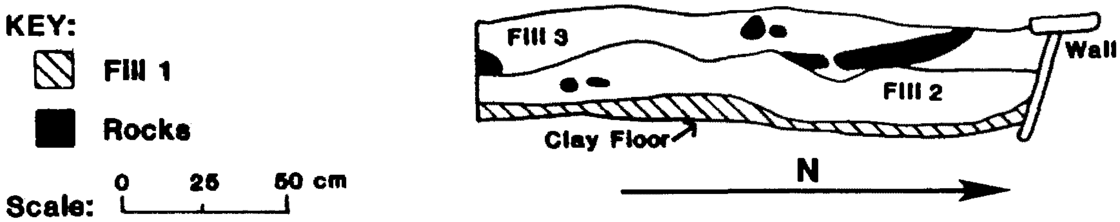
Figure 60. View northeast of Room 3, 42Ws288 with Room 2 in the background. Note profile.

Room 4

Room 4 was aligned with Rooms 1, 2, and 3 (Fig. 56), but was not contiguous with Room 3. The area required for the room appears to have been leveled to a depth of 30 cm. Vertically aligned sandstone slabs were then set 15 cm. into Strata 1 and 2. There does not appear to have been coursed masonry walls behind the slabs. The slab walls were internally braced with cobbles and slab fragments which were set in place at the time the flagstone floor was laid. The interspaces between the slabs were also chinked with small tabular sandstone fragments. A layer of red-brown clay 1 to 2 cm. thick was spread over the stone flooring and was lapped up and over the lower parts of the wall slabs. The surface of the floor was gray in color and it was found at a depth of 25 to 32 cm.

Two vertical wall slabs in the northern end of the room had been arranged to form a block "U" measuring 128 cm. wide. Outside of the room but associated with these slabs was a small cist or mealing bin (Fig. 56). It proved to be oval in shape, measuring 40 by 35 cm. The bottom was unlined and it was 8 cm.



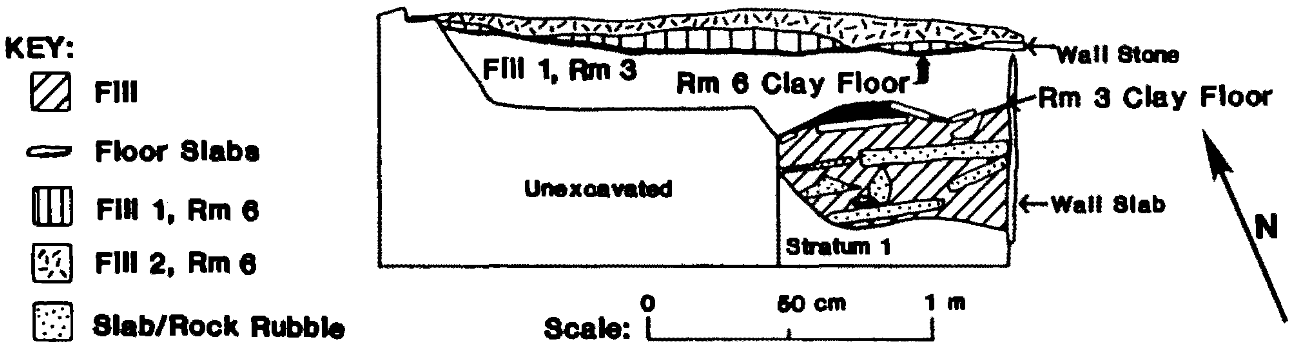




Figure 61. Selected room profiles, 42Ws288. Top, Room 1; center, Room 2; bottom, Rooms 3 and 6.

higher than the clay floor of Room 4. The western side of the feature was masonry lined while the eastern wall was contiguous with Room 3. There were small patches of red clay along the southeastern corner, but the northern limit could only be identified by the absence of fill and the presence of Stratum 2. The fill of the feature was a gray-brown sand and clay of medium compaction that was sparsely flecked with charcoal. The character of the fill suggests the feature may have been clay lined, while the presence of a grinding slab fragment suggests the feature served as a mealing bin.

A subfloor depression was also noted in the northeast corner of the room. It pressed against the wall slab and its bottom was 10 cm. below the floor from which it originated. On the western edge of the depression a small sandstone slab was set flush with the floor. Another slab tilted down to the bottom of the depression. The feature may, at one time, have been clay-lined since some clay was found at the bottom of the pit which measured 50 by 47 cm. The function of the feature could not be determined with assurance.

Fill Level 1 of Room 4 was a discontinuous layer directly overlaying the floor. It was composed of red-brown sand of loose compaction which ranged from 3 to 15 cm. in thickness. The material tended to be thickest against the slab walls and in the corners, a fact which suggests it was a natural post-abandonment deposit. A small, lightly compacted ashy lens flecked with charcoal also overlay the floor in the west-central area. The deposit did not appear to have originated in the room since the floor showed no sign of fire. The ashy material was partly overlain by the sand deposit. The ash lens would best be explained by the assumption that other parts of the site remained in use and that the ash was refuse from another fire.

Fill Level 2 was composed of mediumly compacted,brown-orange, sandy clay which contained some charcoal, slab and stone rubble. This fill, 2 to 15 cm. thick, probably represented the burned and collapsed roof. There were also areas of clay concentration in the level, suggesting a clay constituent for the roof.

Fill Level 3 was a well-compacted, orange-brown, clay-impregnated sand which varied in thickness from 9 to 25 cm. The fill appears to have been a mixture of roof-fall and Stratum 2. There was also a considerable amount of wall rubble in the material, especially in the southwestern portion of the room.

The slab walls of the room were mainly intact but there was no sign of an upper coursed masonry construction. The sandstone slabs of the northeastern wall were not fully intact although the corners remained visible in the southern end of the room where erosion had caused one corner slab to lean outward at an angle of over 45°. The quantity of structural rubble at the southern end of the room suggested that the wall had collapsed both inward and outward. It is possible that an entrance may have been located in the southern area. Also noted was a prehistoric use surface south and east of the room and found at a depth of 30 cm. in Stratum 2.

Room 6 (Rebuild)

Room 6 represented a second occupation (Figs. 56,61,62) within Room 3 but a carbon date as well as ceramic evidence suggested that this was a reconstruction incident during the main occupation of the site. Sometime after

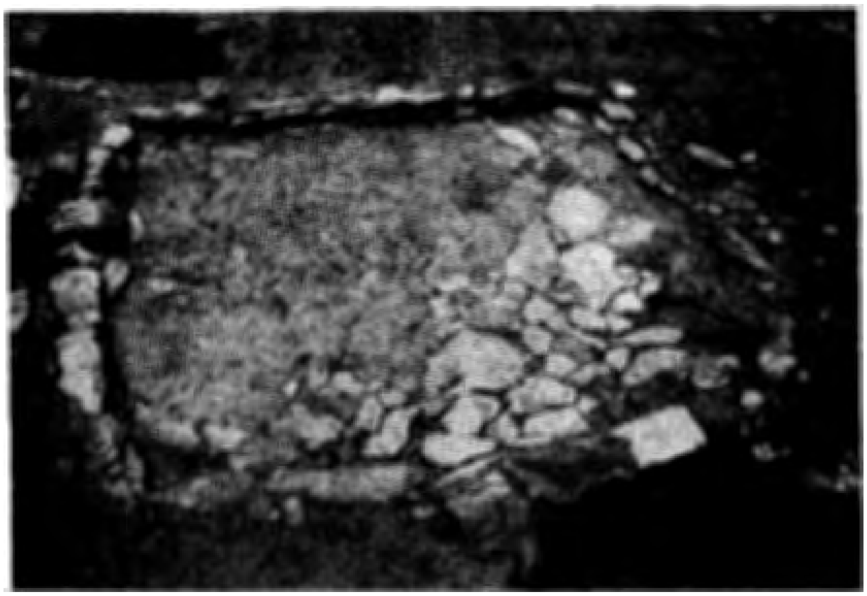


Figure 62. View northeast of Room 6, 42Ws288.

Figure 63. Isolated room (Room 5), 42Ws288. View northwest.

Room 3 was abandoned, it was apparently decided to reuse the room by cutting off a portion of the southwestern end, which was not used again. The abbreviated dimension was manifest in the reduced length from 4.1 m. for Room 3 to 2.6 m. for Room 6 while the width remained at 1.9 m. (Fig. 56).

Fill Level 2 of Room 3 lay on Fill Level 1 and, since it was discontinuous, sometimes directly on the floor of Room 3 (Fig. 61). The material of the fill was composed of at least eight laminae of highly compacted, orange-brown clay which varied in thickness from 10 to 23 cm. No slabs were found within this fill but, due to its highly compact nature, it was impossible to tell if the observed laminae were floor levels or fill levels. The laminae showed no fill deposits between them, indicating they were laid in rapid sequence. Sometime during the deposition of Fill Level 1, the masonry of the new southwestern wall was set for the new room.

Small sandstone flagstones were laid on Level 1 to form a rather uneven surface around the wall edges and at the northeastern end. A highly compacted clay layer was then spread over the flagstones with a thickness varying from 1 to 3 cm. The resulting surface failed to cover the slabs at the northeastern end of the room, however.

Three small, circular depressions were noted in the floor of the southwestern end of the room. They were aligned in a small arc and varied from 2.8 to 4 cm. in diameter. All were 2 cm. deep, but only the central depression was clay-lined, while the other two touched the flagstone. These features may have been sockets for secondary roof supports. Much of the rest of the floor had deteriorated too completely to determine if other supports existed.

The outline of Room 6 (Figs. 56,62) was demarked by the top one or two courses of masonry originally built for Room 3. Fill Level 1 for Room 6 was made up of a highly compacted red clay which varied from 3 to 10 cm. thick and contained charcoal, ash lenses, burned sticks and twigs. The fill covered the entire floor although it thinned markedly towards the edges. The fill represented a layer of burned and collapsed roof-fall which suggests a rather common form of roof construction. A carbon sample recovered from this fill produced a date of 750±60 years: A.D. 1200 (Beta 8035), which would be reasonable consistent with a late occupation for the site. Fill level 2 was composed of compacted, tan, clay-impregnated sand which ranged from 3 to 12 cm. in thickness. The upper surface of the level conformed to the modern surface. No structural rubble was recovered from either of the fill levels for the room, suggesting that it could have been open on the sides.

## Pithouse

The pithouse was identified 1 m. south of Room 4 (Fig. 56). The structure was built within a circular pit that had been dug through an average of 25 cm. of Stratum 2 into Stratum 1 to an average depth of 90 cm., or 60 cm. below the surface of origin which was assumed to have been the activity area outside of Room 4.

Once excavated, the pit was lined with roughly shaped sandstone slabs which were set in place and chinked with sandy clay. The slabs were also set from 20 to 30 cm. above the clay floor. As could be seen in profile, it

Figure 64. Overview of the cleared pithouse, 42Ws288. View north.

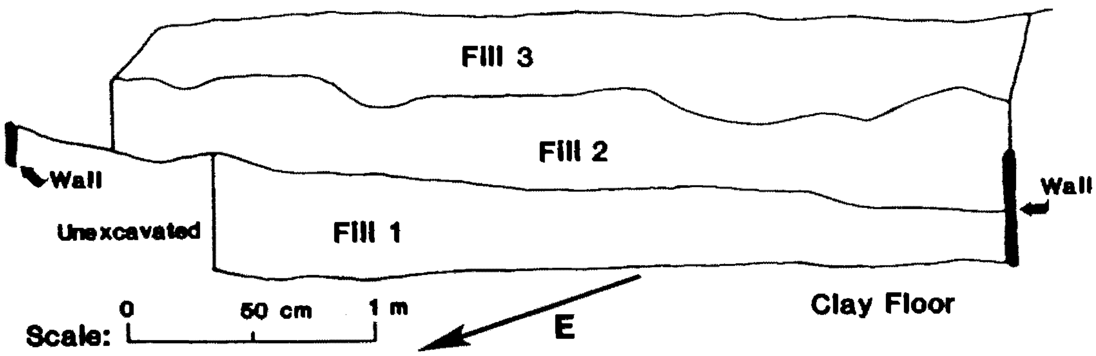



Figure 65. Pithouse profile, 42Ws288.

appeared that the original pit was some 20 cm. greater in diameter than the slab-lined circle which had a diameter of 4.15 m. The outer areas behind the slabs were filled with clean sand. A floor composed of highly compacted, red-orange clay was laid over Stratum 1 to an average thickness of 3 cm. The floor acquired a gray colored surface through use.

A number of distinctive floor features (Figs. 56,64) were found within the pithouse. All appeared to have been dug into Stratum 1 prior to the laying of the floor. Two sets or clusters of floor pits were noted in the two northern quarters of the floor. Set 1 was found in the northwestern quarter and was composed of three depressions (Fig. 56). The depressions were aligned with the largest, lozenge-shaped one located between the two smaller ones. The western-most depression was most nearly circular, measuring 46 by 35 cm. This was the most poorly defined of the pits and it was also unlined. It proved to be 10 cm. deep were it touched some white clay in Stratum 1. The central and eastern depressions were more clearly defined.

The central and largest feature was 19 cm. deep and measured 75 by 48 cm. The sides were sloping and lined with gray clay similar to that used on the floor of the pithouse. Sometime after it was constructed, the central pit was filled with loose orange sand and then covered with a layer of prepared clay 2 cm. thick. This clay differed slightly in color from that of the floor and was thus readily identified. The clay cap had three small, circular depressions, each vaguely collared, on its surface. These varied from 2.5 to 6.0 cm in diameter and 0.6 to 1.0 cm. deep, and they were arranged in a linear pattern.

The most easterly depression in the northwestern group was similar in its construction to the central depression. It differed in that it was smaller and oval in shape. The pit measured 29 by 45 cm. and was 14 cm deep. The fill was again a loose, orange sand although a rock was included. The smaller depression was also clay-capped.

The northeastern group (Fig. 56) was composed of three well-defined, subfloor pits, although only the eastern most had a clay cap. The most westerly of the three was ovoid in outline, measuring 69 by 48 cm. and 16 cm. deep. The fill was composed of mediumly compacted, brown-orange sand with a few charcoal flecks. The walls and floor were lined with gray clay which appeared to have been laid at the time the pithouse floor was placed. The central pit, the largest of the three, measured 73 by 48 cm. by 20 cm. deep. The fill was similar to that found in the other pits. The walls and bottom of this particular pit were lined with a maroon-gray clay which had disintegrated at the bottom. The most easterly pit was the same size as the western feature of the group, measuring 69 by 48 cm and 19 cm. deep. This final pit was, however, capped by a thick layer of reddish clay from 1 to 30 cm. in thickness. The fill was loose, clean, orange sand.

Subsurface pits such as these are common on Western Anasazi sites, usually occurring in groups of four or five. They are usually filled with clean sand and many have been clay-covered. Unfortunately, nothing really indicates their function.

A firepit and a large, associated, clay-rimmed basin also originated from the clay floor of the pithouse (Figs. 54,64). The firepit was identified just south of the center of the room and it proved to be somewhat oval in shape, measuring 56 by 43 cm. by a maximum of 13 cm. deep. There were some remnants of a gray clay lining on the lower walls and the bottom of the basin, while some areas exhibited fire reddening, particularly to the southwest. The lower areas were also ash-covered, probably from the bottom 1 to 5 cm. of fill which was composed of mediumly compacted, orange-gray, clay-impregnated sand and ash. Pollen and flotation samples were taken from this material. There was no clay rim to the firepit while its sides ranged from sloped to vertical.

Directly south of the firepit was a large, trapezoidal depression which was outlined on its eastern and western side by clay ridges which fanned out from the firepit in the fashion of the spokes of a wheel (Figs. 56,64). Thus, the enclosed depression widened toward the southern edge of the pithouse. The depression was 56 cm. wide in the north, 107 cm. wide at the southern end while it was 98 cm. long. The depression extended to an average depth of 10 cm. below the floor except for a large, circular depression in the northern end which proved to be 15 cm. deeper. This secondary depression measured 65 by 53 cm. and its fill was similar to Fill Level 1 (see below), the pithouse roof-fall. The entire feature had been dug into Stratum 1. The clay ridges were 4 to 5 cm. above the surface of the floor while they averaged 10 cm. in width. The walls of the depression were partly lined with gray clay to a point at least 17 cm. below the top of the clay ridges.

A clay wall some 5 cm. wide separated the firepit from the depression (Fig. 64). At the eastern end of the wall, a small gap was identified. It suggested that there was some connection between the firepit and the depression. Similar features have been noted elsewhere. In the project area it was found at 42Ws392, Pithouse 1.

A sandstone slab was laid flush with the floor just west of the ridge-outlined depression. It was not clay covered and its specific function was not evident.

Two small, circular depressions (Fig. 56) originated on the floor of the pithouse just south of the northeastern group of sand-filled pits. Both of these depressions showed some collaring of floor clay. The western one was 4.8 cm. in diameter while the eastern depression was 4.3 cm. in diameter. Both were no more than 0.5 cm. in depth and they were found 32 cm. apart. A speculative suggestion is that the features were sockets for a ladder, suggesting a roof entrance to the pithouse in the northeastern quarter. A fairly large, rectangular slab of rippled sandstone, measuring 64 by 45 cm., was recovered just above the roof-fall in this area. The slab may have been a hatch cover intended to seal the opening from the weather.

Fill Level 1 (Fig. 65), apparently representing the collapsed roof, lay directly on the pithouse floor. It was composed of well-compacted, red-orange clay and sand which contained moderate to sparse charcoal flakes. It ranged from 24 to 42 cm. thick and contained small rocks but no evidence of charred beams. A C-14 sample recovered from the upper portion of the fill produced a date of 1090±50 years: A.D. 860 (Beta-8038). This seemingly early date may be the result of an older piece of wood having been used in the pithouse construction. Such an argument is convenient when dates do not conform to expectations. The material of Fill Level 1 suggested that the roof was composed of clay and that it collapsed with minimal burning. No evidence was observed on which to base a reconstruction of the superstructure.

Fill Levels 2 and 3 (Fig. 65) were naturally deposited levels, both composed of mediumly compacted, orange-brown sand which was sparsely flecked with charcoal. Fill Level 2 ranged from 20 to 40 cm. in thickness as did Fill Level 3. Both were deposited following the collapse of the roof and both were similar in composition to Stratum 2.

There appeared to have been some erosion on the southern edge of the pithouse. There was no evidence of a slab wall on the south, and the edge of the room was determined by following the clay floor even though it was somewhat broken in the area. This edge was also defined by the apparent southern end of the ridge bordering the depression south of the hearth.

In a further attempt to define the southern edge of the structure, a trench measuring 1 m. by 0.5 m. was extended south of the pithouse. This small unit exposed a 1 to 1.5 cm. thick layer of burned material composed of sticks, twigs, and corncobs. The burned layer was within Stratum 2 only 5 to 10 cm. below the modern surface. This same level was also seen in the western wall of Trench Unit 11-B. The observed length of the burned material was 3.1 m. east to west and 0.81 m. north to south. The origin of the stratum could not be determined, but it could be historic.

Isolated Room (Room 5)

Room 5 was an isolated, slab-lined structure (Fig. 63) located 5 m. southeast of the pithouse (Fig. 55). The surface of origin was probably within Stratum 2, but it could not be identified in the profile. The wall slabs were placed barely into Stratum 1, the surface of which slopes up to the north in this area. Following the placement of the slabs, a flagstone floor was laid on Stratum 1 and the stone was then covered with a highly compacted layer of clay measuring from 1 to 2 cm. thick near the center of the room to as much as 5 cm. along the base of the slabs. The slabs stood from 20 to 25 cm. above the floor which lay at a depth of 30 cm. Room 5 measured 3.16 by 1.7 m.

The room had been vandalized in the modern period and it was, in fact, the feature most visible on the surface when the site was cleared. The vandalism meant that the fill was heavily disturbed and it probably does not represent the actual deposition sequence.

Fill Level 1 was a discontinuous deposit noted only in the eastern end of Room 5. It consisted of a 2 to 4 cm. thick layer of loosely compacted, darkly stained, ashy sand which was heavily flecked with charcoal. In places it overlay the clay floor and the fire or heat which produced the stratum also blackened the floor and assured its preservation.

Fill Levels 2 and 3 appear to have been redeposited simultaneously as both, in places, overlay the floor. Fill Level 2 was composed of compacted, red-brown, sandy clay which was charcoal flecked and varied from 2 to 10 cm. thick. Fill Level 3 was composed of a highly compacted, orange-gray clay which was some 25 cm. thick and slightly charcoal flecked. Loose sandstone slabs were found on and around the room, but the fill suggests that the room had a clay superstructure.

Modern vandalism destroyed the eastern walls of the room, but the slab floor remained essentially intact so the room limits could be defined. Almost all of the floor slabs had been removed from the northern half of the room, probably by vandals, since this was where all fill levels were thinnest.

Roasting Pit

The roasting pit was a circular, slab-lined pit (Figs. 56,67) found 8 m. south of Room 1 and 10 m. east of the pithouse. Construction was begun by digging a pit some 25 cm. into Stratum 1, the top of which was perhaps 5 cm. below the surface of origin. The pit was then lined with small, flat stones and tan sand. Next, thick sandstone lining slabs were placed that lean slightly outward at the top. The slabs stood 15 to 20 cm. above the apparent surface of origin. The lining slabs were not set into sterile and the bottom of the pit was below the bottom of the slabs. The bottom of the pit apparently remained unlined, although a few flagstones were noted in the southwestern corner where they formed a fairly level surface. The roasting pit had an average diameter of 1.4 m. and the bottom was ca. 45 m. below the tops of the lining slabs.

Fill Level 1 (Fig. 67) was deposited during prehistoric use. It was a deposit, 10 to 13 cm. thick, of charcoal and loosely compacted, brown sand. The charcoal in the bottom of the layer was very highly compacted and it appeared to have been burned and reburned several times. It was this level which heavily blackened the slab walls. A carbon sample recovered from the upper portion of the fill yielded a date of 890±50 years: A.D. 1060 (Beta 8037). Pollen and flotation samples were also recovered from the fill.

Fill Level 2 consisted of medium to loosely compacted, tan-brown sand which was slightly charcoal stained and which contained sandstone slab fragments. The stone rubble probably resulted from a wall collapse of the structure. This level was 10 to 20 cm. thick and its upper surface was level with the apparent surface of origin.

Fill Level 3 was composed of loosely compacted, tan-brown sand which was lightly flecked with charcoal but which contained no structural rubble. The layer was 20 to 25 cm. thick and it was essentially the same as Stratum 2 outside the pit.

A number of artifacts (Table 19) were recovered from Trench Unit 12-C, Stratum 2 which suggested that there was an activity area associated with the roasting pit. The cultural material was generally suggestive of lithic production of all stages.

Outdoor Hearth

Hearth 1. This feature was located 2 m. south of Room 2 (Figs. 55,68). Evidence indicated that a pit had been dug 10 to 15 cm. below the surface of origin in Stratum 2, or some 20 cm. deep. The pit was lined with small, horizontal and tilted sandstone slabs which were associated with a highly

Figure 66. View west of cleared roasting pit, 42Ws288.

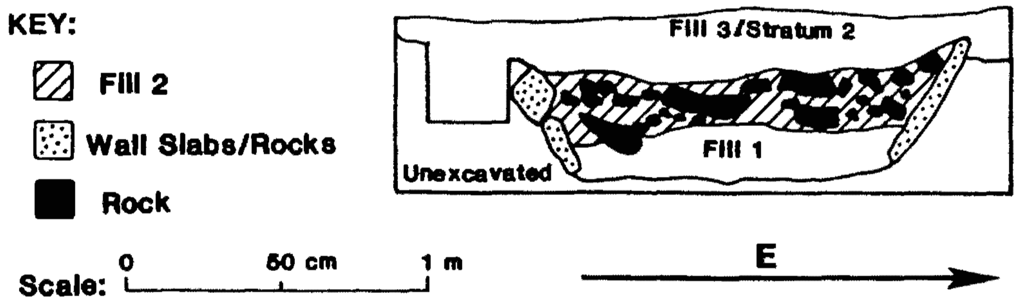



Figure 67. Profile of the roasting pit, 42Ws288.

Figure 68. View east of Outdoor Hearth 1, 42Ws288. Use level is in the background.

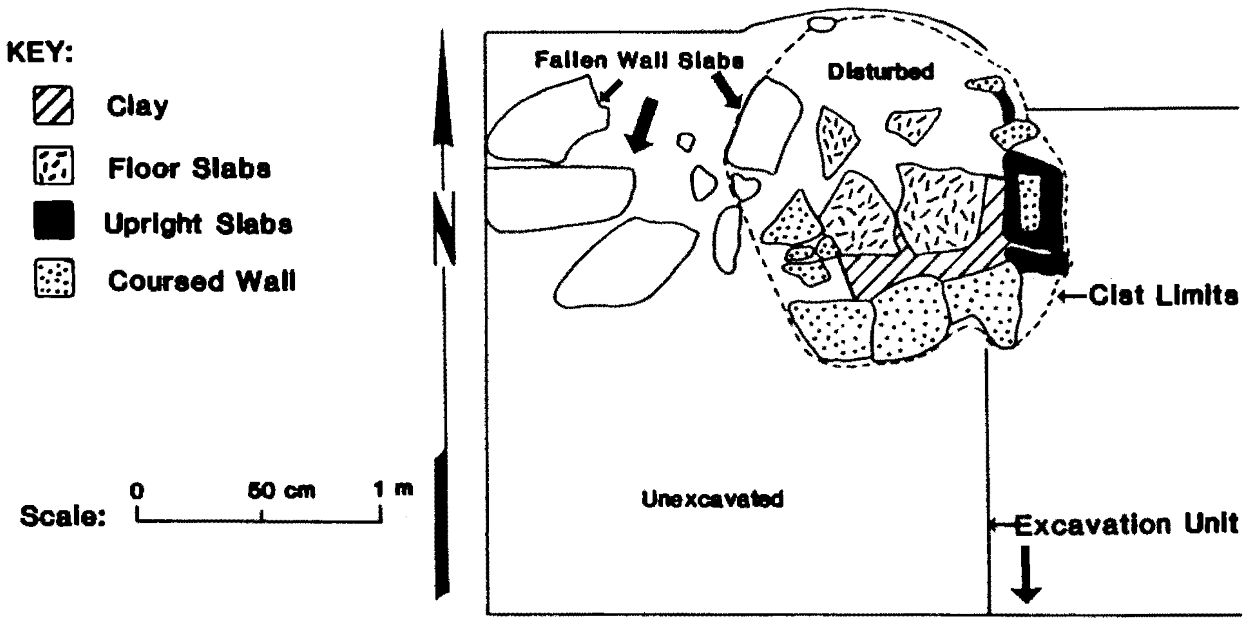



Figure 69. Plan map of the isolated cist, 42Ws288

compacted, brown sand surface. The lining slabs either protruded just above the prehistoric surface of origin or they may have been flush with that surface. The compact surface was darkly stained by two associated charcoal deposits. The hearth measured 80 cm. in diameter and was generally dish-shaped in profile.

The prehistoric use surface surrounding the hearth (Fig. 68) was composed of highly compacted Stratum 2 and clay; it was found at a depth of 15 to 20 cm. An area of red clay wash, possibly from Room 2, was noted just north of the hearth.

Hearth 2. This hearth was found 2 m. south of Hearth 1 (Fig. 55) and the two are generally similar, save that Hearth 2 had a diameter of only 28 cm. A pit had been dug 10 to 20 cm. into Stratum 2 and then was lined with small pieces of tabular sandstone. The stone was set in an ashy matrix and there was no clay or sand covering over the slabs. The fill overlying the slabs consisted of 2 cm. of charcoal-stained, brown sand which, in turn, was overlain by 10 cm. of Stratum 2 sand.

The apparent surface of origin for Hearth 2 was identified at a depth of 10 cm. It was flush with the tops of the defining stone. The surface of origin was also a prehistoric use level composed of brown, clay-impregnated sand which had been highly compacted from exposure and use. Most of the hearth was excavated during the digging of Trench Unit 7-B and all associated cultural material is listed under the excavation unit (Table 19).

Isolated Cist

This Cist was the only structural feature found north of the room block (Figs. 55,69). It was located 5 m. northwest of the common wall of Rooms 2 and 3. A pit was dug into Stratum 1 and lined with fairly large, vertical sandstone slabs which did not reach into Stratum 1. The pit was apparently dug 50 cm. below the surface of origin which was, in its turn, identified at a depth of 25 cm.

The wall slabs were set into a tan-gray wall-pack laid some 10 cm. above the floor. Some red clay was also mixed in the feature. Both of the clays were also used to put a thin lining on the bottom of the pit. A flagstone floor was then laid in the pit and more clay was used to cover the stone. The floor clay ranged from 2 to 7 cm. in thickness. The clay may not have been laid immediately after the stone floor was set because a thin ash deposit was found on the slab floor in the southeast corner. The vertical slab walls were capped by a two or three courses of masonry wall. The cist measured 110 by 85 cm., being oval in shape (Fig. 69).

Refuse Pit

A small refuse and ash disposal pit was identified 3.5 m east of Room 5 (Fig. 55). The feature was composed of two, small, interconnected pits dug some 20 to 25 cm. below the surface of Stratum 1. The entire feature measured 2.4 m. long by 0.70 m. wide. The fill was loosely compacted, darkly stained, orange- brown sand and ash mixed with moderate amounts of charcoal flecks. There were also two unburned stones in the southern part of the pit.

Figure 70. Historic slab surface, 42Ws288. "Step" is on the right.

## TABLE 19

## COLLECTION SUMMARY, 42WS288

**Trench 1 Stratum 2.**
**Units A,D,E,F,H,J,L,M,O,Q.**

**Ceramics**

| | |
|---|---|
| North Creek Gray | 88 |
| North Creek Corr. | 12 |
| North Creek B/G | 1 |
| u/i Virgin ser. B/G | 11 |
| Boulder Gray | 1 |

**Lithics**

| | |
|---|---|
| B - mano frag. | 1 |
| S - mano frags. | 2 |
| C - utilized flake | 1 |
| C - Cottonwood Triangular | 1 |
| C - point preform | 1 |
| C - cores | 3 |
| C2- core | 1 |
| Q1- core | 1 |
| C - biface flakes | 6 |
| C - core flakes (2 cortex) | 8 |
| C - core shatter flakes (1 cortex) | 12 |
| C - u/i flakes (1 cortex) | 30 |
| LL- core flakes (6 cortex) | 6 |
| LL- core shatter flakes (2 cortex) | 2 |
| LL- u/i flake | 1 |
| Q - core flakes (4 cortex) | 4 |
| Q - core shatter flake | 1 |
| C4- u/i flake | 1 |
| SS- core flake(cortex) | 1 |
| CQ- core shatter flake | 1 |

**Trench 1 Stratum 2 Historic.**
**Units D,L,O,Q.**

| | |
|---|---|
| Stoneware (2 flown blue) | 8 |
| screw jar ring frag.opaque white glass | 1 |
| red earthenware | 1 |
| glass sherds (1 clear, pale blue) | 2 |

**Trench 2 Stratum 2.**
**Units A,B,C,D,E.**

**Ceramics**

| | |
|---|---|
| North Creek Gray | 17 |
| St. George B/G | 1 |
| Hildale B/G | |
| u/i Virgin Ser. B/G | 2 |
| Middleton B/R disk frag. | 1 |

| | |
|---|---|
| Lithics | |
| C - Parowan Basal-notched | 1 |
| C - knife frag. | 1 |
| C - bifacially worked eccentric | 1 |
| C3- core | 1 |
| LL- core | 1 |
| C - core flakes (2 cortex) | 3 |
| C - core shatter flakes (3 cortex) | 5 |
| C - u/i flakes (3 cortex) | 6 |
| LL- core flake (cortex) | 1 |
| LL- u/i flakes (2 cortex) | 4 |
| Q - core flake (cortex) | 1 |
| C4- u/i flake | 1 |
| Unit 2-E Historic. | |
| Clear glass frags. | 2 |
| Units 4-A and 4-B Stratum 2. | |
| Ceramics | |
| North Creek Gray | 27 |
| North Creek Corr. | 2 |
| Glendale B/G | 5 |
| Parashant B/G | 1 |
| Lithics | |
| S. manos (1 frag.) | 2 |
| C - core flakes (1 cortex) | 4 |
| C - core shatter flake | 1 |
| C - u/i flakes (1 cortex) | 5 |
| Q - core flake (cortex) | 1 |
| Trench 5 Stratum 2 0-32 cm. | |
| North Creek Gray | 24 |
| North Creek Corr. | 2 |
| St. George B/G | 1 |
| u/i Virgin Ser. B/G | 1 |
| S - axe | 1 |
| C - core shatter flake (cortex) | 1 |
| C - u/i flakes | 4 |
| LL- core shatter flake | 1 |
| O - u/i flakes (1 cortex) | 1 |
| Units 6-A,6-B,6-C Stratum 2. | |
| North Creek Gray | 22 |
| North Creek Corr. | 4 |
| North Creek B/G | 2 |
| Hildale B/G | 1 |
| u/i Virgin Ser. B/G | 2 |
| C - Rose Spring | 1 |
| C - blank frags. | 2 |
| Q - blanks | 2 |
| C - preform | 1 |
| C - biface flake | 1 |
| C - core shatter flakes (1 cortex) | 2 |
| C - u/i flakes (1 cortex) | 8 |
| LL- core flake (cortex) | 1 |
| LL- u/i flake (cortex) | 1 |
| C2- core flake (cortex) | 1 |
| O - u/i flake | 1 |
| Trench 7 Stratum 2. | |
| Units A,B,C | |
| North Creek Gray | 24 |
| St. George B/G | 2 |
| Boulder Gray | 3 |
| Q - edge grinder | 1 |
| C - preforms (2 frag.) | 5 |
| C - core | 1 |
| C - core flakes (1 cortex) | 5 |
| C - u/i flakes | 8 |
| large mammal ribs | 8 |
| Trench 8 Stratum 2. | |
| Units A,B,C | |
| North Creek Gray | 57 |
| North Creek Corr. | 18 |
| St. George B/G | 1 |
| u/i Virgin Ser. B/G | 4 |
| Q - polishing stone | 1 |
| C - preform frag. | 1 |
| LL- core | 1 |
| Q - core | 1 |
| C - biface flake | 1 |
| C - core flakes (1 cortex) | 7 |
| C - core shatter flakes (3 cortex) | 3 |
| C - u/i flakes | 2 |
| SS- u/i flake (cortex) | 1 |
| Trench 9 Stratum 2. | |
| Units B,C,D. | |
| Ceramics | |
| North Creek Gray | 27 |
| North Creek Corr. | 48 |
| u/i Virgin Ser. B/G | 2 |
| Lithics | |
| C2- drill | 1 |
| C - knife frag | 1 |
| Q - edge grinder | 1 |
| hematite frag. | 1 |
| C - blanks (1 frag.) | 3 |
| O - preform | 1 |
| C - biface flakes | 4 |
| C - core flakes (2 cortex) | 5 |
| C - core shatter flakes (2 cortex) | 4 |
| C - u/i flakes | 6 |
| LL- core flakes (3 cortex) | 5 |
| LL- core shatter flake (cortex) | 1 |
| LL- u/i flakes | 2 |
| C5- biface flake | 1 |
| C5- core flake | 1 |
| Trench 10 Fill | |
| North Creek Gray | 45 |
| North Creek Corr. | 1 |
| St. George B/G | 1 |
| Boulder Gray | 4 |
| S - mano | 1 |
| C - point preform | 1 |
| C - biface flake | 1 |
| C - core flakes | 6 |
| C - core shatter flakes (1 cortex) | 2 |
| C - u/i flakes (1 cortex) | 4 |
| LL- u/i flake | 1 |
| Q - u/i flake | 1 |

## TABLE 19 (continued)

| Trench 11 Stratum 2. Units A,B,C. | |
|---|---|
| North Creek Gray | 20 |
| North Creek Corr. | 1 |
| St.George B/G | 1 |
| North Creek B/G | 2 |
| u/i Virgin Ser. B/G | 2 |
| c - u/i point | 1 |
| C - point frag. | 1 |
| C - blank | 1 |
| C - scraper | 1 |
| C - biface flake | 1 |
| C - core flakes | 7 |
| C - core shatter flake | 2 |
| C - u/i flakes (2 cortex) | 15 |
| Q - core flake | 1 |
| LL- u/i flake (cortex) | 1 |
| Q - u/i flake | 1 |

| Trench 12 Stratum 2. Units B,C. | |
|---|---|
| North Creek Gray (1 fr.) | 40 |
| u/i Virgin Ser. B/G (1 fr.) | 4 |
| C2- utilized flake | 1 |
| C - preform frag. | 1 |
| LL- core | 1 |
| C - biface flakes | 6 |
| C - core shatter flakes (3 cortex) | 6 |
| C - u/i flakes (3 cortex) | 8 |
| LL- core flake (cortex) | 1 |
| LL- u/i flakes (2 cortex) | 2 |
| C9- core flake | 1 |

| Trenches 13 and 14 Stratum 2. | |
|---|---|
| North Creek Gray | 25 |
| North Creek B/G | 7 |
| u/i Virgin Ser. B/G | 1 |
| S - mano | 1 |
| S - edge pounder | 1 |
| C - utilized flake | 1 |
| LL- core | 1 |
| C - core flakes (2 cortex) | 5 |
| C - core shatter flakes (15 cortex) | 16 |
| C - u/i flakes | 9 |
| LL core flakes (2 cortex) | 2 |
| SS- core flake | 1 |
| C6- biface flake | 1 |

| Trench 15 Stratum 2 Units A,B,C,D. | |
|---|---|
| North Creek Gray (3 fr.) | 66 |
| North Creek Corr. | 1 |
| St. George B/G | 3 |
| North Creek B/G | 7 |
| u/i Virgin Ser. B/G | 2 |
| Paiute Plain | 2 |
| S - pestel | 1 |
| S - knife frag. | 1 |
| C - scraper | 1 |
| C - biface flake | 1 |
| C - core flakes (1 cortex) | 3 |
| C - core shatter flakes (4 cortex) | 12 |
| C - u/i flakes (1 cortex) | 6 |
| LL- core flakes (3 cortex) | 6 |
| LL- u/i flakes (1 cortex) | 5 |
| Q - u/i flake | 1 |
| L - core flake (cortex) | 1 |

| Trench 16 Stratum 2. | |
|---|---|
| North Creek Gray | 7 |
| St.George B/G | 1 |
| S - mano frag | 1 |
| C - Elko Corner-notched | 1 |

| Room 1 Floor contact. | |
|---|---|
| North Creek Gray | 14 |
| North Creek Corr. | 1 |
| North Creek B/G | 5 |
| B - mano | 1 |
| C - Parowan Basal-notched (inc.) | 1 |
| C - Rose Spring | 1 |
| C - biface flakes | 1 |
| C - core flakes (1 cortex) | 8 |
| C - core shatter flakes | 2 |
| C - u/i flakes (1 cortex) | 19 |
| LL- u/i flake (cortex) | 1 |
| CQ- u/i flake | 1 |

| Room 1 Cist 1 fill. | |
|---|---|
| North Creek Gray | 7 |

| Room 1 Cist 2 fill. | |
|---|---|
| North Creek Gray (vessel frag.) | 24 |

| Room 1 fill. | |
|---|---|
| North Creek Gray (1 worked) | 72 |
| North Creek Corr. | 5 |
| u/i Virgin Ser. B/G | 7 |
| Boulder Gray | 2 |
| S - ground stone frag. | 1 |
| C - blank | 1 |
| C - biface flakes | 3 |
| C - core flakes (2 cortex) | 15 |
| C - core shatter flakes (2 cortex) | 3 |
| C - u/i flakes (3 cortex) | 19 |
| LL- core flakes (1 cortex) | 1 |
| Q - core shatter flake (cortex) | 1 |
| O - u/i flake | 1 |
| large mammal long bone frag. | 1 |

| Use Area 1, clay floor contact. | |
|---|---|
| North Creek Gray | 22 |
| u/i Virgin Ser. B/G | 2 |
| Boulder Gray | 1 |

| Use Area 1, Fill 1 and 2, Stratum 2. | |
|---|---|
| North Creek Gray (1 fr.) | 63 |
| North Creek Corr. | 1 |
| St.George B/G | 2 |
| North Creek B/G | 4 |
| Glendale B/G | 2 |
| u/i Virgin Ser. B/G (1 fr.) | 6 |
| u/i Virgin Ser. B/G-Corr. | 1 |
| S - ground and flaked stone | 1 |
| C4- knife frag. | 1 |
| C - preform | 1 |
| Q - core | 1 |
| C - biface flakes | 2 |
| C - core flakes | 5 |
| C - u/i flakes | 3 |
| LL- core flake (cortex) | 1 |
| C4- u/i flake | 1 |

| Room 2 floor contact. | |
|---|---|
| North Creek Gray | 19 |
| North Creek Corr. (23 one vessel) | 24 |

TABLE 19 (continued)

| | |
|---|---|
| u/i Virgin Ser. B/G | 1 |
| B - mano frag. | 1 |
| C - core flakes (2 cortex) | 4 |
| C - u/i flakes | 6 |
| LL- core flakes (1 cortex) | 2 |

Room 2 Fill 1, 2, 3.

| | |
|---|---|
| North Creek Gray (3 fr.) | 125 |
| North Creek Corr. (25 single vessel) | 88 |
| St.George B/G | 2 |
| North Creek B/G | 3 |
| Glendale B/G | 2 |
| u/i Virgin Ser. B/G (2 fr.) | 10 |
| Boulder Gray | 1 |
| S - mano | 1 |
| B - mano frag. | 1 |
| Q - edge grinders | 2 |
| C - knife frag. | 1 |
| C - utilized flake | 1 |
| L - core | 1 |
| C - biface flakes | 4 |
| C - core flakes (3 cortex) | 11 |
| C - core shatter flakes (4 cortex) | 5 |
| C - u/i flakes | 16 |
| LL- core flakes (4 cortex) | 5 |
| LL- u/i flakes (2 cortex) | 2 |
| SS- u/i flakes (1 cortex) | 2 |
| C4- u/i flake (cortex) | 1 |

Room 3 floor contact.

| | |
|---|---|
| North Creek Gray | 7 |
| North Creek Corr. | 3 |

Room 4 floor contact.

| | |
|---|---|
| North Creek Gray (2 drilled disk frags.) | 182 |
| North Creek B/G | 1 |
| u/i Virgin Ser. B/G | 2 |
| C - point frag. | 1 |
| C - utilized flake | 1 |
| C - preform | 1 |
| C - biface flake | 1 |
| C - core flakes | 3 |
| C - u/i flake | 1 |
| LL- core shatter flake (cortex) | 1 |
| LL- u/i flake | 1 |
| SS- core flake (cortex) | 1 |
| large mammal long bone frags. | 2 |
| small mammal long bone frags. | 5 |
| u/i frags. | 11 |

Room 4 floor depression.

| | |
|---|---|
| North Creek Gray | 1 |

Room 4 exterior cist.

| | |
|---|---|
| S - grinding slab frag. | 1 |

Room 4 Fill 2 and 3.

| | |
|---|---|
| North Creek Gray (15 one vessel) | 158 |
| North Creek Corr. | 1 |
| St.George B/G | 1 |
| North Creek B/G | 1 |
| u/i Virgin Ser. B/G | 10 |
| D - ground stone frag. | 1 |
| LL- edge pounder | 1 |
| C - core flakes (1 cortex) | 8 |
| C - core shatter flake | 1 |
| C - u/i flakes | 5 |
| LL- core flakes (1 cortex) | 2 |

| | |
|---|---|
| O - u/i flake | 1 |
| Q1- u/i flake | 1 |
| Lagomorph | 1 |
| *Sylvilagus* right scapula | 1 |
| *Sylvilagus* right/left tibula/fibula | 2 |
| large mammal long bone frags. | 15 |
| small mammal long bone frags. | 3 |
| small mammal u/i frags. | 35 |
| u/i frags. | 3 |

Room 6 prehistoric Fill 2.

| | |
|---|---|
| North Creek Gray (1 fr.) | 41 |
| St.George B/G | 1 |
| Glendale B/G | 1 |
| u/i Virgin Ser.B/G | 1 |
| C - blank frag. | 1 |
| bird long bone (burned) | 1 |

Room 6 Fill 1 and 2.

| | |
|---|---|
| North Creek Gray | 17 |
| North Creek Corr. | 2 |
| u/i Virgin Ser. B/G | 2 |
| Boulder Gray | 1 |
| u/i Moapa Ser. B/G | 1 |
| S - manos (1 frag) | 4 |
| Q - mano frag. | 1 |
| C - knife frag. | 1 |
| C - utilized flake | 1 |
| C - biface flake | 1 |
| C - core flake | 1 |
| C - core shatter flake (cortex) | 1 |
| LL- core shatter flake (cortex) | 1 |
| LL- u/i flake (cortex) | 1 |
| Q - core shatter flake (cortex) | 1 |
| large mammal rib frags. (burned) | 2 |
| large mammal vertebrae frags.(burned) | 6 |
| large mammal u/i frag. (burned) | 1 |
| large mammal long bone frag. | 1 |

Pithouse floor contact.

| | |
|---|---|
| North Creek Gray | 6 |
| St.George B/G | 1 |
| malachite frag. | 1 |
| C - core shatter flakes | 2 |
| C - u/i flake | 1 |
| LL- core flake (cortex) | 1 |

Pithouse depression with hearth.

| | |
|---|---|
| North Creek Gray | 4 |

Pithouse central pit NW group.

| | |
|---|---|
| North Creek Gray | 2 |
| u/i Virgin Ser. B/G | 1 |
| Q - hammerstone | 1 |

Pithouse central pit NE group.

| | |
|---|---|
| North Creek Gray | 1 |
| u/i Virgin Ser. B/G | 1 |

Pithouse Fill 1, 2, 3.

Ceramics

| | |
|---|---|
| North Creek Gray (worked rectangle) | 88 |
| North Creek Corr. (68 single vessel) | 71 |
| St.George B/G (1 fr.) | 1 |
| North Creek B/G | 1 |
| u/i Virgin Ser. B/G | 1 |

TABLE 19 (continued)

| | |
|---|---|
| **Lithics** | |
| C - Gypsum | 1 |
| C - blank | 1 |
| C2- blank | 1 |
| LL- core | 1 |
| C - biface flakes | 6 |
| C - core flakes (1 cortex) | 9 |
| C - core shatter flakes (1 cortex) | 5 |
| C - u/i flakes (4 cortex) | 14 |
| LL- core flakes (2 cortex) | 6 |
| LL- core shatter flakes (1 cortex) | 2 |
| LL- u/i flakes (2 cortex) | 3 |
| SS- biface flake | 1 |
| SS- u/i flake (cortex) | 1 |
| Q - core flake (cortex) | 1 |
| C4- u/i flake | 1 |
| C6- u/i flake | 1 |
| **Pithouse Fill 2 and 3, So.trench strat. 2.** | |
| **Ceramics** | |
| North Creek Gray | 17 |
| Hildale B/G | 1 |
| u/i Virgin Ser. B/G | 3 |
| **Lithics** | |
| C - biface flakes | 3 |
| C - core flakes | 5 |
| C - core shatter flake | 1 |
| C - u/i flakes | 8 |
| LL- core flakes (2 cortex) | 2 |
| Q - u/i flakes (2 cortex) | 2 |
| Q1- core flake | 1 |
| **Floral** | |
| corncob 12 row (burned) | 1 |
| corncob frag. greater than 4 row (burned) | 1 |
| **Room 5 floor contact.** | |
| North Creek Gray | 2 |
| **Room 5 Fill 2 and 3.** | |
| North Creek Gray | 9 |
| North Creek B/G | 3 |
| C - biface flakes (2 cortex) | 3 |
| C - u/i flake | 1 |
| Hist.opaque white glass frag. | 1 |
| **Roasting Pit Fill 3.** | |
| North Creek Gray | 5 |
| C - core | 1 |
| LL- core | 1 |
| C - core flake | 1 |
| C - core shatter flake | 1 |
| C - u/i flake | 1 |
| **Hearth 1 fill.** | |
| North Creek Gray | 6 |
| u/i Virgin Ser. B/G | 1 |
| **Hearth 2 Stratum 2.** | |
| North Creek Gray | 21 |
| North Creek Corr. | 2 |
| u/i Virgin Ser. B/G | 4 |
| Boulder Gray | 1 |
| C - core flakes (2 cortex) | 2 |
| C - u/i flakes | 2 |
| LL- core flake (cortex) | 1 |
| LL- u/i flake | 1 |
| **Cist Fill 1.** | |
| Q - edge grinder | 1 |
| C - u/i flake (cortex) | 1 |
| **Refuse pit fill.** | |
| North Creek Gray | 29 |
| u/i Virgin Ser. B/G | 1 |
| C - core flake | 1 |
| C - core shatter flake | 1 |
| C - u/i flake | 1 |
| LL- core flake (cortex) | 1 |
| LL- u/i flakes (2 coretex) | 2 |
| Q - core shatter flake (cortex) | 1 |
| **Slab surface historic fill.** | |
| **Prehistoric** | |
| North Creek Gray | 10 |
| u/i Virgin Ser. B/G | 1 |
| C - point preform | 1 |
| C - core shatter flakes (2 cortex) | 3 |
| C - u/i flake | 1 |
| L - core flake (cortex) | 1 |
| C6- core flake | 1 |
| **Historic** | |
| Stoneware frag. | 1 |
| Red earthenware frag | 1 |
| biscuitware frag | 1 |
| clear blue glass frags. | 3 |
| light green glass frag. | 1 |
| amber glass frag. | 1 |
| **Unit 1-R historic fill.** | |
| **Prehistoric** | |
| C - biface flake | 1 |
| C - core flakes (2 cortex) | 4 |
| C - core shatter flakes (3 cortex) | 9 |
| C - u/i flakes (2 cortex) | 6 |
| LL- core flake (cortex) | 1 |
| LL- u/i flake | 1 |
| Q - core shatter flake (cortex) | 1 |
| C4- core shatter flake (cortex) | 1 |
| C6- core flake | 1 |
| **Historic** | |
| flown blue peasant ware frags. | 7 |
| flown blue peasant ware variant frag. | 1 |
| flown blue variant frag. | 1 |
| peasant ware (?) frag. | 1 |
| stoneware frags. | 6 |
| red earthenware frag. | 1 |
| gray earthenware frags. | 2 |
| slipped earthenware frag. | 1 |
| clear glass frag. | 1 |
| green glass frag. | 1 |
| pale blue glass frag. | 1 |
| olive green glass frag. | 1 |
| marble | 1 |
| zinc strips | 2 |

## The Historic Component

A single historic structural component was identified and cleared at the site. It was found at the southern side of the site in Trench Unit 1-R and 1-S (Fig. 55). Evidence appeared to indicate that there had been some historic excavation on the north side of the structure to provide a level surface, including compensation for some downslope erosion in the area. A thick sandstone slab surface (Fig. 70) was then laid on the leveled area. Much thicker than those used by the prehistoric occupants of the area, the slabs ranged from 5 to 20 cm. thick. The stone surface also included part of a broken millstone.

At the southeastern corner of the stone surface was found what appeared to be a step (Fig. 70) for entry onto either the area in question or one that may have been nearby. With the slab surface in place, a layer of dark red sand was laid over the stone as well as around it. The entire surface area measured 3.35 by 2.6 m.

Historic Fill Level 1 was evident at the modern surface level in association with the slab surface, although it was in the process of gradually being covered by Stratum 2 moving in from the north and east. The area seems to have been an historic patio area associated, possible, with a structure to the east. Time limitations precluded further investigation.

## Discussion

The site was a fairly large Western Anasazi habitation and storage complex which appeared to have been occupied either continuously or repeatedly during Pueblo II times. Excavated features included a pithouse, a four-unit room block with an associated use area, an isolated room, an isolated cist, a roasting pit, two outdoor hearths, and a refuse pit. In addition, Room 3 of the room block was reconstructed during the later occupation. Finally, a minor historic component was exposed.

The majority of the artifactual (Table 19) and structural evidence supports the use of the features during middle to late Pueblo II, although there are a few anomalies which suggest the site may have been used earlier as well. The exterior cist 'behind' the room block is typical of a Pueblo I storage unit, and there was some evidence of a similar structure southwest of the recorded one. The ceramic collection was, however, completely lacking in Pueblo I sherds. The earliest design form was St. George Black-on-gray, used in early and middle Pueblo II. At the same time, two of the C-14 dates, ca. A.D. 860 and 930 from the roof-fall of the pithouse and Room 1, respectively, are clearly too early for a Pueblo II occupation. The dates could be construed as suggesting a Pueblo I or a Pueblo I to Pueblo II transitional occupation. The absence of Pueblo I ceramics suggests the latter possibility while the dates might also be indicative of old wood or of a carbon sample inadvertently taken from the interior portion of a utilized beam.

The large ceramic collection was dominated by North Creek Gray, but the temporally sensitive ceramic types, North Creek Corrugated and North Creek Black-on-gray, are the more important types for dating and both indicate a late Pueblo II occupation after A.D. 1050. The carbon date from the fill of the roasting pit, ca. A.D. 1060, gives support to the idea of a Pueblo II occupation. The architecture of the room block is considered by some with Western Anasazi experience to be more indicative of early Pueblo II, but they are quick to point out that structural sequences remain poorly known for many parts of the Western Anasazi continuum and structures similar to those at 42Ws288 are known in other late Pueblo II contexts. The clay-ridged depression in the pithouse has been found in other Pueblo II pithouses in the Western Anasazi areas, as have sand-filled pits.

Also characteristic of Pueblo II was the lack of a bench in the pithouse, and the incorporation of apparent habitation elements within the room block. While exterior activity surfaces are not temporally diagnostic, the three Parowan Basal-notched points have been widely recognized as characteristic of the Pueblo II period. The recovery of a Gypsum and an Elko Corner-notched point is not particularly significant. While both doubtless originated in the Archaic, both have been commonly reported from Formative contexts.

The late occupation of the site appeared to coincide with the reconstruction of Room 3 to create Room 6. A carbon sample from the roof-fall stratum of Room 6 yielded a date of A.D. 1200 $\pm$60. This agrees, if the latitude of two standard deviations is utilized, quite well with the ceramic diagnostics.

Subjectively, the architecture and pattern of features gives some support for a Pueblo II occupation of fairly long duration. The main portion of the room block appeared to have been built within a short period of time, although the gap between Rooms 3 and 4 and the isolation of Room 5 suggests that Rooms 4 and 5 may have been added after the initial construction. The feature plan, including the arc of the room block, the use area, the pithouse, and Room 5 all enclosing two exterior hearths and a roasting pit, could suggest either a planned or an opportunistic growth. The exterior cist was reminiscent of Pueblo I features while surface storage and habitation rooms clearly indicated later development. Pithouses continue through Pueblo II as, it has recently been recognized, they also do in the Kayenta and San Juan Anasazi.

The room block appears to have been fairly substantial and it may have contained rooms with ceilings high enough to permit the inhabitants to stand erect. It is possible, of course, that this may not have been considered an important or desirable attribute in habitation rooms where winter heat was supplied by firewood cut with a stone axe.

Entrance to the surface rooms may have been gained through sidewalls or end walls. This seems notable in the case of Rooms 1, 3, and 4 where vertical slabs were missing. It is possible, however, that the slabs were lost to later uses or to erosion. The presence of a centrally located hearth and interior cist in Room 2 argues that it may have been used as a habitation unit, while the discovery of interior cists in Room 1 and an attached cist in Room 4 imply functions more specialized than simple storage. Room 4, for example, may have served as a food-processing area.

Cultural debris recovered at the site (Table 19) implies a wide variety of activities. The large collection of lithic debris suggests that both core reduction and tool production were important. Stone tools for cutting and scraping as well as utilized flakes indicate that numerous processing activities were common. Complete and unfinished projectile points attest the continued significance of at least some form of hunting. Both utility and painted ceramics argue the basic housekeeping functions while manos, metates, and grinding slab fragments are evidence of specialized food processing. The position of the site just above the point where Quail Creek empties into the Virgin River suggests the importance of the floodplain for agriculture. The old Virgin River floodplain, some 50 m. south of the site, was, at the time of excavation, supporting a vineyard. The idea that this may have been a good agricultural area is obvious.

## 42Ws289

### Introduction and Excavation

This small site lay on the terrace that rises above the west bank of the Virgin River at an elevation of 2080 ft. Vegetation in the site area consisted of creosote bush, filaree, and cottonwood. The focus of the site was a circular alignment of stone measuring roughly 3 m. in diameter. The survey team found only a flake, a mano, and a few sandstone fragments associated with the feature. The site was located some 100 m. southeast of 42Ws288 and 200 m. west of Quail Creek just before it joins the Virgin River (Fig. 2).

Initially, a trench aligned north and south was laid out to be 1 m. wide and 12 m. long. Reconsideration confined testing to two, 1 by 2 m. units which, in terms of the original trench, could be called Trench 1-D, located north of the structure, and Trench 1-E, located inside the structure. Trench 1-D revealed the natural stratigraphy of the site while Trench 1-E exposed the interior of the structure. With the excavation of 1-E completed, the western half of the structure was exposed (Figs. 71-72).

The natural stratigraphy consisted of two depositional sequences. Stratum 1 was an orange-brown, sandy clay layer mixed with pebbles, rocks and boulders. This material represented the underlying substratum of the site. Stratum 2 was a loosely compacted, brown sand containing decayed organic material. Originating at the surface, it proved to be only some 5 cm. thick.

### Structure

The structure was located on a small rise of some 20 to 30 cm. above the surrounding ground where a pit was dug into Stratum 1. The pit was ringed with a nearly circular stone alignment (Figs. 71-72) with interior dimensions of 2.8 by 2.9 m. The stones of the ring were contiguous except for minor breaks in the northern arc. Boulders were basalt, diorite, and sandstone. They appear to have originated in Stratum 1.

The bottom of the pit was prepared for use by removing most of the boulders and rocks which protruded from below. The floor (Fig. 72) was compacted while acquiring a gray ash stain. No evidence of any form of superstructure could be identified during the excavation. No floor features such as hearths, bins, etc. were found.

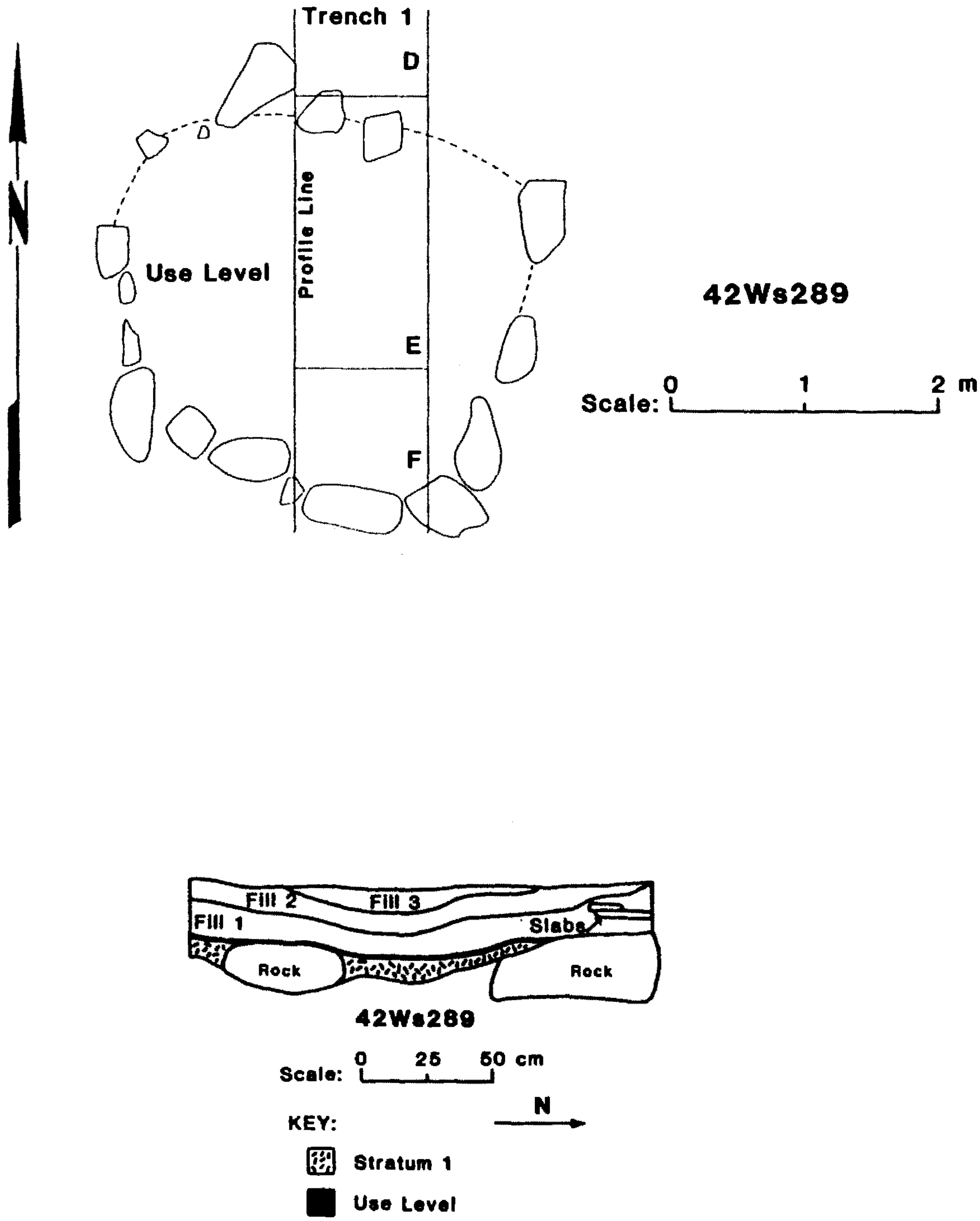



Figure 71. Plan (top) and profile (bottom) maps of the 42Ws289 structure.

Figure 72. View of the 42Ws289 structure with the unit floor exposed and penetrated by Trench 1-E.

TABLE 20

COLLECTION SUMMARY, 42WS289

| | | | |
|---|---|---|---|
| Surface. | | C - core flakes | 2 |
| C - biface blank | 1 | C - u/i flake | 1 |
| | | LL- core shatter flake (1 cortex) | 4 |
| Fill 1 and 2 0-26 cm. | | malachite frag. | 1 |
| North Creek Gray | 7 | | |
| North Creek Corr. | 3 | Use Surface 1. | |
| u/i Virgin Ser. B/G | 1 | North Creek Gray | 1 |
| S - mano (1 frag.) | 2 | C - core flakes | 2 |
| B - mano | 1 | C - core shatter flake | 1 |
| C - biface preform frag. | 1 | LL- core flakes (2 cortex) | 3 |
| C - point preform frag. | 1 | | |

In addition to the floor, or use surface, which was about 1 cm. thick and found at a depth of 25 cm., three levels of fill were identified. Resting directly on the floor was Fill 1 (Fig. 71) which was composed of highly compacted, orange-brown clay very similar to the material of the floor. The layer was 15 to 18 cm. thick and it contained lenses of charcoal-flecked, ashy clay, most of which seemed to be in contact with the floor. Fill 1 might be represented as having been subject to occasional use because of these deposits and a few horizontal sandstone slab fragments found within it. No additional use surfaces could be found, however.

Fill 2 (Fig. 71) was a layer of highly compacted, brown clay which varied from 4 to 10 cm. in thickness. It was much the same as Fill 1, except for a slight difference in color. At the top of the accumulation, Fill 3 proved to be identical to Stratum 2 outside the structure, being composed of loosely compacted, brown sand containing decayed organic material. Fill 3 was noted only towards the center of the stone circle (Fig. 71) where it had collected in the shallow depression which was the remnant of the natural filling process of the structure.

## Discussion

The only cultural/temporal indicator recovered from the site was a North Creek Gray sherd found in floor contact (Table 20). This would indicate a Western Anasazi use of the feature at any time between A.D. 800 and 1200. The North Creek Corrugated Sherds found in the fill may relate to the occupation of 42Ws288 and probably should be discounted in dating this site.

# 42Ws293

## Introduction and Excavation

Two small rockshelters and a possible use area constituted the focal points of this site which covered an area of 1250 $m^2$ at an elevation of 2940 ft. The site was on the southern slope of the anticline overlooking the Virgin River (Fig. 2). Vegetation on the rocky, boulder-strewn slope included blackbrush, Mormon tea, buckwheat, hilaria grass, snakeweed, and three-awn grass. The survey party had found evidence of prehistoric use in the collection of North Creek Gray and North Creek Corrugated sherds, chert debitage, and a chert hammerstone.

Trenches were placed in three areas which seemed to show the best evidence of prehistoric use. These included the two small rockshelters and a flat, sandy area which had produced a surface ceramic scatter. Soil deposits on the bedrock surface of the slope were limited in size and depth, the most substantial deposits being found within the two rockshelters. The fills of the shelters could not be correlated because they were separated by exposed bedrock.

## Rockshelter 1

The first trench was placed in the larger of the two rockshelters, which was located at the southern end of the top of a small ridge. It was formed by the overhang of a large sandstone boulder with the opening facing

Figure 73. View of the use area, 42Ws293.

TABLE 21

COLLECTION SUMMARY, 42WS293

| | |
|---|---|
| Surface - slope below rockshelter. | |
| North Creek Gray | 14 |
| North Creek Corr. | 3 |
| Boulder Gray | 1 |
| Tsegi Orange | 2 |
| Q - edge grinder | 1 |
| Q - polishing stone | 1 |
| S - ground stone pointed object | 1 |
| C - scraper | 1 |
| Q - scraper | 1 |
| C - utilized flake | 1 |
| C - Elko Eared | 1 |
| C - hammerstones | 2 |
| C - biface flakes | 2 |
| C - core flakes (3 cortex) | 10 |
| C - core shatter flakes (9 cortex) | 25 |
| C - u/i flakes (1 cortex) | 13 |
| LL- core shatter flake (cortex) | 1 |
| LL- u/i flakes | 2 |
| Q - u/i flakes (2 cortex) | 3 |
| malachite/azurite frag. | 1 |
| Use Area 1 surface. | |
| North Creek Gray | 6 |
| Use Area 1 fill 0-19 cm. | |
| North Creek Gray | 3 |

south-southeast. The shelter was 5 m. wide at the mouth, 3 m. deep, and, prior to testing, the height varied from 0.9 to 1.25 m. Trench 1 measured 1 by 2 m. and was aligned to 297° in order to parallel the natural inclination of the shelter. The trench was excavated to bedrock with a maximum depth of 30 cm. near its midpoint. No stratigraphic subdivisions could be identified within the loosely compacted, yellow-tan sand which constituted the fill. There were, however, some sandstone roof spalls and some widely scattered flecks of charcoal within the fill. No artifacts were found within the shelter, but there was an extensive scatter downslope to the south and east. This material was completely collected.

Rockshelter 2

This shelter was located under a large, detached sandstone boulder some 20 m. west northwest of Rockshelter 1. The shelter measured 1.5 m. wide, 1.1 m. deep with an average height at the dripline of 75 cm. prior to excavation. No cultural material was observed in association with this shelter but, just to the west, the top of a vertical sandstone slab was noted. A 50 by 50 cm. test pit was placed in the western half of the shelter in order to investigate the sandstone slab. The pit was excavated to a depth of from 10 to 19 cm. to the underlying bedrock. The fill proved sterile, consisting of loosely compacted, yellow-tan sand, containing some roof spall. The apparent slab was found to be of natural origin and no other cultural evidence was found in the shelter.

Use Area

The Use Area (Fig. 73) was located 10 m. northeast of Rockshelter 2 on a small, rock-cleared sandy area about 3 m. in diameter. Surface evidence of use included a small collection of North Creek Gray sherds and a collapsing, semicircular arrangement of stacked sandstone slabs which constituted the northern edge of the area. Large sandstone boulders, both bedrock and detached, made up the other boundaries of the area. A test pit 1 $m.^2$ was placed to explore the sandstone slab alignment. The trench reached a depth of 10 to 19 cm. revealing yellow-brown, loosely compacted sand laminae covering a fairly level sandstone surface that was pitted with slight concavities. Further excavation for a meter to the north and to the south revealed that this bedrock surface actually connected with the boulders that formed the northern and southern limits of the site. Excavation also revealed that the wall alignment had been built directly on this surface. The surface ended abruptly along the western edge.

Discussion

Rockshelter 1 and the use area appear to represent limited activity loci. Cultural debris (Table 21) recovered from the slope in front of this rockshelter (Table 21) suggests that grinding and core flake production were significant activities. Ceramic evidence suggested that the site was subject to sporadic use during Pueblo II times. Like the other limited activity sites in the project area, the collection contains sparse evidence of biface manufacture and the usual quota of grinding implements and core flake production debris (Table 21). The site's location high above the river is rather unusual for a limited activity site and it may be that it was used as an observation post because of the good view of the Virgin River. It is more likely, however, that the convenience of the shelters was the primary concern in the use of the area.

## 42Ws317

Originally recorded as a part of 42Ws388 which lay 10 m. south of this locale, the site was separated because the two areas were not only divided by apparently unused space, they represented different temporal positions and different cultural affiliations (Fig. 3). The site was identified on the basis of a small collection of Paiute Plain sherds. A single 1 by 2 m. trench was oriented north to south in such a manner as to cross the area of the ceramic scatter. The trench exposed an undifferentiated deposit of sand and pea-sized gravel lacking in cultural evidence except for the sherds, all of which were found in the upper 10 cm. of the material. The only other cultural item was a chert core shatter flake with cortex.

## 42Ws318

### Introduction and Excavation

This small limited activity site was located on the lowest terrace on the east side of Quail Creek at an elevation of 2920 ft. (Fig 2). Vegetation on and around the site included creosote bush, prickly pear, and grasses. Surface evidence for cultural activity included a circular alignment of stone, one stone of which showed a petroglyph, and a small, circular, slab-lined feature with only the upper edge exposed.

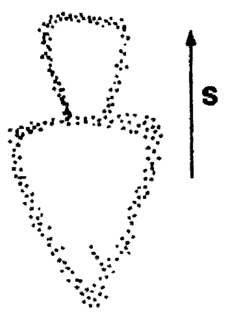



Figure 74. Boulder petroglyph with the stone circle, 42Ws318.

A single 1 by 4 m. trench was laid out so as to bisect the circle. Interior dimensions of the feature proved to be 2.65 m. by 2.74 m. The circle was continuous with no significant gaps between the boulders. On one surface of a boulder on the southern perimeter of the circle, an apparent anthropomorphic figure had been formed by two inverted triangles (Fig. 74).

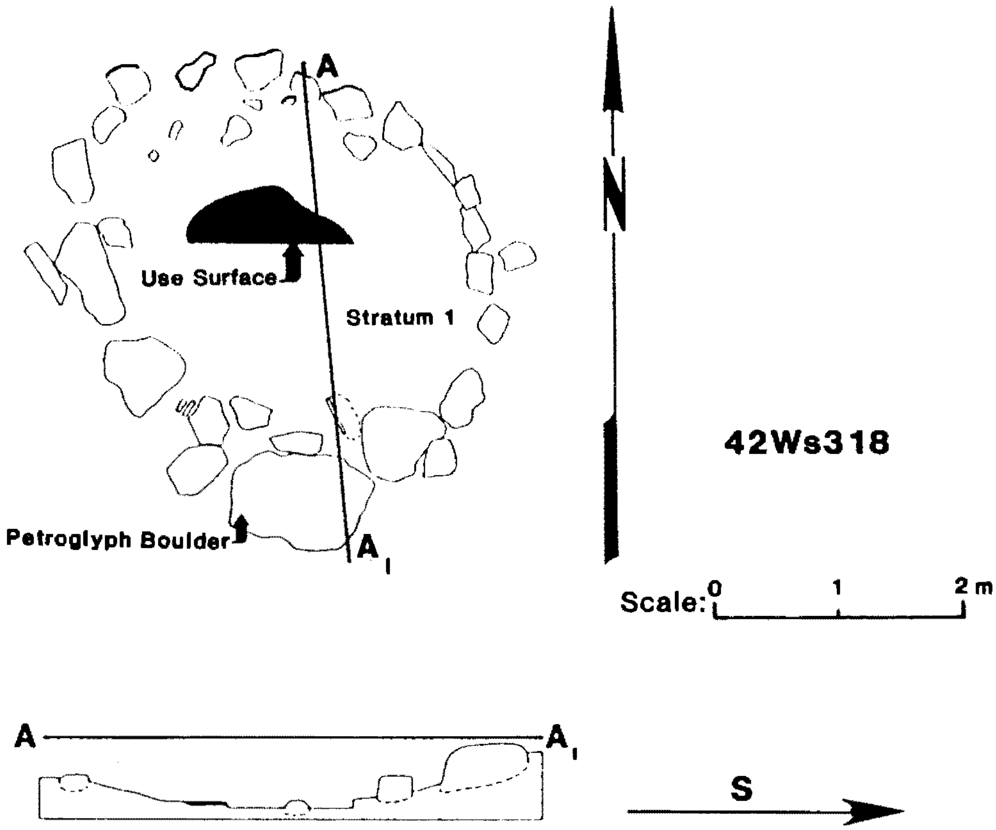



Figure 75. Plan and profile of the stone circle/use surface, 42Ws318.

TABLE 22

COLLECTION SUMMARY, 42WS318

| Surface | | Stone circle interior 0-35 cm. | |
|---|---|---|---|
| North Creek Gray | 7 | North Creek Gray | 15 |
| Q - edge grinder | 1 | LL- cores | 3 |
| C - scraper | 1 | C - core flakes | 2 |
| C - hammerstones | 1 | C - core shatter flakes (1 cortex) | 5 |
| LL- core | 1 | C - u/i flake | 1 |
| C - u/i flake | 1 | LL- core flakes (2 cortex) | 3 |
| | | LL- core shatter flake | 1 |
| | | LL- u/i flake (cortex) | 1 |

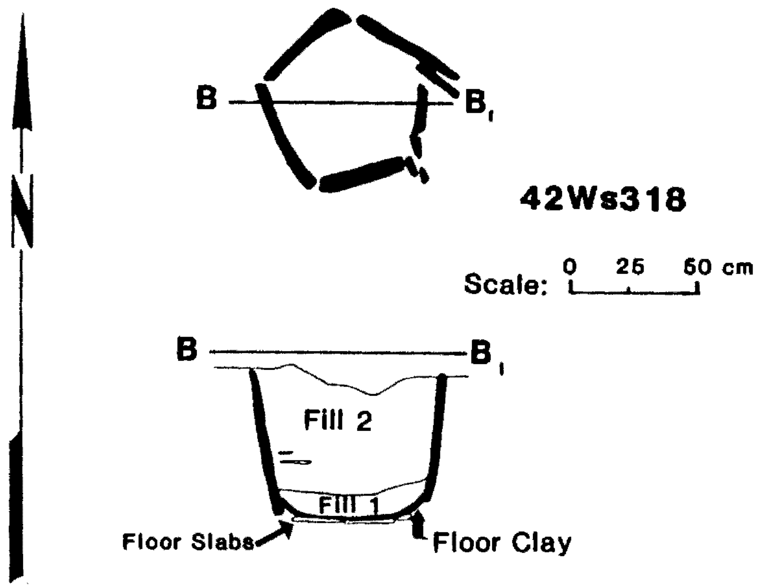



Figure 76. Plan and profile of the roasting pit, 42Ws318.

Figure 77. View of the roasting pit fully cleared, 42Ws318.

Stone Circle and Use Surface

Excavation within the circle encountered an apparent use surface (Fig. 75) formed by an 8 cm. thick layer of highly compacted, orange-brown sand. The top of this surface lay at a depth of 35 to 40 cm. Stratum 1, a culturally sterile, red-orange sand with pebbles and rocks underlay the entire feature. Since the trench revealed that Stratum 1 lay at a depth of no more than 5 to 7 cm. outside the boulder circle, it appeared evident that some 30 cm. of fill had been removed in building the feature. The fill between the use surface and the modern surface consisted of a light brown, sandy gravel about 40 cm. thick. No evidence of a superstructure was found nor were cultural materials found in association with the floor. All cultural material from within the circle came from the fill (Table 22) and thus may represent post-occupation debris.

Roasting Pit

A small, circular, sandstone slab feature (Figs. 76,77) measuring 69 by 62 cm. was identified 18 m. northeast of the larger feature. Vertical slabs were set into a pit dug directly into Stratum 1, after which a horizontal sandstone slab floor was laid in the bottom. A prepared clay floor some 7 cm. thick was laid over the slabs (Fig. 76). Fill 1, an 8 to 12 cm. thick layer of ashy sand flecked with charcoal, overlayed the prepared clay. A pollen and a flotation sample were taken from the layer. Fill 2 was entirely sand and was from 20 to 35 cm. thick. It began at the modern surface and contained two thin clay laminae which attest its natural origin.

The presence of ash and charcoal in Fill 1 suggests that the pit was used as a roasting pit since its depth in relation to diameter argue against its use as a regular hearth. The lack of charcoal would appear to mean that the pit had been well cleaned prior to abandonment. Since the interior stone of the pit showed no sign of blackening or oxidation, the pit must have been used only briefly. No cultural material could be associated with the pit, but its similarity to roasting pits at 42Ws268, Ws386, and Ws388 may argue a Pueblo I affiliation. Numerous other Pueblo I sites have, however, failed to produce such features.

Discussion

The site is best summarized as having been a limited activity area that included a compacted, sunken use surface defined by a circle of stone, plus a nearby slab-lined roasting pit. Culturally diagnostic material (Table 22) was confined to North Creek Gray sherds, none of which were directly associated with either of the two features. The design of the pit is similar to sites dated at between A.D. 850 and 900. The ceramic evidence lends no support to the assumption, but it also fails to contradict it. The function of the circle remains, of course, somewhat enigmatic.

## 42Ws319

This possible limited activity site was tested because of the presence of a charcoal stained area, a rubble pile, and a small ceramic scatter. The site was located on an alluvial sand deposit on the west side of the Quail Creek

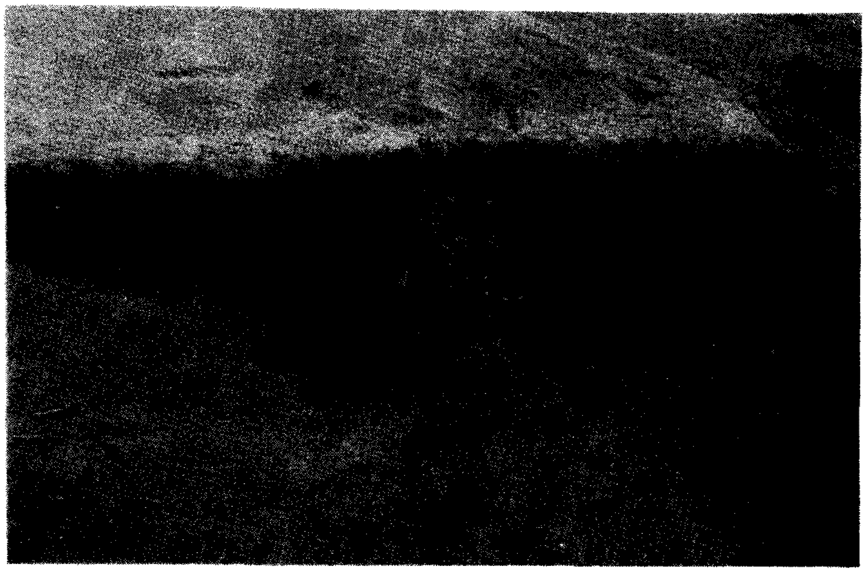


Figure 78. Profile of Trench 1 through the hearth area at 42Ws319.

TABLE 23

COLLECTION SUMMARY, 42WS319

| | |
|---|---|
| **Trench 1 Stratum 1.** | |
| North Creek Gray | 1 |
| Paiute Plain | 1 |
| S - grinding Slab frag. | 1 |
| C - biface blank | 1 |
| **Surface.** | |
| North Creek Gray | 1 |
| B - grinding slab | 1 |
| C - Desert Side-notched | 1 |
| C - biface flake | 1 |
| **Trench 1 0-5 cm.** | |
| S - metate frag. | 1 |
| Q - polishing stone frag. | 1 |
| LL- core shatter flake (cortex) | 1 |
| **Trench 1 75 cm.** | |
| B - grinding slab | 1 |
| **Trench 2A 0-5 cm. Locus 2.** | |
| C - core flake (cortex) | 1 |
| LL- core flakes (1 cortex) | 2 |
| LL- u/i flakes (2 cortex) | 3 |
| **Trench 2-A 100-115 cm. Locus 4.** | |
| B - mano frag. | 1 |
| **Trench 2-E 0-5 cm. Locus 5.** | |
| LL- core flake (cortex) | 1 |
| LL- core shatter flake (cortex) | 1 |
| LL- u/i flake | 1 |

floodplain (Fig. 2). Site vegetation was dominated by desert willow, Indian ricegrass, and cheatgrass. Several clumps of yucca were growing in fairly close proximity.

Two trenches were excavated. One focused on the charcoal stain and the second was intended to investigate the pile of stone. Both trenches revealed only a single stratum of loosely compacted tan to brown alluvial sand which extended to a depth of at least 70 cm.

Trench 1 measured 3 by 1.5 m. and was aligned to cross the charcoal stain. With the removal of 10 cm. of Stratum 1, a 25 by 30 cm. area of charcoal and blackened sand containing burned sandstone fragments (Fig. 78), was found to be the source the surface discoloration. There was insufficient carbon in the apparent hearth for dating, but a flotation sample was taken from the matrix of the stain.

Trench 2 was aligned to cross the rubble mound some 2 m., southeast of the hearth area. The rubble mound was roughly oval, measuring 2.7 by 2 m. and it was 50 cm. above the surrounding ground. Excavated to a depth of 70 m., Trench 2 revealed that the rubble mound was largely formed of a hummock of sand upon which the rock had been piled. There was some sparsely scattered charcoal in the sand, but it appears to be a natural deposition. Thin gravel lenses were noted in the lower 20 to 30 cm. of the profile--a fact which also argued for a natural deposition process. A strip of rusted metal was recovered beneath the stone and seemed to conclusively establish its modern or historic origin.

The sand and rock may have been mounded during the construction of the irrigation ditch near the foot of the western escarpment, perhaps removed from the ditch itself. The hearth area with the associated Paiute Plain and North Creek Gray sherds (Table 23) indicate a prehistoric origin for that feature but a more specific determination cannot be made. The grinding slab suggests that the processing of plant material may have been involved. The continued presence of Indian ricegrass in competition with historically introduced cheatgrass also suggests that the ricegrass was more abundant prehistorically.

## 42Ws321

### Introduction and Excavation

This sand dune camp site lay on the left or south bank of the Virgin River (Fig. 4) at a distance of 50 m. The elevation was 2840 ft. and the vegetation on site included sand sage, snakeweed, indigo bush, dove-weed, arrow weed, Indian ricegrass, and some mesquite. Both tamarix and willow were also abundant on the floodplain. Two trenches were laid out to investigate three cultural loci, while a third trench was run along the centerline of a proposed haul road.

Trench 1. Aligned on an east to west axis to investigate the ash stain of Locus 1, the trench was 1 by 2 m. and dug to a depth of 100 cm. The ash lens proved to be 5 cm. deep. No culturally diagnostic materials were found nor was a datable carbon sample recovered. Pollen and flotation samples were taken, however. A metate was found at a depth of 75 cm., although no other hint of cultural activity could be identified around it.

Trench 2. The second trench was laid out on an east to west axis for 10 m. and then subdivided into five, 1 by 2 m. units designated A through E starting at the western end. Unit 2A was established to investigate a small scatter of cultural debris found in a blowout and called Locus 2. The excavation of this unit also exposed additional loci well below the surface. Excavation showed that the surface scatter did not have depth.

At a depth of 75 cm., Locus 3 was exposed and shown to be a small concentration of cobbles. While no other cultural material was found, the geomorphological characteristics of the area preclude anything but a cultural origin.

At a depth of 100 to 115 cm., Locus 4 proved to be a hearth (Fig. 79) which assumed the form of a circular bed of burned and heat-cracked cobbles 1 m. in diameter and surrounded by an irregular, hard-packed surface which varied from 20 to 50 cm. out from the hearth. The cobbles were embedded in a dense matrix of charcoal and ash from which pollen, flotation, and carbon samples. were taken. Analysis of the carbon resulted in a date of 1870±60 years: A.D. 80 (Beta 8472).

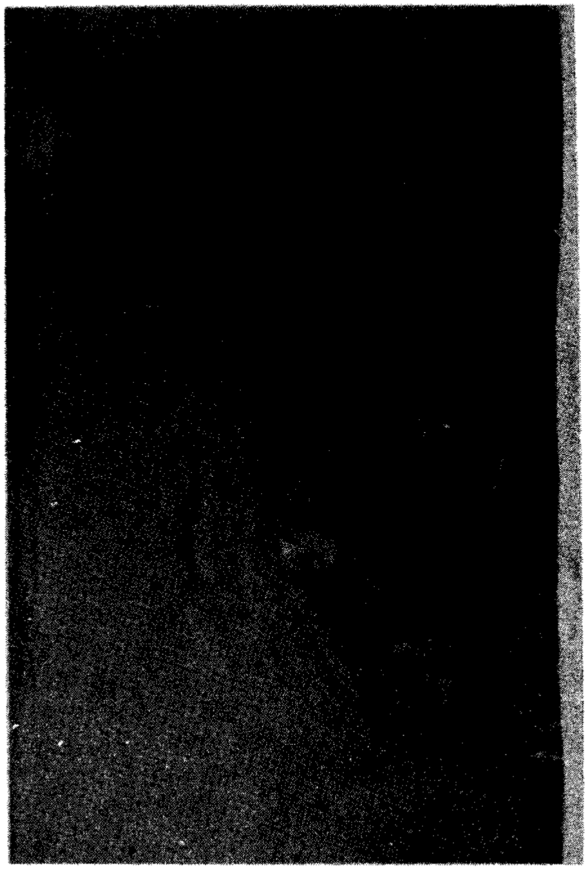


Figure 79. View of the Locus 4 hearth, 42Ws321.

The arrangement of the cobbles seemed to indicate that they were not meant to define the hearth but, rather, they formed the bed of the hearth as a means of increasing and sustaining the heat. The compacted area around the hearth appears to have developed with use and perhaps the heat of the fire. No culturally diagnostic artifacts were recovered.

Trench 2E was to investigate Locus 5, a surface scatter of flakes; it was excavated to a depth of 110 cm. The lithic scatter was confined to the surface while the lower portions of the unit revealed only very rare flecks of charcoal.

Trench 3. The final trench was run along the centerline of the proposed haul road and it was subdivided into 25, 1 by 2 m. units. Every fourth unit, a total of 7, was excavated to a depth of at least 1 m. Between the test units, an auger hole was pushed to a depth of 1.5 m. at 2 m. intervals. In the seven test pits and in the auger holes, the only hint of cultural activity was an occasional charcoal flake.

## Discussion

The features of the site were small, limited activity loci with at least some evidence of food processing. Only two culturally diagnostic items were found and both came from the surface. A North Creek Gray sherd and a Desert Side-notched point were indicative of Western Anasazi and Paiute activity but they told no more than that. The carbon date of ca. A.D. 80 from the Locus 4 Hearth is considerably earlier than any Anasazi dates in the project area, but it may imply a connection with the gradually growing evidence of the period of transition between the late Archaic and the Western Anasazi Basketmaker II.

## 42Ws322

As a quarry site, this locality appeared to produce the nearest known source of chert for use within the project area. No excavation was attempted but, because of its relevance to lithic material procurement, a brief reference has seemed merited.

The site is located at the mouth of Dipping Pen Wash just above the point where it meets the Virgin River drainage. This location is some 3 km. upstream along the Virgin from the mouth of Quail Creek. The valley was formed by the erosion of the soft, shale clays of the Petrified Forest Member of the Chinle Formation. The Petrified Forest Member is exposed east of and "above' the much more resistant Shinarump Conglomerate Member that forms the steep eastern side of the Harrisburg anticline. Erosion has exposed and thus concentrated numerous petrified logs and chert cobbles near the center of the valley. The petrified wood ranges through various shades of brown and, because of its poor state of silification, it has very irregular fracture characteristics. It was, therefore, not used for the manufacture of lithic tools. Chert is present, however, in the same areas as the petrified wood. It occurs as a narrow band running down the center of the wash. This exposure measures roughly 75 m. wide and some 600 m. long.

Extant debitage consists primarily of very irregular, broken fragments with some core flakes. The quality of the mineral is quite poor and most pieces show numerous flaws. Those flakes which can be definitely attributed to cultural activity are of better quality, however. A few hammerstones were noted, but as is typical of quarry sites, no culturally diagnostic artifacts were found.

## 42Ws385

### Introduction and Excavation

A cluster of upright slabs protruding above the contemporary surface at the end of a ridge made up of clays within the Schnabkaib Formation provided the focus of the site. The site was located well above the terrace level 75 m. east of Quail Creek and about 1/2 mile southeast of the North Gap (Fig. 2). The site lay 20 m. above Quail Creek at an elevation of 2960 ft. Vegetation on and around the site consisted of creosote bush, bursage, and Mormon tea. Initially, the site features appeared as three clusters of upright limestone and sandstone slabs, one of which was at the tip of the rapidly eroding knoll (Fig. 80).

Three trenches were placed on top of the ridge in such a manner as to cross the slab clusters. Trench 1 measured 1 by 4 m. with a north to south orientation. The trench was divided into two, 1 by 2 m. units identified as Trench 1-A and Trench 1-B. Excavation of 1-A would expose what would become Cist 1, while the clearing of 1-B revealed Cist 2. Trench 2 was a 2 $m.^2$ unit laid out to expose the slabs that would become Cist 3, a feature at the northwestern tip of the ridge. Trench 3, measuring 1 by 2 m., was placed parallel and adjacent to 1-B.

The lowest natural stratum was identified at a depth of only 15 cm. This Stratum 1 was a gray-tan sandy clay mixed with limestone rocks. The stratum was devoid of cultural evidence. It was overlain by Stratum 2, a tan sand showing some mixture of Stratum 1 clay. This was the level within which all cultural material was recovered outside the three features (Table 24).

### Cists

As suggested, excavation showed all three surface alignments to be slab-lined cists (Fig. 83). These are discussed individually.

Cist 1. This feature was initially observed as three vertical sandstone slabs set well into Stratum 2. Excavation revealed no floor or additional slabs. The existing slabs appear to represent the eastern edge of a cist which was either never completed, or which was subsequently damaged either by erosion or vandalism. No cultural debris was found in the remnant of the cist.

Cist 2. The second cist (Fig. 82) was rectangular in shape, measuring 0.85 m. east to west by 1.2 m. north to south. In this instance, the builders had dug a pit into Stratum 1 (Fig. 83) and then mudstone and limestone slabs were set against the pit walls. The slabs appeared to have been stabilized by

Figure 80. Overview of 42Ws385. Cist 3 is visible at the end of the ridge. Facing south.

Figure 81. Fully cleared Cist 3, 42Ws385. Portions of clay floor are intact. Cist 2 to rear.

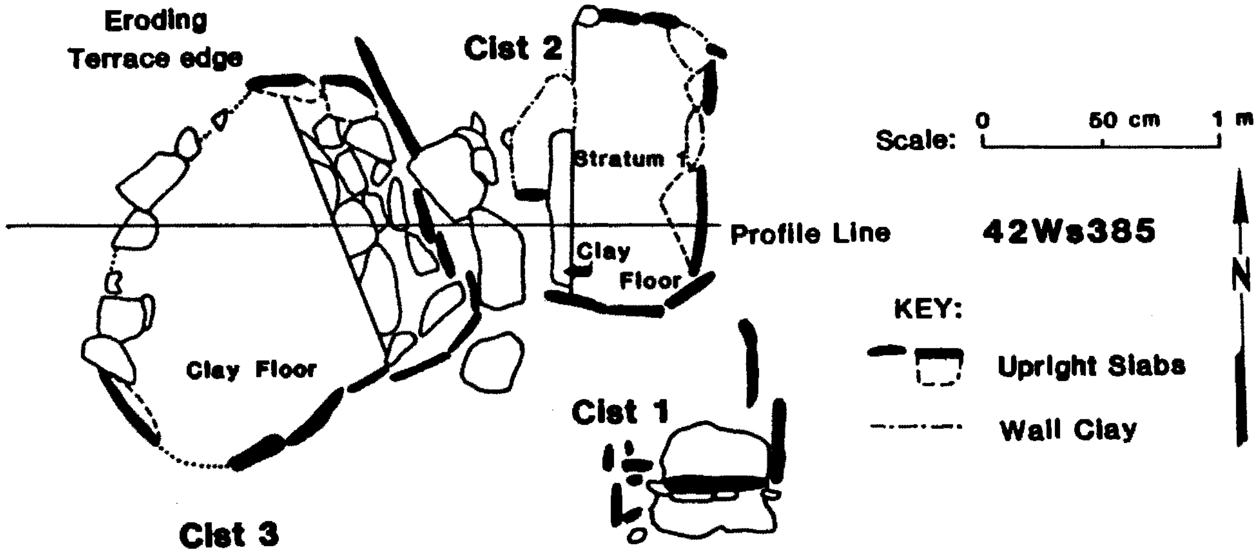



Figure 82. Plan map of the three cists, 42Ws385.

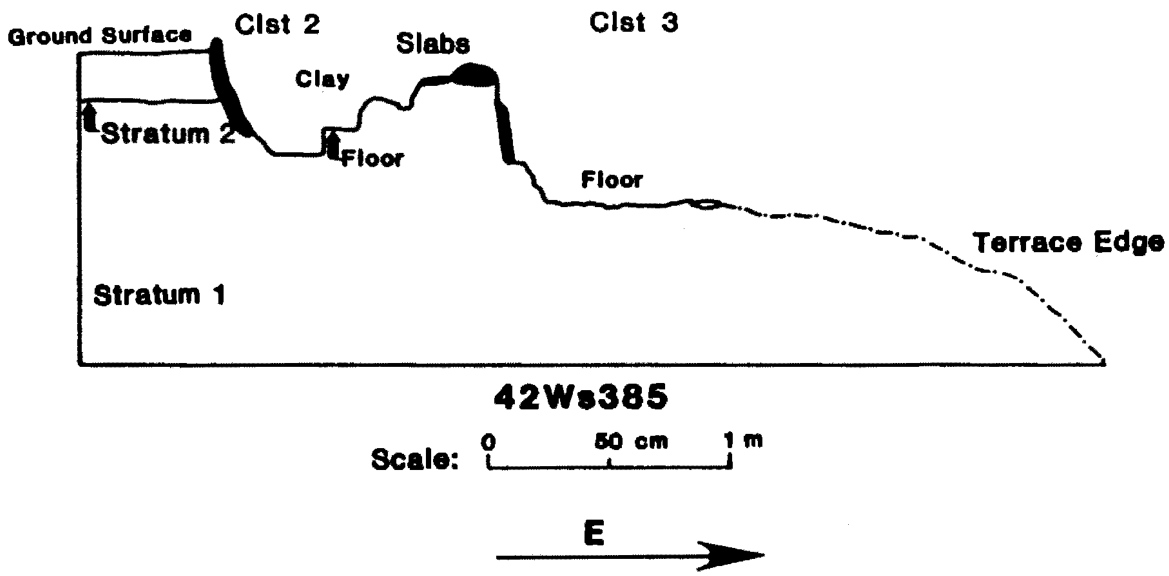



Figure 83. Profile of Cists 2 and 3, 42Ws385.

a clay wall-pack composed of material from Stratum 1. A red clay floor, 0.5 cm. thick, was laid directly over the exposed Stratum 1 without the use of slab flooring. The clay floor proved to be highly friable and only a portion near the western edge, at a depth of from 10 to 22 cm., remained intact. A single unit composed of tan sand filled the cist. This ranged from 7 to 25 cm. thick and contained stone and slab rubble but lacked cultural materials.

Cist 3. While measured at 1.6 m. east to west by 1.2 m. north to south, the latter figure is somewhat conjectural since erosion down to the northwest was eating at the feature (Figs. 81-83). The pit excavated for the cist was lined with vertical limestone and sandstone slabs which had been embedded in a red-white clay matrix partially composed of Stratum 1 material and identical in composition to the clay noted in Cist 2. The floor slabs were uneven because of the irregular surface of the bedrock below. The slabs were also covered with the red-white clay (Fig. 81) in a layer 4 to 7 cm. thick. The surface of the floor was from 6 to 20 cm. deep, the edges and perhaps the surfaces of the vertical slabs being covered as well. The bottoms of most of the slabs did not reach the floor of the pit so that the heavy interior clay lining served as a structural element as well. There were also 2 to 3 cm. gaps between the slabs and these appeared to have been clay-packed.

A fill from 10 to 20 cm. thick lay above the floor. This was a tan, clay-impregnated sand with a mix of chunks of red, sandy clay. The clay may have been part of the interior plaster or of the roof. Enough charcoal was recovered to produce a composite carbon sample. The result was a date of 1240±60 years: A.D. 710 (Beta 8039). Cultural materials recovered are summarized in Table 24.

TABLE 24

COLLECTION SUMMARY, 42WS385

| | | | |
|---|---|---|---|
| Surface. | | Trench 1 Stratum 2. | |
| North Creek Gray | 30 | North Creek Gray | 1 |
| St.George B/G | 2 | C - u/i flakes | 2 |
| Shinarump Gray | 1 | | |
| C - scraper | 1 | Trench 2 Stratum 2. | |
| C - utilized flake | 1 | North Creek Gray | 2 |
| C4- utilized flake | 1 | | |
| C - knife tip | 1 | Cist 3 fill 0-20 cm. | |
| LL- core | 1 | North Creek Gray | 9 |
| C - biface flake | 1 | S - mano | 1 |
| C - core flakes (1 cortex) | 3 | D - mano | 1 |
| C - core shatter flakes (2 cortex) | 4 | C - biface flake | 1 |
| C - u/i flakes | 6 | C - core flake | 1 |
| LL- core flake (cortex) | 1 | C - u/i flake | 1 |
| Q - core shatter flake | 1 | LL- core flakes | 2 |

## Discussion

The site consisted, then, of three storage cists which had been seriously damaged by erosion. Cist 1 may never have been finished since no trace of a floor could be found. Cist 2 had been completed, but it lacked the slab flooring which has been found to be an almost invariable element in the great majority of cists. The absence of burning evidence as well as its size militates against a possible argument that it was a firepit. Cist 3 proved to be more typical of traditional cist construction. None of the cists exhibited any evidence of a superstructure. A few pieces of red, sandy clay were noted in Cist 3, but this was insufficient to suggest a clay roof.

The carbon date of A.D. 710 was derived from a composite sample of small charcoal fragments and must be considered suspect. The date is early Pueblo I while the two St. George Black-on-gray sherds indicated at least early Pueblo II. There was, of course, no 'proven' relationship between the sherds and the cists. It should also be noted that the shape and construction of the cists was more typical of Pueblo I than anything else, but structural forms do not, as is well understood, form a neat line of chronometric sequence. It is possible, too, that the carbon sample was taken from "old" wood.

The collection of cultural materials (Table 24) conformed closely to those recovered from similar project area sites. Noted were some grinding and cutting implement, rare evidence of bifacially flaked tools, and plentiful remains of core flake production.

# 42Ws386

## Introduction and Excavation

This small storage site was identified on the terrace 50 m. west of and 30 m. above Quail Creek (Fig. 2). With an elevation of 2960 ft., the dominant vegetation on and around the site included creosote bush, bursage, blackbrush, hilaria grass, and Mormon tea. Surface suggestions of human activity included a very small collection of sherds and an apparently square alignment of vertical sandstone.

Trench 1. This trench was oriented west to east and measured 1 by 6 m. It was subdivided into three, 1 by 2 m. units designated A, B, and C from west to east. Trench 1-C was excavated to a depth of 35 cm. to establish the stratigraphy and its relationship to the feature. The underlying Stratum 1 was a soft, clay-impregnated sand mixed with gravel, cobbles,and boulders. The top of the stratum ranged from a depth of 15 to 30 cm. Stratum 2 overlay the basal layer and was composed of a reddish sand that extended from the modern surface to the top of Stratum 1.

Trench 2. This was a 1 by 4 m. trench extending on a north to south axis in such a manner as to bisect a mounded area (Fig. 84). The western half of the mound was excavated to a depth of 80 cm. Only one stratum, Stratum 2, could be identified. Cultural materials were recovered only from the upper 20 cm. of the trench (Table 25). No additional features were encountered.

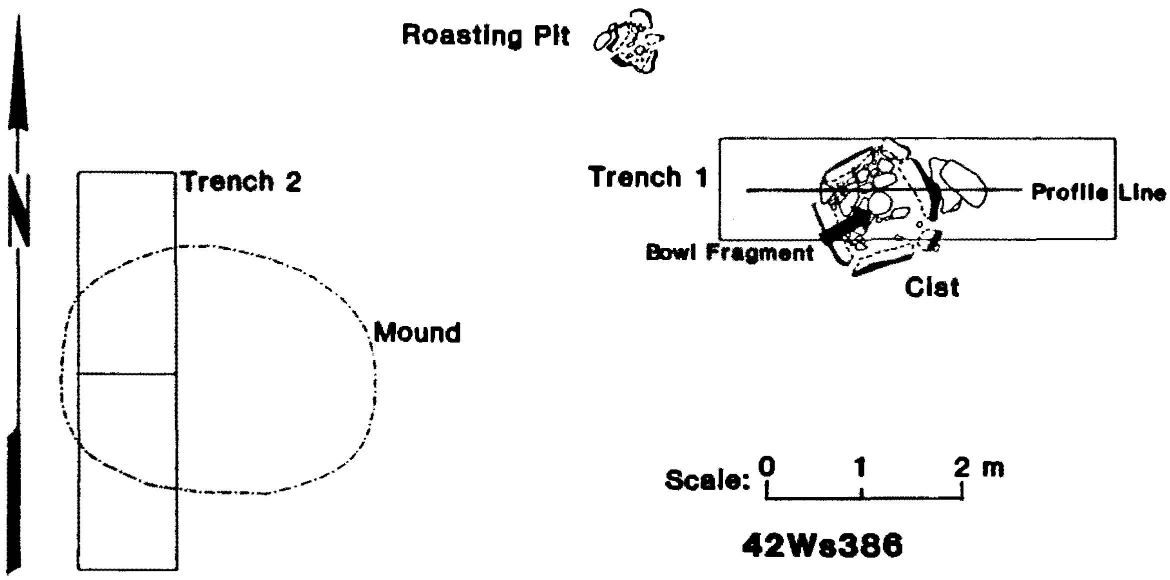



Figure 84. Plan and excavation map, 42Ws386.

Figure 85. The 42Ws386 cist with clay floor partially removed and flagstone exposed. Fragment of North Creek Gray vessel in situ.

## Cist

Cist 1 formed the focus of Trench Unit 1-B. Work in Trench Unit 1-C had indicated a possible surface of origin for Cist 1 at a depth of 17 cm. This was a well-compacted surface of Stratum 2 material. Excavation within the cist demonstrated that the pit had been dug to a depth of 32 cm., or 25 cm. below the apparent surface of origin. It penetrated some 10 to 12 cm. into Stratum 1. The pit was then refilled with 10 to 15 cm. of loosely compacted, gray-tan sand with some clay content. Next, upright wall slabs were set around the pit edges with their lower edges only slightly below the surface of origin. The slabs enclosed an area 0.85 m. in diameter. The slabs appeared to have been supported by piling irregular slabs and cobbles around the outside of the cist. After the wall slabs had been set in place, a flagstone subfloor was laid and then covered with a layer of red-brown sandy clay to form a floor 0.25 to 2 cm. thick (Fig. 85). This was approximately level with the supposed surface of origin.

The height from the clay floor to the top of the tallest wall slab was no more than 20 cm. No evidence of a superstructure was found. The bottom of a North Creek Gray vessel (Fig. 85) was found on the floor. Since no related sherds were found in the area, it is likely the fragment was already broken when placed in the cist. Pollen and flotation samples were taken from floor contact and also from the fill of the vessel fragment.

After abandonment, the cist filled with 10 cm. of red-white sand that was moderately compacted.

## Roasting Pit

Approximately 2 m. northwest of the cist, the tops of two vertically set sandstone slabs had been noted by the survey team. Sweeping the area produced a small, slab-lined feature (Figs. 84,86) measuring 50 cm. square with an associated ashy surface stain. This feature was sectioned on an east to west line and the southern half of the fill was removed. Excavation revealed that this was probably a roasting pit. Unfortunately, no surface of origin could be determined.

The feature was constructed by digging a pit to a depth of 32 cm. and lining it with vertical slabs which did not extend all of the way to the bottom, thus leaving the lower 15 cm. unlined. The gravel at the bottom of the pit was covered with 5 to 7 cm. of charcoal-stained sand, above which was a layer of charcoal fragments and stained sand 10 cm. thick. Pollen, flotation, and carbon samples were taken from the layer. Assay of the carbon produced a date of 1050±70 years: A.D. 900 (Beta 8040). The remainder of the pit fill was of post-abandonment deposition. This was a layer of red-tan sand 15 cm. thick and lightly flecked with charcoal.

## Discussion

The investigation produced two features: a storage cist and a roasting pit, both built of sandstone slabs. The storage cist was different in the sense that it appeared that the slabs were set only slightly below the surface

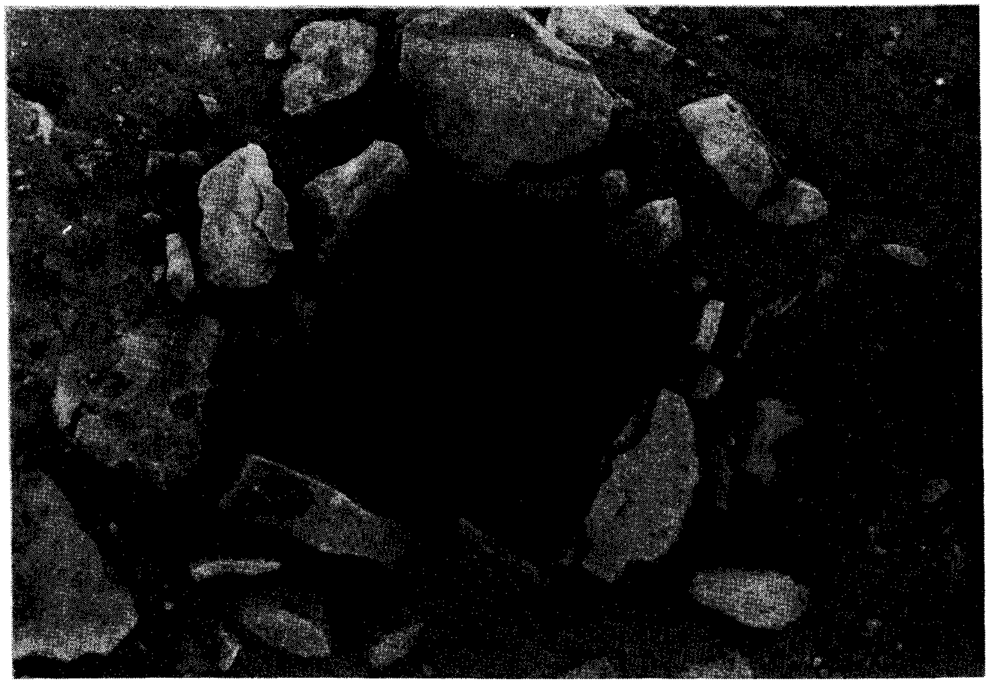


Figure 86. Detail view into the roasting pit, 42Ws386.

TABLE 25

COLLECTION SUMMARY, 42WS386

| | |
|---|---|
| **Surface.** | |
| North Creek Gray | 23 |
| Washington B/G | 3 |
| C - biface flake | 1 |
| C - core flake | 1 |
| C - core shatter flakes | 2 |
| C - u/i flake | 1 |
| LL- core flake | 1 |
| SS- core flake | 1 |
| - core flake (imported chert) | 1 |
| **Cist 1 floor contact.** | |
| North Creek Gray | 1 |
| **Cist 1 fill.** | |
| SS- core flake | 1 |
| **Roasting Pit fill 10 cm.** | |
| North Creek Gray | 1 |
| **Trench 2 0-20 cm.** | |
| North Creek Gray | 8 |
| Washington B/G | 3 |
| St.George B/G | 1 |
| C - u/i flake | 1 |
| LL- core flake | 1 |

of origin and thus they required support of stone piled up around the exterior. The A.D. 900 date in combination with St. George Black-on-gray and Washington Black-on-gray painted designs is internally consistent and it also squares with finds at other sites in the project area.

## 42Ws387

### Introduction

In this instance, a small habitation site was found perched on top of the most prominent knoll in the Quail Creek catchment basin. The site was located 50 m. east of Quail Creek at an elevation of 2970 ft. were it encompassed an area that measured 60 m. north to south by 40 m. east to west (Fig. 2). The knoll was composed of remnant terrace gravels and crested 25 m. above the surrounding area (Fig. 87). The vegetation of the site area consisted of creosote bush, bursage, blackbrush, prickly pear, cholla, Indian ricegrass, three-awn grass, hilaria grass, and fluffgrass. Surface evidence of prehistoric use included two depressions, one of which had a vague encircling stone alignment while the other had a less well-defined element with one of the stones sporting a small petroglyph. There were also some rubble alignments on the west central portion of the site at the highest part of the knoll in association with a rubble mound 10 m. in diameter.

### Excavation and Stratigraphy

Seven trenches (Fig. 87) were used to search for structures and to identify site stratigraphy.

Trench 1. Running north to south on the west side of the knoll, this trench measured 1 by 26 m. It was divided into thirteen, 1 by 2 m. units designated A through J, beginning at the western end. Only three of these units were actually dug. Unit 1-A was used to explore Rubble Area 1 by excavating the eastern half of the 1 by 2 m. feature to a depth of 15 cm. While some ash was noted in the trench, the rubble proved to have neither depth nor alignment. The excavation did identify the basal Stratum 1 as a moderately compacted, brown sand forming a matrix for gravel and cobbles. This was overlain by Stratum 2 a loose to mediumly compacted, dark brown sand containing small charcoal flecks.

Trenches 2, 3, and 4. These trenches, as well as Units 1-G, 1-H, and 1-I, were excavated to investigate Rubble Area 2 which measured 10 m. in diameter. There also seemed to be two cobble alignments on the surface. All excavated units revealed only natural stratigraphy, however. It should be pointed out that there had been a considerable amount of human disturbance on the site. This included the placement of a primary survey marker by the project surveyors, recent fire hearths, and some recent vandalism. Most of the surface stone was cobble size although a few small boulders were present. Curiously, cobble-sized rocks were rare in subsurface contexts. Some cultural material appeared in Stratum 2 of Unit 1-I.

Trench 2 was excavated to a depth of 78 cm. but cultural debris appeared only in Stratum 2 in the upper 30 cm. No structural evidence appeared.

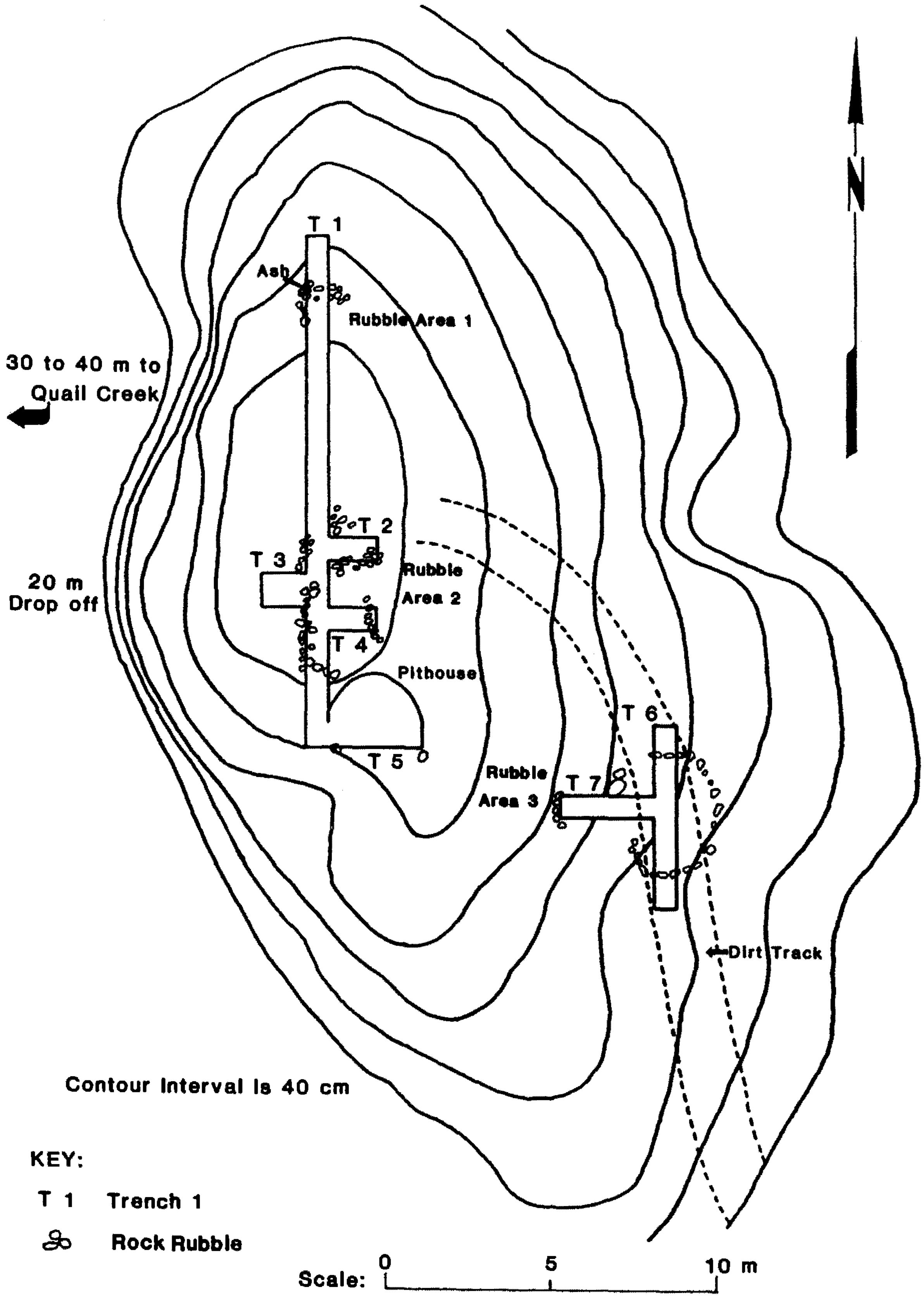



Figure 87. Plan and excavation map, 42Ws387.

Trench 3 was dug to a depth of 62 cm. Stratum 2 averaged only 20 cm. thick but contained comparatively more charcoal than did the other trenches probing Rubble Area 2. Cultural materials were recovered from Stratum 2, but no other features were identified.

Trench 4 penetrated to a depth of 63 cm. to reveal the anticipated stratigraphy with Stratum 2 averaging 35 cm in depth. A small collection of cultural material was recovered, but no evidence of structures was found.

Trench 5. Measuring 1 by 16 m. and run east from the southern part of Trench 1, the purpose of this excavation was to investigate a circular depression some 3 m. in diameter that was marked by a vague circle of small boulders. A basalt boulder on the southeastern edge had a small petroglyph pecked into its western surface. The figure displayed a counterclockwise spiral with a linear design set at the side (Fig. 88). Trench 5 ran through the center of the depression which would eventually be found to mark the existence of a pithouse.

Trench 6. This trench measured 1 by 8 m. and ran north to south in a fashion intended to bisect the rock alignment and depression noted on the southeastern edge of the site. The alignment was discontinuous but seemingly it circumscribed an area 5 $m.^2$. The square was bisected by the access track that led to the crest of the knoll. Two, 1 by 2 m. units, 6-B and 6-D were excavated to explore sections of the apparent alignment. Both units penetrated to 45 cm. and both found Stratum 1 to begin at 20 cm. The cobble alignment proved to be restricted to the surface and there were no subsurface features evident. Cultural debris was collected from the upper 10 cm. of Stratum 2 in both units.

Trench 7. A single 1 by 2 m. unit, this was used to investigate a semicircular cobble alignment and Rubble Area 3 which lay near two moderately large boulders. The trench was aligned east to west within the western end of the rubble area. Excavation demonstrated that the concentration of stone was fortuitous, even though the cobbles originated in Stratum 1, and penetrated through the 30 cm. of Stratum 2.

All three rubble areas were thus shown to be devoid of architectural significance, although human activity in those areas was indicated by small collections of cultural material. The square stone alignment was found to contain cultural debris within Stratum 2 but neither the origin nor the purpose of the feature could be determined.

Pithouse

The pithouse ringed with boulders was identified in Trench 5 (Figs. 87,89-90). The pit seemed to have been dug through the 30 cm. of Stratum 2, and then 60 to 70 cm. into Stratum 1 gravels. The limits of the pit could be determined only by the disappearance of post-occupation fill and the identification of Strata 1 and 2 materials. The walls of the pit appear to have been lined with unmodified boulders and cobbles. Both the east and west profiles of Trench 5 showed stone stacked against Stratum 1. Also supporting the concept of the stone facing was the fact that the greatest concentration of stone rubble was located around the edges of the pithouse within the post-occupation fill. There was no evidence to suggest that a clay lining had been used.

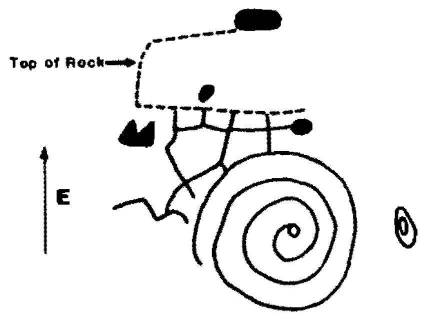



Figure 88. Boulder petroglyph, 42Ws387.

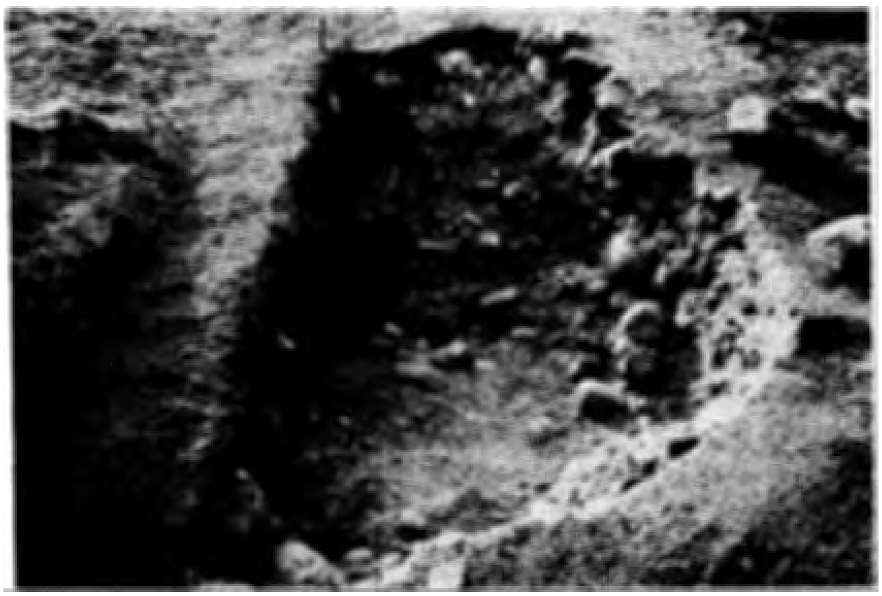


Figure 89. Pithouse at 42Ws387 cut in section. Note gravels in the floor and walls.

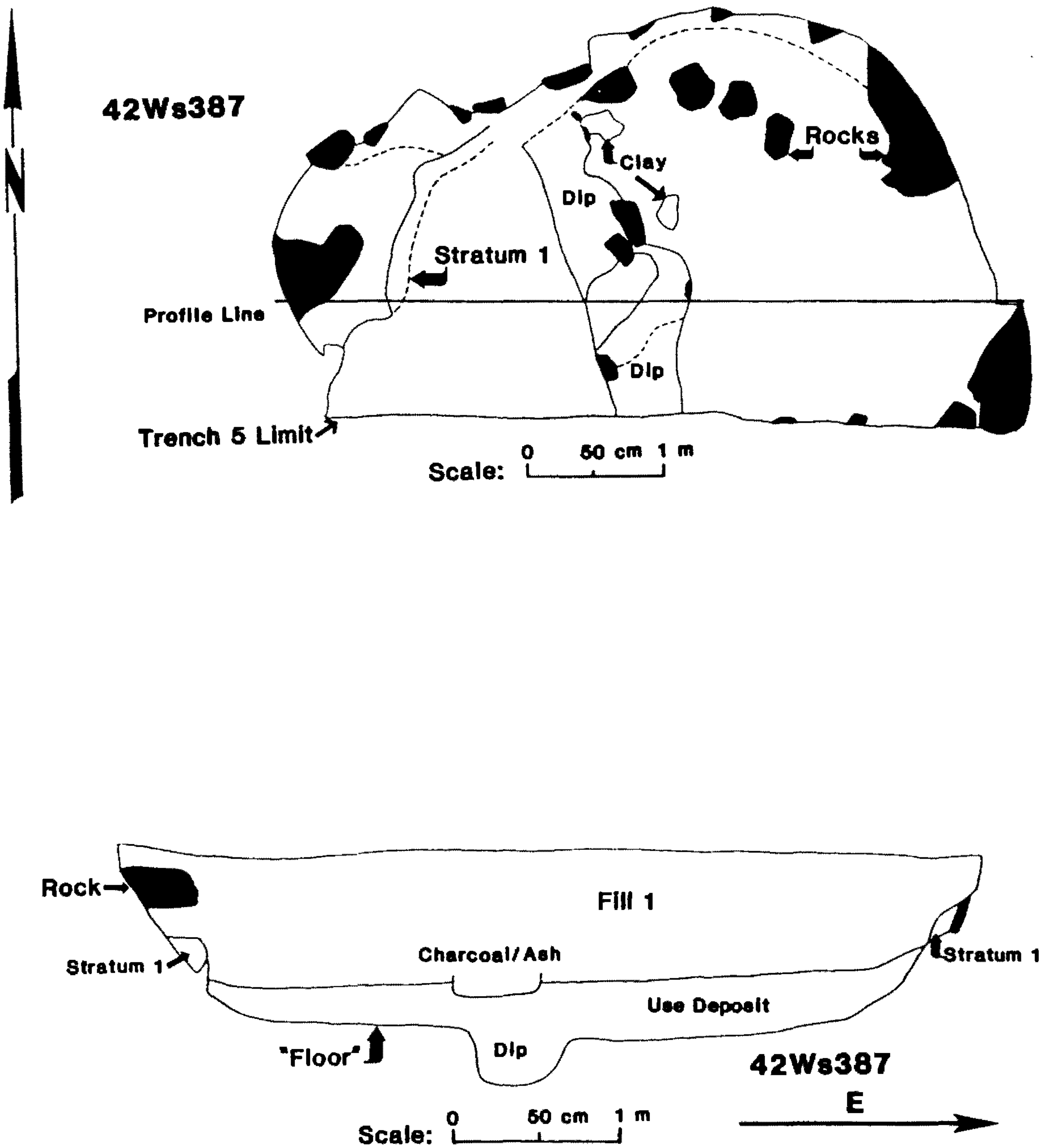



Figure 90. Plan and profile of the excavated portion of the 42Ws387 pithouse.

The pithouse floor was exposed at a depth of from 110 to 120 cm. as a use-altered surface of Stratum 1. Two clay concentrations were noted on the floor (Fig. 90). A radiocarbon sample was also recovered in floor contact which produced a date of 1160±60 years: A.D. 790 (Beta 8475).

Overlying this unprepared gravel and clay surface was Use Deposit 1, a somewhat arbitrarily defined layer of sand 10 to 30 cm. thick which appeared to have been deposited during the occupation of the structure. The fill contained cultural material, heat-cracked sandstone and quartzite, sparse to moderately concentrated charcoal and some vague ash deposits. Within Use Deposit 1, as well as on its surface, there was a concentration of sandstone, quartzite, and basalt, some of which had been heavily blackened and heat-cracked. There was no arranged pattern to the stone, but limited amounts of ash and charcoal were associated. A carbon sample from the material produced an assay date of 980±60 years: A.D. 970 (Beta 8474) which was somewhat later than other dates and the ceramics would indicate. It is possible, of course, that the depression that remained until modern times was, at one point, used as a camp by later Western Anasazi.

The post-occupation fill was composed of 70 to 80 cm. of undifferentiated, loose to medium compact, light brown sand containing pebbles as well as cobble and boulder rubble around the edges of the former structure. This material contained moderate charcoal flecking and an ash lens was noted in the lower 30 cm. A carbon sample collected at a depth of 65 to 75 cm, or close to the top of Use Deposit 1 yielded a date of 1310±60 years: A.D. 640 (Beta 8473). This reading was, of course, inconsistent with the other dates but it conformed more closely to the ceramic evidence.

Although only the northern half of the pithouse was cleared (Figs. 89-90), calculations based on the dimensions actually obtained suggests that the room had a diameter of 5 m.

Discussion

The evidence appears to indicate that 42Ws387 was a site used for limited activities for several centuries. Inevitably, core flake production was done here, but the evidence of other activity is meager at best.

The pithouse was of a most perfunctory type of construction, but this is not, in itself, a temporal indicator. Several similar structures have been reported, and they have come from different points in time. This pithouse may, in fact, have had a fairly good, though rough, stone interior wall. The fact that evidence of a roof could not be found does not mean there was no roof. The amount of energy invested in a structure, including the quality of the materials, will vary with the purpose for which the structure was intended.

A number of other pithouses in the project area have been identified as possible "farm houses" and this pithouse, though larger than the others, may for a time have filled the same function. It should be recognized that this is the only Basketmaker III site within the project area. That would mean that the 'home' site was somewhat farther removed. When one compares the resources of the project area with other parts of the St. George Basin, perhaps the wonder is that it was used at all. This would be particularly the case during Basketmaker III times where it is highly unlikely that the basin was subject to any population pressure at all.

## TABLE 26

## COLLECTION SUMMARY, 42WS387

**Surface**

| | |
|---|---|
| Mesquite Gray | 7 |
| North Creek Gray | 191 |
| u/i Virgin Ser B/G | 12 |
| S - manos (1 frag.) | 3 |
| Q - polishing stones | 2 |
| Q - edge grinders | 4 |
| C - Parowan Basal-notched | 2 |
| Q - hammerstones | 2 |
| LL- cores | 2 |
| Q - core | 1 |
| C - biface flakes | 2 |
| C - core flakes (5 cortex) | 9 |
| C - core shatter flakes (36 cortex) | 45 |
| C - u/i flakes (5 cortex) | 19 |
| LL- core flakes | 2 |
| LL- core shatter flakes (2 cortex) | 2 |
| LL- u/i flake (cortex) | 1 |
| Q - core flake (cortex) | 1 |
| Q - core shatter flake | 1 |
| Q - u/i flake | 1 |
| SS- core flake | 1 |

**Unit 1-A Stratum 2 0-15 cm.**

| | |
|---|---|
| Q - edge grinder | 1 |
| C - core flake | 1 |
| C - core shatter flake | 1 |
| C - u/i flake | 1 |

**Unit 1-I Stratum 2 0-15 cm.**

| | |
|---|---|
| Mesquite Gray | 1 |
| North Creek Gray | 8 |
| Q - edge grinder | 1 |
| C - core shatter flake (cortex) | 1 |
| LL- core flake (cortex) | 1 |
| LL- core shatter flake (cortex) | 1 |
| LL- u/i flake (cortex) | 1 |

**Trench 2 Stratum 2.**

| | |
|---|---|
| Mesquite Gray | 7 |
| Q - edge grinder | 1 |
| C - core flake | 1 |

**Trench 3 Stratum 2.**

| | |
|---|---|
| Mesquite Gray | 1 |
| North Creek Gray | 51 |
| Q - grinding slab frag. | 1 |
| C - core | 1 |
| C - core shatter flakes (2 cortex) | 3 |
| C - u/i flakes (1 cortex) | 5 |
| LL- core flakes (4 cortex) | 4 |
| LL- core shatter flakes (1 cortex) | 2 |
| LL- u/i flakes (3 cortex) | 3 |
| Lagomorpha left mandible | 1 |
| Rodentia tooth | 1 |
| small mammal scapula | 1 |

**Trench 4 Stratum 2.**

| | |
|---|---|
| North Creek Gray | 9 |
| C - core shatter (cortex) | 1 |
| LL- core flake | 1 |
| Q - core flake | 1 |
| Q - u/i flake (cortex) | 1 |

**Units 6-B, 6-D Stone alignment 0-10 cm.**

| | |
|---|---|
| North Creek Cray | 6 |
| LL- core | 1 |
| C - core shatter flake | 1 |
| C - u/i flake (cortex) | 1 |
| LL- u/i flake | 1 |
| Q - core flake | 1 |

**Trench 7 Stratum 2.**

| | |
|---|---|
| North Creek Gray | 8 |
| L - core | 1 |
| C - core flake (cortex) | 1 |
| C - core shatter flake (cortex) | 1 |
| LL- core flakes (2 cortex) | 2 |
| Q - core shatter flake (cortex) | 1 |

**Pithouse use deposit.**

| | |
|---|---|
| North Creek Gray | 19 |
| North Creek Gray vessel segment | 1 |
| C - core shatter flake (cortex) | 1 |

**Pithouse fill.**

| | |
|---|---|
| Mesquite Gray | 2 |
| North Creek Gray | 175 |
| S - mano | 1 |
| Q - polishing stone frag. | 1 |
| S - ground stone frags. | 2 |
| Q - edge grinders | 2 |
| C - utilized flake | 1 |
| C2- utilized flake | 1 |
| C - knife frag. | 1 |
| C - point preform | 1 |
| Q - hammerstone | 1 |
| C - cores | 2 |
| LL- cores | 9 |
| Q - cores | 4 |
| SS- cores | 2 |
| L - core | 1 |
| C4- core | 1 |
| S - core | 1 |
| C - core flakes (1 cortex) | 3 |
| C - core shatter flakes (4 cortex) | 6 |
| C - u/i flakes (2 cortex) | 6 |
| LL- core flakes (6 cortex) | 7 |
| LL- core shatter flakes (6 cortex) | 9 |
| LL- u/i flakes (3 cortex) | 3 |
| Q - core flakes (2 cortex) | 8 |
| Q - u/i flake | 2 |
| SS- core flakes (2 cortex) | 2 |
| SS- u/i flake | 1 |
| L - core flakes | 2 |
| CQ- core shatter flake (cortex) | 1 |
| Lagomorpha tibia/fibula | 1 |
| large mammal long bone frags. | 4 |
| large mammal scapula frag. | 1 |

Dating of the site has relied upon ceramic evidence (Table 26) and three carbon dates. Mesquite Gray sherds diagnostic of Basketmaker III were recovered from the surface, near the surface, and from the aeolian fill of the pithouse. North Creek Gray sherds were found in the same contexts plus Use Deposit 1. Many sherds have been called North Creek Gray when the eversion of the rims displays the form associated with Basketmaker III. The authors here express doubt that either Mesquite Gray or North Creek Gray are good temporal indicators. The forms are separable and the 'earlier' Mesquite Gray crops up even on Pueblo II sites. In contexts beyond that of the project area, it is believed that North Creek Gray first appeared in Basketmaker III times. The distinction between the two types is based largely on temper and paste while the temporal position is based on rim form and, in other cases, on painted designs. At 42Ws387 the rim forms conform to the Basketmaker III mode and that fact should be sufficient to position the site.

Although the provenience for the sample that dated A.D. 640 is not as tight as might be liked, it came from near the top of Use Deposit 1. The samples producing the two later dates originated at points deeper in Use Deposit 1 than did the earliest date. Some explanation may bring more order to the problem, but the reasoning would be tortured and circumstantial. It clarifies the matter to declare the later dates do not conform with the other evidence and to let it go at that.

It should be noted that the cultural materials recovered from the site (Table 26) include two items, recovered during the survey, that hint at a later occupation. These were two Parowan Basal-notched points, widely considered diagnostic of Pueblo II. The fact that they were found on the surface allows the observer to postulate a Pueblo II use without claiming a connection with the carbon sample that produced a Pueblo II date.

## 42Ws388

### Introduction

Like all of the other sites between 42Ws385 and 42Ws397, 42Ws388 was first recorded by the New Zealander H. Johnson Hall in November, 1970 while working for the University of Utah. The site was a well-developed habitation and storage complex chronometrically dated to the middle of the Pueblo I period. The area was located near the edge of the upper terrace 70 m. west of Quail Creek at an elevation of 2920 ft.(Fig. 2). Dominant vegetation on and around the site included creosote bush, range ratany, blackbrush, and bursage. Surface indications were limited to a vague semicircular mound showing a single vandalized storage cist, a faint surface ash area near the terrace edge, and a broad ash stain on the sandy terrace below the main site.

### Excavation and Stratigraphy

Over the course of the excavations, 15 trenches (Fig. 91) were established to investigate the initially observed feature areas, define stratigraphy, search for additional phenomena, and pursue defined features. One trench (12) was laid out but not excavated. Three trenches (7, 10, 15) were 2 by 2 m.

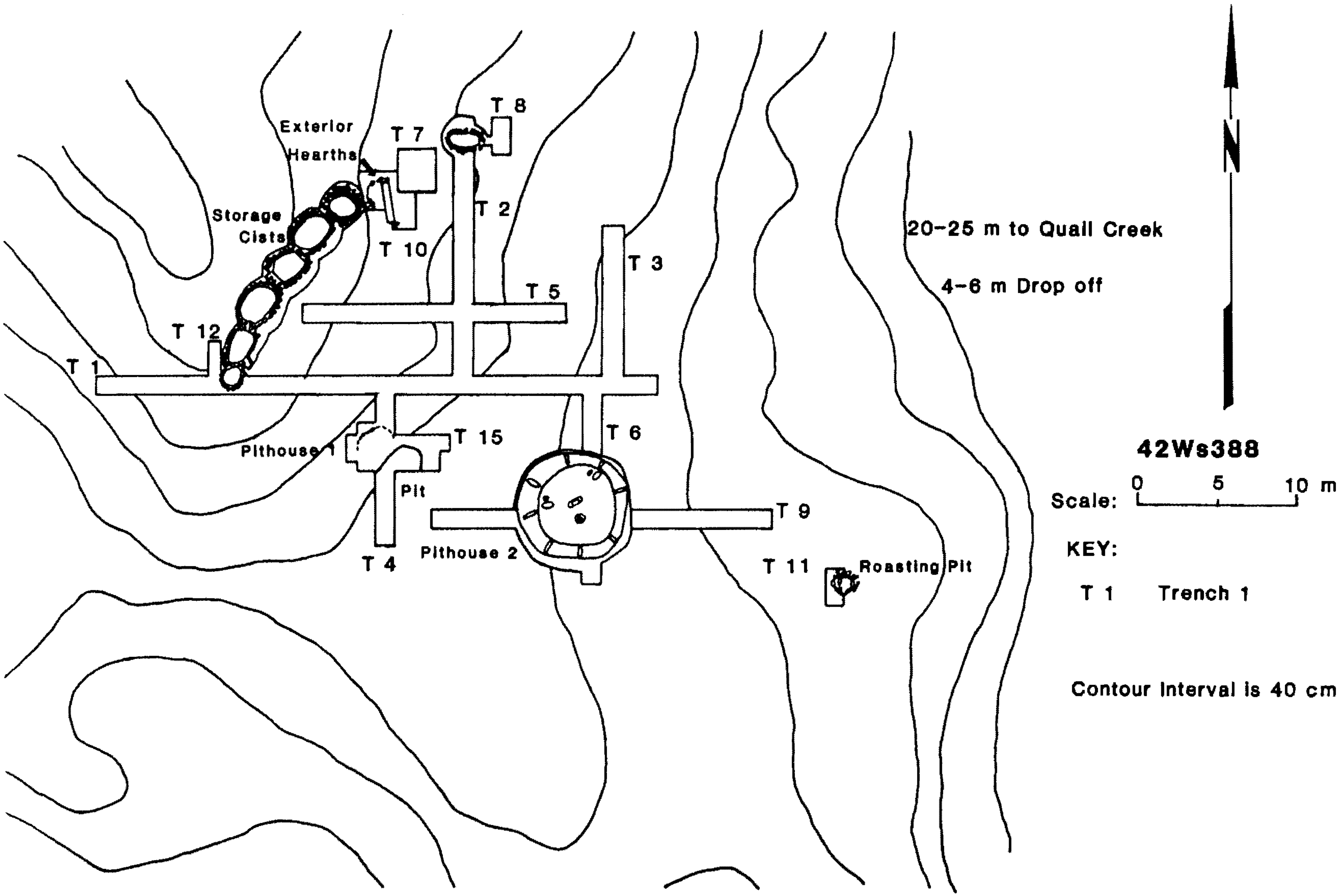



Figure 91. Site plan and excavation map, 42Ws388.

units. Otherwise, all trenches were 1 m. wide and were either divided into 1 by 2 m. units designed 1-A, 1-B, etc., or were 1 by 2 m. individual trenches in the first instance. The initial approach with the longer exploratory trenches was to excavate alternate units; this, of course, was modified as development of the site required.

The four strata revealed in Trench 1 were replicated in the remaining trenches and thus the basic site stratigraphy can be described on the basis of Trench 1 observations.

Stratum 1. This was a deposit of stream gravel and cobbles embedded in a clay-impregnated sand matrix which underlay the entire site and was exposed at the terrace riser below the site. The top of Stratum 1 was found at a depth of 100 cm. in the western portion of the site, but proved to be much closer to the surface along the terrace edge to the east where it could be found at 10 to 15 cm.

Stratum 2. This stratum was a lower-energy stream deposit of coarse sand and pea-sized gravel which occurred sporadically on top of Stratum 1 in the eastern site area.

Stratum 3. Stratum 3 was a deposit of red or pink caliche clay with sparse gravel and cobbles. The stratum was present primarily in the western half of the site, although a few pockets of the material were noted in trenches along the eastern portion of the site. The stratum was undulatory, being found at any point between 20 and 45 cm. deep.

Stratum 4. This upper layer was a loose sand with small gravel which covered the entire site. The layer was only 5 cm. deep around the storage cists, but it gradually deepened toward the east to a maximum depth of 60 cm. before it thinned rapidly near the terrace edge. Stratum 4 was the only artifact-bearing stratum on the site. Strata 1, 2, and 3 were culturally sterile.

## Site Features

The trenches exposed a number of features including a discontinuous block of eight storage cists; a rudimentary pithouse, either unfinished or cannibalized; a complex and well-preserved pithouse, a pair of shallow, exterior slab- and clay-lined hearths; an outdoor slab- and clay-lined roasting pit, and a deep pit of unknown significance (Fig. 91). All features related to the same Pueblo I occupation.

### Storage Cists.

The block of storage cists (Fig. 92) consisted of seven large oval cists and a small rectangular cist which was adjacent to the outside of Cists 1 and 2. No evidence of the overall construction sequence of the contiguous cists could be determined, with the exception of Cist 3 which was clearly added after Cists 1 and 2 and been completed. Cist 8 may have been constructed after the other cists because of its separation from the main block and because of the relatively "immaculate" condition as compared with the other cists. This may indicate that Cist 8 was used for a shorter period of time before it was

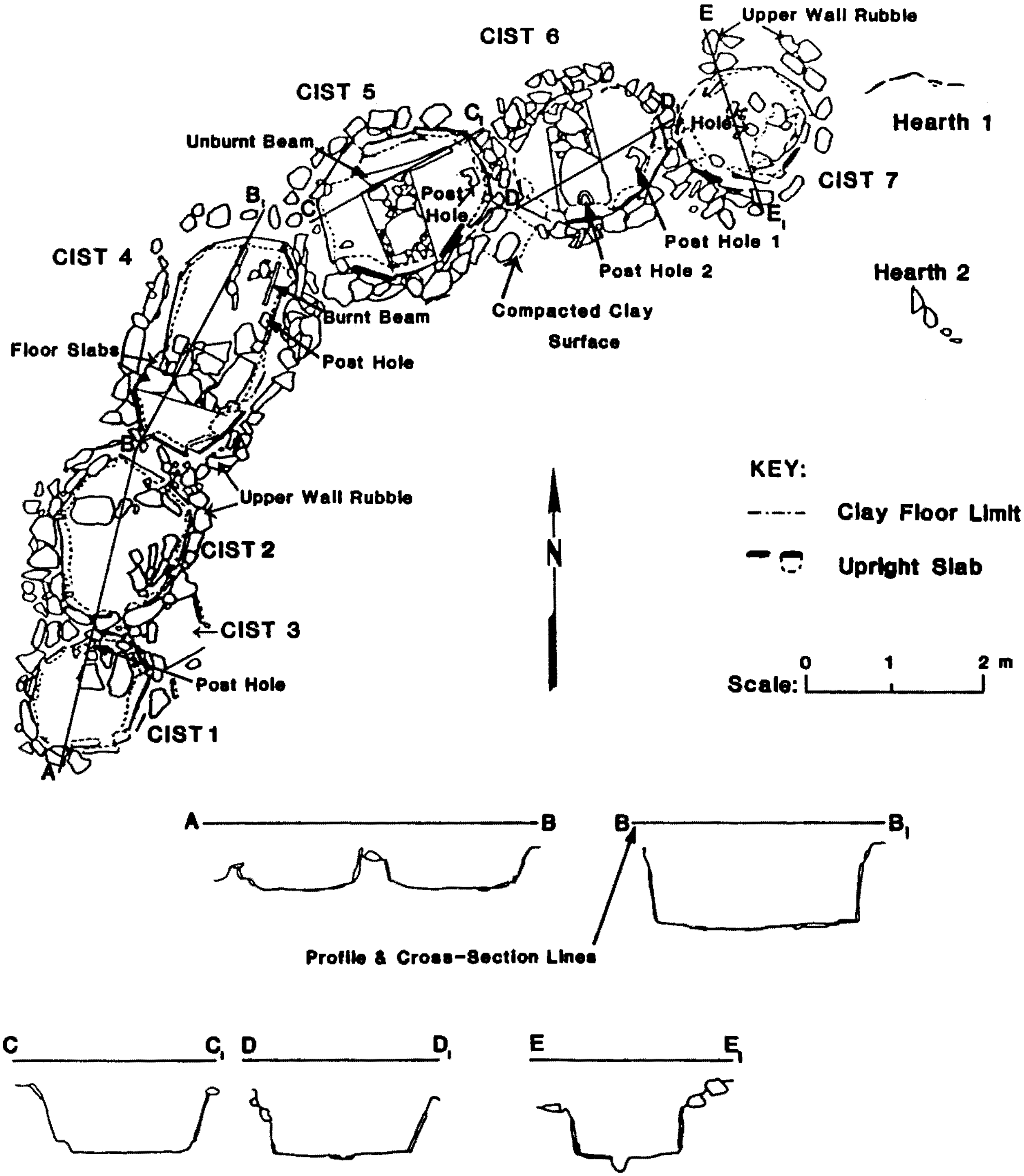



Figure 92. Plan map and cross-section drawings for the contiguous Cists 1-7, 42Ws388.

abandoned. If this was, in fact, the case, it would suggest that Hearths 1 and 2 were built before Cist 8 and were the reason for the separation of Cist 7 and 8.

Since each of the large cists was built in a similar manner, a general cist construction procedure can be described as applicable to all cists, and then the distinctive properties of each cist may be discussed.

The first step in the construction of a cist was the excavation of an oval pit. The sides of the pit were then lined with large, vertical sandstone slabs which might overlap slightly and, in some instances, might be set in a double thickness. A loose, sandy fill, sometimes containing cobbles, was placed behind the upright slabs for support and then a similar fill was used in the bottom of the pit at, least in some instances, apparently to even out surface irregularities. The highest of the wall slabs protruded above the ground by as much as 10 to 15 cm.

The bottom of the pit was then lined with as many as three layers of sandstone slabs. Small sandstone slabs were placed at an angle along the junction of the wall and floor slabs, and a clay floor, as much as 4 cm. thick, was placed on the floor slabs. Because of the irregular nature of the multiple-level slab floor, however, the clay floor was sometimes absent from the higher slabs leaving exposed stone surfaces. The clay floor was extended up the angled junction slabs and at least part way up the vertical wall slabs. It is not known whether the entire internal surfaces of the wall slabs were originally plastered, but in many cases the junctions or overlapping margins of the vertical wall slabs were packed with pebbles and sealed with clay which did survive until the present.

The superstructure was constructed by the wet-laying of blocky sandstone and diorite slabs on the surface of origin just outside the protruding vertical wall slabs. This wet-laid wall was, in all cases, only a single course wide, even in those segments lying between adjacent cists, which indicates that the superstructure walls were shared, unlike the subterranean vertical slabs. Unfortunately, the wet-laid nature of the superstructure walls resulted in such poor preservation that the overall storage block construction sequence could not be determined by examining the interdigitation of the wet-layed wall blocks.

The wet-layed walls were covered by a clay roof, probably supported by a wooden framework. The clay was mixed with small cobbles and pebbles and sometimes small sandstone slabs. Unfortunately, no clear evidence of an entry was found in any of the cists, except as reflected by one possible sandstone hatch cover.

Four of the cists show evidence of remedial repair work in the form of "postholes." These postholes did not penetrate the floor but were constructed by forming a V-shaped clay ridge 3 to 4 cm. high on the floor with the open end of the V facing away from the wall (Fig. 94). Three cists have a single posthole and one cist has two (Fig. 100), all of which are located adjacent to the vertical slab wall. Two of the postholes have a small slab wedged into the open end, and three have faint charcoal stains on the floor within the clay perimeter. These charcoal stains may indicate that the posts were cut to size by burning rather than by chopping. This may have been the usual technique since ground stone axes are extremely rare in the project area. Based on these data, it is suggested that the postholes are evidence of remedial roof support. If a cist roof began to sag, a posthole was constructed on the floor of the cist, and a post was then made by burning to size. Then the upper end of the post was placed against the portion of the roof requiring support and the lower end was slipped into the V-shaped posthole. The open end of the posthole was then blocked with small slabs or additional clay.

All of the cists eventually collapsed after abandonment, but the rates of collapse varied considerably. In some cases, the clay roof-fall lay directly on the floor, but in other cists a considerable aeolian deposit of sand accumulated within the cist before the roof collapsed. It should be noted, however, that if a cist remained sealed until it collapsed, an aeolian deposit would not have accumulated. It should also be noted that the "roof-fall" in these cists is unusually thick (compared to 42Ws268, for example), which can probably be attributed to the wet-layed construction of the walls which would have added considerably more clay to the roof-fall during the process of collapse.

Cist 1. This was constructed following the procedures outlined above except for the inclusion of several vertical diorite slabs instead of the normal sandstone. The floor of Cist 1 measured 1.30 by 1.05 m. and it lay 40 cm. below the top of the highest vertical slabs (Fig. 92,93). A remedial posthole, composed of a V-shaped clay ridge with two slabs closing its open end, was found along the northern wall. The posthole contained charcoal and it had an interior diameter of 10 cm. The upper wall remnants consisted of a maximum of two intact courses of stone. The roof-fall produced a 20 cm. thick layer of red-brown clay mixed with some white clay found lying directly on the floor of the cist. The roof-fall showed no evidence of burning and it was topped by a 5 to 15 cm. thick layer of loose, red-tan aeolian sand containing slab fragments. Pollen and flotation samples were taken from the floor of the cist.

Cist 2. Built according to the established method, the clay floor of this cist measured 1.60 by 1.25 m. and it was 50 cm. below the top of the highest slab (Fig. 92,95). The remnant wall of the superstructure was two courses high.

Before the roof collapsed, a thin layer of fine red sand called Fill 1 accumulated sporadically over the floor. The roof-fall, which showed no sign of having been burned, was 30 cm. thick and consisted of a chunky, light tan clay with pea-sized pebbles and small cobbles. A shaped sandstone slab which could have been a hatch cover for the cist was recovered from the lower part of the roof-fall. The roof material was covered by a layer of tan sand with significant clay content as well as sandstone slabs.

Cist 3. This small, rectangular, partially slab-lined cist was built adjacent to the exterior sides of Cists 1 and 2 (Fig 92). Cist 3 was constructed by digging a pit into Stratum 3 at the junction of the coursed masonry walls of Cists 1 and 2. Two vertical sandstone slabs were placed in the east and south sides of the pit and a small slab was placed over the corner of Cists 1 and 2 to smooth the interior of Cist 3. A hard red clay, 0.5 cm. thick, was laid directly on Stratum 3 and then up the exterior of Cist 1

Figure 93. View of the fully cleared Cist 1, 42Ws388.

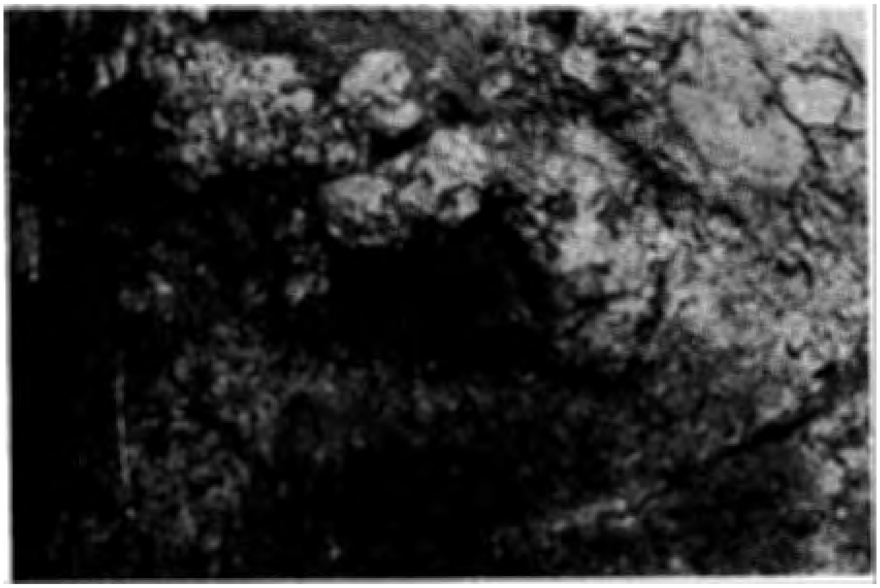


Figure 94. Detail of the posthole in the floor of Cist 1, 42Ws388.

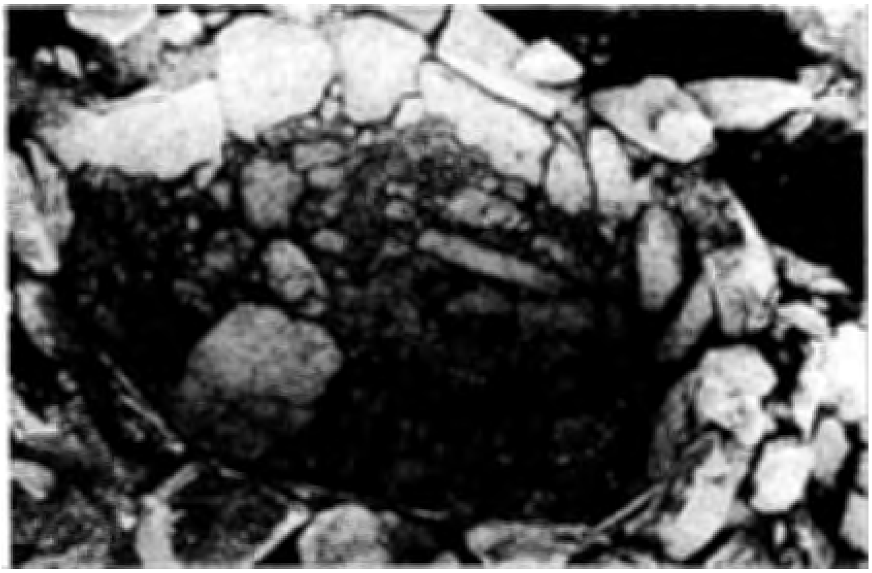


Figure 95. View of fully cleared Cist 2, 42Ws388.

Figure 96. View of fully cleared Cist 4, 42Ws388.

and 2 walls. The resulting square measured 70 cm. on each side and the clay floor was 25 cm. below the top of the highest slab. The fill of Cist 3 consisted entirely of tan, aeolian sand. Pollen and flotation samples were taken from the fill immediately above the floor.

Cist 4. This was constructed by the basic procedures noted. The floor measured 2.3 by 1.0 m. and it lay 72 cm. below the top of the highest slab (Figs. 92,96). Cist 4 also had a remedial posthole along its west wall. This consisted of a clay ridge 4 cm. high with a small vertical slab set in one of the corners away from the wall. The internal dimensions of the roughly square hole were 13 by 12 cm. The posthole differed from others observed in that the clay ridge would have completely encircled the base of the post. The upper wall of coursed stone was more completely preserved than most of the others. A maximum of four courses of stone remained intact (Fig. 97).

The collapse of Cist 4 was more complex than it was in the case of the other cists. Soon after abandonment, portions of the inner wall clay began to slump, leaving a sloping deposit of chunky clay around the outer edges of the floor. A thin deposit of loose, aeolian sand with small pebbles and cobbles, Fill 1, then accumulated on the floor and the wall slump. A large number of sherds, a superficially charred post, and red, fire-hardened clay chunks were all found within Fill 1. The undulatory nature of the top of Fill 1 suggested that it was a natural aeolian deposit, while the presence of the closely associated sherds from a single vessels, the cobbles, and the charred post and clay chunks indicate that other parts of the site remained occupied while Fill 1 was accumulating. The evidence apparently argues that the use of Cist 4 ended before that of other cists.

The charred beam and the fire-reddened clay chunks in the cist indicate that there had been fire within even though no charcoal was present in Fill 1. The post was found lying parallel to the west wall near the southern end of the cist (Fig. 98). The northern end of the post was near the posthole (Fig. 92) suggesting that the two were related and that the post fell during the accumulation of Fill 1. The post was slightly charred but only on its outer surfaces. The remnant piece was 70 cm. long and 2.75 cm. in diameter. A portion of the post was subjected to radiocarbon assay. The resulting date was $1170 \pm 60$ years: A.D. 780 (Beta 8045).

The explanation for the superficial burning of the post is found in Fill 2, a highly compacted, fire-reddened aeolian sand which contained gravel, cobbles and, in its lower portions, significant amounts of charcoal. Fill 2 also contained artifacts characteristic of the general site occupation time period which suggests that, after the lower part of Fill 2 had accumulated naturally, a fire was started within the cist. The fire proved hot enough to char the post and to bake the clay covered by Fill 1, but it was not hot enough to cause the collapse of the roof.

After the fire, some kind of activity occurred within the cist which scattered and fragmented the charcoal. The accumulation of Fill 2 continued without any additional evidence of cultural activity. Fill 2 was distinctly higher near the north-central portion of the cist. Since Fill 2 was composed of aeolian sand, the configuration of the Fill 2 deposit may indicate that the entry was in the roof, perhaps directly above the highest point of Fill 2.

Figure 97. Detail of a segment of the upper wall around Cist 4, 42Ws388.

Figure 98. Detail of the charred post just above the floor of Cist 4, 42Ws388.

Above Fill 2 was a layer of roof- and wall-fall consisting of chunky tan clay, some sand, and a number of slabs from the coursed walls. The sand among the clay components perhaps indicates a gradual collapse of the upper walls. After the wall collapse had completed, the remainder of the cist filled with a loose, aeolian, clay-impregnated sand termed Fill 3. Pollen and flotation samples were taken from Fill 1 immediately above the floor.

Cist 5. This also followed the general construction procedures outlined at the beginning of the section. The clay floor measured 1.8 by 1.3 m. and it lay 45 cm. below the top of the highest slab (Fig. 92,99). The floor also revealed a single remedial posthole near the northern wall (Fig. 92). The posthole was formed by a V-shaped clay rim some 3 to 4 cm. high which enclosed a square area measuring 12 cm. on each side. Two small sandstone slabs lay on the bottom of the posthole beneath a few small fragments of charcoal. A part of the open side of the posthole was defined by a small vertical slab.

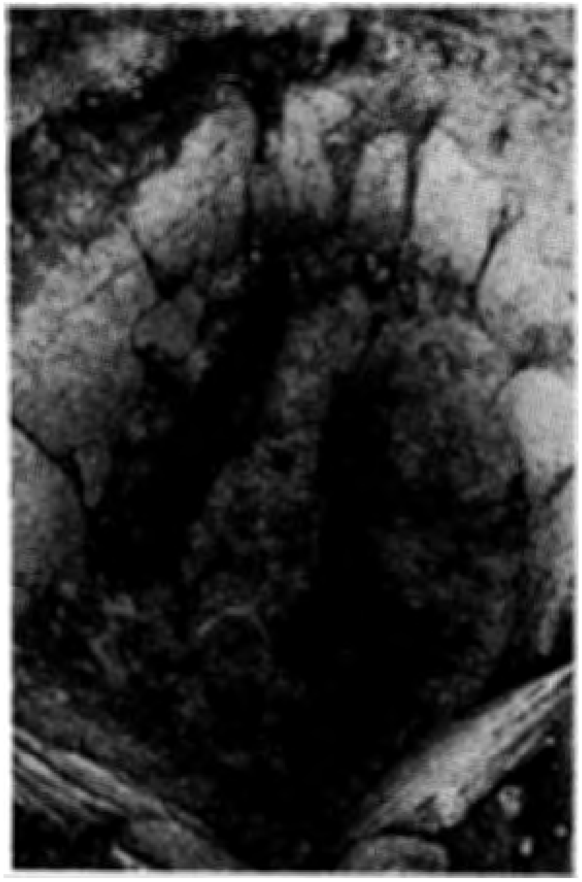


Figure 99. View of cleared Cist 5, 42Ws388. The unburned post is along the west (left) wall. Ice pick handle points to a posthole.

The upper wall of masonry contained four courses at the time of excavation. In addition, a small exterior paved area had been placed along the northeastern edge of the cist (Fig. 92). The paving was made by placing several sandstone slabs on top of Stratum 3. These were then covered by several centimeters of compacted red clay to encompass an area about 35 by 40 cm. adjacent to the outer wall.

Just prior to the collapse of the cist, a small, dense concentration of charcoal and ash was dropped in the center of the floor. This conclusion was based on two considerations: the charcoal and ash contained several sherds, and no evidence of fire-alteration was present on the floor under the deposit. The location of the ash and charcoal suggested that the entry was in the middle of the roof.

Above the floor and charcoal deposit lay Fill 1, a relatively thick aeolian deposit of loose, red, clay-impregnated sand with pea-sized gravel. The layer also contained artifacts, some small cobbles, and a few clay chunks, all of which suggest that Cist 5 had been abandoned and began disintegrating while at least part of the site continued to be occupied. Also within Fill 1, about 5 to 9 cm. above the clay floor, a decomposing post (Fig. 92,99) was found lying horizontally along the western edge of the cist, parallel to its longitudinal axis. The post was 118 cm. long, and 10 to 15 cm. in diameter. It yielded a C-14 assay of 2690 ±280 years: 740 B.C. (Beta 8043). The post's location in Fill 1 seems to eliminate the possibility that it was a roof beam. It might have been a remedial support post but it was not aligned with the existing hole. If the post was, indeed, used as a support post, its length would indicate the roof was about 1.2 m. above the floor.

Accumulation of Fill 1 continued, apparently uninterrupted by human activity within the cist, resulting in a characteristic undulating upper surface of the fill. Fill 1 was sealed by the fall of the roof and the slow collapse of the masonry walls. The roof-fall consisted of gray-tan clay mixed with sand and sandstone slab fragments. Above the roof-fall was Fill 2, a natural aeolian deposit of clay and sand along with a few sandstone slabs. Pollen and flotation samples were taken from Fill 1 immediately above the floor.

Cist 6. This cist (Figs. 92,100) was constructed according to the basic pattern with one exception: the small slabs placed at an angle along the base of the upright wall slabs were set in place before the slab floor was laid rather than afterwards. The floor of the cist measured 1.6 by 1.2 m. and it lay 65 cm. below the top of the highest slab. The cist was also characterized by two remedial postholes (Figs. 92,100). One containing charcoal fragments lay at the north end of the floor and the other lay near the east wall.

The first posthole was marked by a V-shaped clay ridge 4 cm. high which enclosed part of a square area measuring 11.5 cm. on each side. A few small charcoal chunks were present on the floor of the posthole, suggesting that the post may have been burned rather than cut to the required length. The second posthole was enclosed by a clay rim that varied between 3 and 5 cm. high. The enclosed area was also a square measuring 11.5 cm. on a side. Even though the latter posthole was completely enclosed by the clay rim, the southern perimeter was considerable lower than the rest of the rim.

After abandonment, a deposit of loose, red-tan aeolian sand and pea-sized gravel, Fill 1, accumulated on the floor. Within Fill 1, but lying directly on the floor, were several chunks of white clay which might have been portions of fallen wall plaster. The consistency and color of the chunks was sufficiently different from the rest of the structural clay, however, that it is possible they were deliberately placed on the floor. Pollen and flotation samples were taken from Fill 1 immediately above the cist floor.

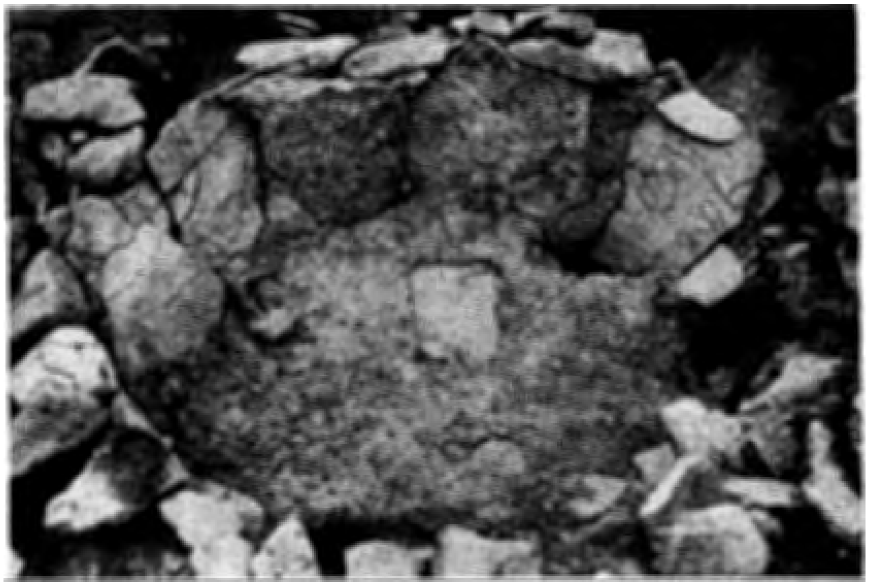


Figure 100. View of fully cleared Cist 6, 42Ws388. Postholes show upper left and upper right.

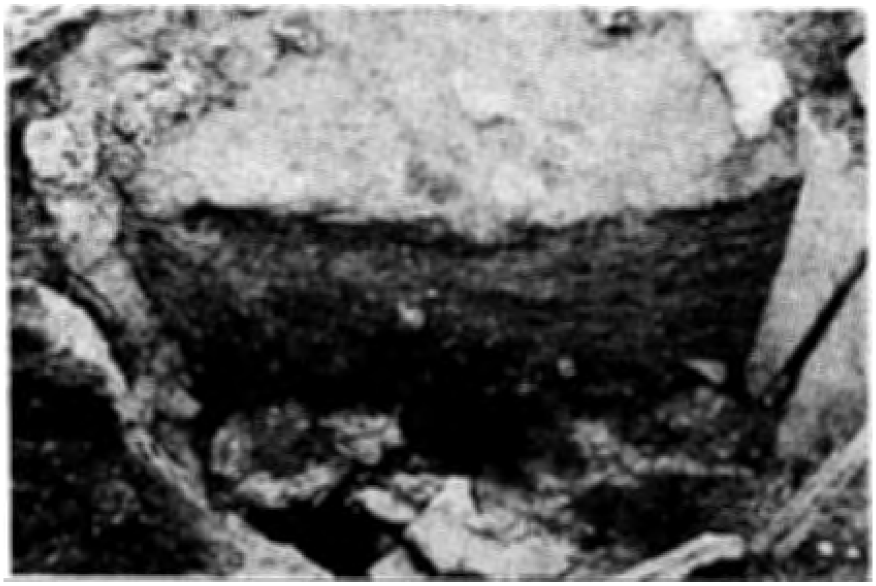


Figure 101. View of the profile through the fill of Cist 7, 42Ws388. Disturbed area at center and right.

After the accumulation of some 20 cm. of Fill 1, the roof collapsed and the coursed stone walls began to deteriorate. The roof-fall and wall-fall consisted of compacted, tan-gray chunks of clay with sandstone slabs and slab fragments in its upper portions. The remainder of the fill in Cist 6 consisted of aeolian, clay-impregnated sand with additional wall slabs.

Cist 7. Construction of this cist (Figs. 92,101) followed the procedures indicated with the exception of the fact that the floor slabs were a light green mudstone rather than the usual sandstone. The floor measured 1.3 by 1.2 m. and it lay 67 cm. below the top of the highest slab.

After the cist was constructed, a roughly circular pit was dug through the clay and slab floors. The penetration of the floor slabs was more readily accomplished because the mudstone becomes quite soft when exposed to moisture. The pit was 22 cm. in diameter and 17 cm. deep. It contained a very loose, stained-sand fill which lay flush with the floor. Although there was no charcoal or ash in the fill, it appeared to have acquired some form of organic stain.

Lying on the clay floor was a thin, 0.25 cm. thick, discontinuous layer of fine red-brown sand. The deposit included sparse burned clay fragments and rare pieces of charcoal, both suggesting a cultural origin. Above this deposit lay vandal-disturbed fill consisting of loose, red-gray clay termed Fill 1. This fill was similar in composition to the roof-fall deposits of the other cists, but in this feature it was loose and lacked the chunky nature of undisturbed material. Further, the upper western portion of Fill 1 contained a series of alternating clay and sand laminae such as are commonly formed by rain wash and aeolian deposition (Fig. 101). All of this suggested that the northern half of Cist 7 was almost emptied by vandals who subsequently partially back-filled along the eastern edge of the cist leaving a depression in the northwest corner which gradually filled with alternating rain-washed and aeolian sands. After vandalism, the surface had stabilized and a thin, aeolian sand, Fill 2, accumulated. Pollen and flotation samples were taken from the floor contact area of Fill 1.

Cist 8. This final cist (Figs. 102, 103) was constructed in the usual manner but it was not contiguous with Cist 7. Since outdoor Hearths 1 and 2 were built immediately east of Cist 7 (Fig. 92), Cist 8 was probably a later addition to the block of storage cists (Fig. 91). The exceptionally good condition of the floor and the lack of cultural debris in floor contact suggested that Cist 8 may have been constructed late in the occupation of the site.

The floor of Cist 8 measured 1.6 by 0.9 m. and it lay 68 cm. below the top of the highest slab. The floor was covered by a thick deposit of roof- and wall-fall consisting of compact white clay, the upper portions of which contained numerous sandstone slabs and blocky basalt cobbles. Above the roof-fall lay a deep deposit of aeolian, tan, clay-sand called Fill 1. The layer was so deep that it covered all evidence of the cist, including the superstructure rubble. A pollen sample from the surface of the floor and a flotation sample from the lower portion of the roof-fall were taken.

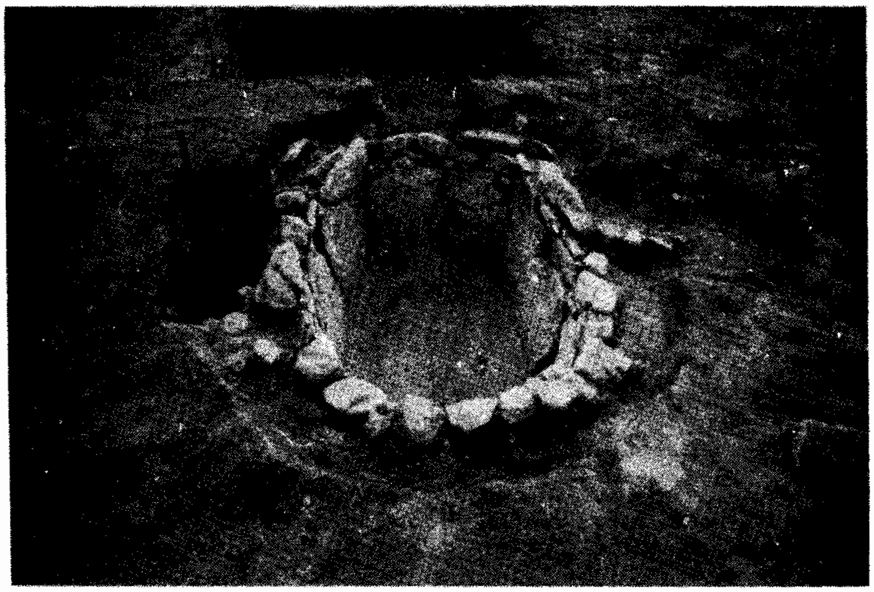


Figure 102. View east of cleared Cist 8, 42Ws388.

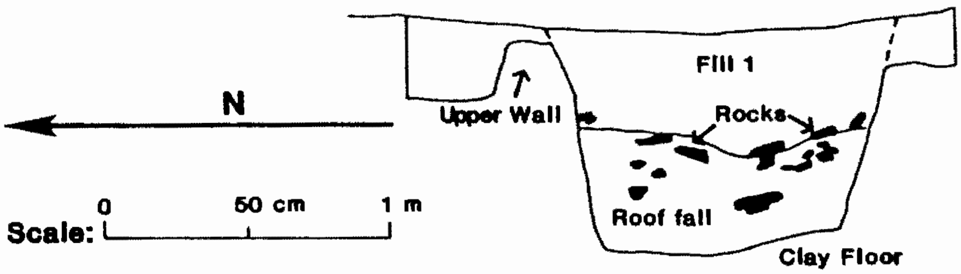



Figure 103. Profile drawing of Cist 8 fill, 42Ws388.

Pithouse 1

This was a small, perhaps unfinished, semisubterranean structure (Fig. 104). It was excavated from a surface of origin within Stratum 4 which was identified at a depth of 25 cm. The pit was dug through 10 cm. of Stratum 4 and 40 cm. of Stratum 3 to a total depth of 50 cm. below the surface of origin (Fig. 104). As the pit was being excavated, a bench was formed in a limited part of the northern perimeter by exposing a 55 cm. wide area at the top of Stratum 3 before digging further to create the pithouse floor. No evidence of a bench could be found at any other location around the pithouse, however.

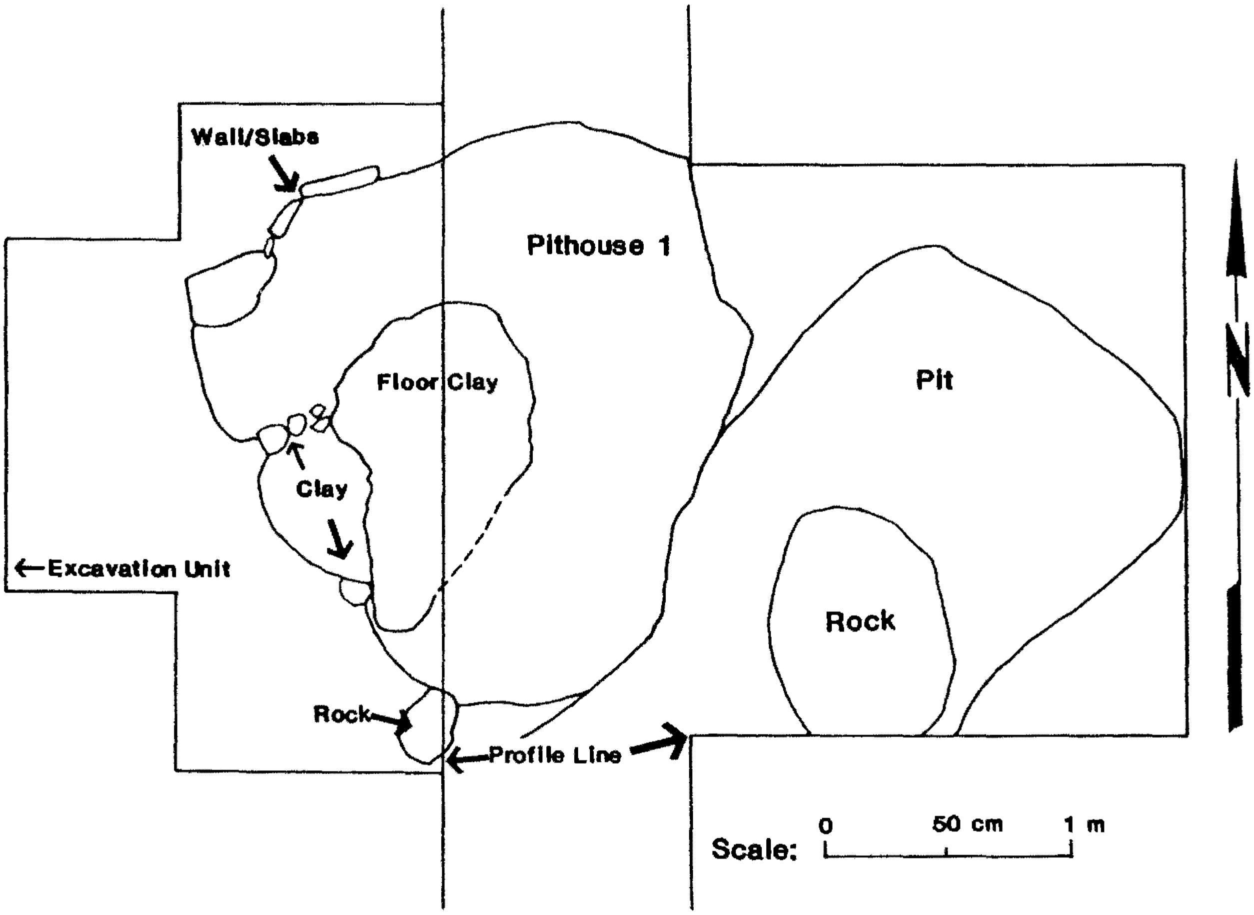
The bottom of the pit formed an irregular circle, the edges of which were difficult to define. The approximate diameter of the floor was 2.25 m. To prepare the bottom of the pit, clean sand was spread over exposed Stratum 3 and then a layer of red clay, 1 to 3 cm. thick, was laid in an irregularly shaped area measuring 1.3 by 0.8 m. near the center of the pit. The clay floor appeared never to have been finished since the balance of the floor remained the sand layer.

The lower walls of the structure were mainly represented by exposed Stratum 3 since wall lining was found only in two limited areas. In the northwest quadrant, the walls were faced with a boulder and two sandstone slabs (Fig. 104), the bottoms of which were placed 1 to 2 cm. above the floor. A small amount of tan clay was placed between the two sandstone slabs, but there was no other evident effort to plaster the surface. The only other area where wall preparation could be found was in a small part of the southwest quadrant where a vague, tan clay wall-pack as much as 7 cm. thick was identified. For the most part, the back of the bench, the bench itself, and the lower walls remained the exposed earth.

No evidence of a roof was found, but the pithouse was used, possibly with a light brush superstructure. Evidence of use consisted of a well-developed ash stain on the clay floor and a peculiar alignment on the west side of the sand floor. This alignment was composed of two sandstone cobbles separated by a chunk of clay. Its function was unknown. Pollen and flotation samples were taken from the floor.

The lower fill, or Fill 1, of Pithouse 1 consisted of a slightly ashy sand which included some cultural material. No clay from the roof was present. At the top of Fill 1, about 11 cm. above the pithouse floor, a well-packed use surface was identified. The surface was best delineated in the northwest quadrant of the structure, immediately adjacent to the wall slabs. Since Fill 2, which lay above the use surface, was indistinguishable from Fill 1, the use surface could be defined only in terms of differential compaction. As a result, definition of the use surface proved difficult. At best it appeared to cover no more than a meter in diameter.

Fill 2, except for position, was indistinguishable from Fill 1. Both fill levels contained an unusually abundant assortment of cultural materials (Table 27) which suggests that the area may have been used either as a knapping locus or as a refuse dump, or both. Certainly the large quantity of cultural debris found in the structure indicates that the site was occupied during the time the structure disintegrated. It is likely that Pithouse 1 was older than Pithouse 2.



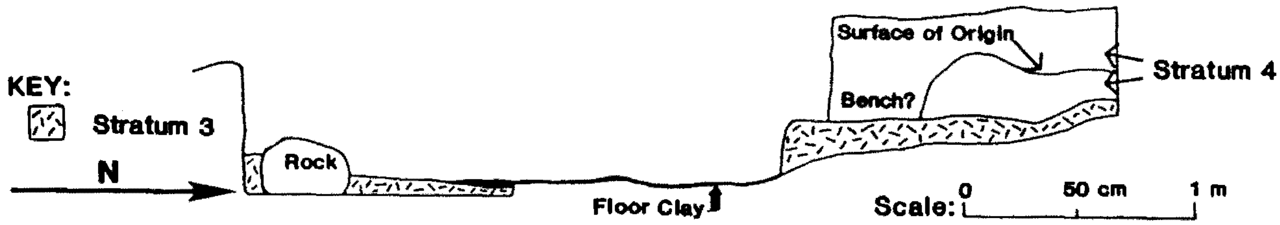




Figure 104. Plan and cross-section drawings of Pithouse 1, 42Ws388.

Pithouse 2

This structure (Figs. 92,105) appeared to have originated at the upper surface of Stratum 3 which has been defined as a naturally deposited layer of caliche clay (Fig. 106). A large pit was dug for an average of 45 to 55 cm. into Strata 2 and 1 so as to include the construction of both the bench and the floor. The pit was then dug deeper in the center to form the main floor of the pithouse, while the peripheral bench area was excavated to a lesser depth, approximating its eventual level. Overall, the pithouse measured 5.2 by 5.9 m. at the outer walls and from 4.0 to 4.5 m. at the base of the slab-lined interior walls (Fig. 105).

It would perhaps be well to point out that the words "floor" and "bench" actually convey two meanings. The word floor refers to a surface, a thing that has no depth. At the same time, the term floor means the material used to create the surface. Some field workers, taking samples from the material from which floors are made, have termed this a "floor matrix." A similar dual meaning exists in the case of the term bench. A bench is a particular configuration that has material body, a composition that can be described. At the same time, a bench is also a surface, an important feature which, like a floor, is confined to two dimensions. Most commonly the terms are used with interchangable meaning without a modifying word to indicate what is meant. The decision to follow that practice, particularly with reference to the bench, should cause no confusion so long as the reader keeps the double meaning in mind.

Detailed construction steps probably began on the bench. Vertical roof supports were set into the bench, the first posts being placed 5 to 15 cm. away from the outer wall. Posts varied from 6 to 16 cm. in diameter with most falling within the 10 to 12 cm. range. To accommodate the posts, eight holes were dug in the bench (Fig. 105) at fairly regular intervals, the holes ranging in depth from 45 to 65 cm. At six positions a single post was set. In the two adjacent holes of the southeast quadrant, however, two posts aligned to the center of the structure were set in place. The posts may have been reduced to proper length by burning since the butt ends of preserved posts were all charred, leaving a charcoal residue that was from 1 to 8 cm. deep. It is possible, of course, that the burning was intended as a preservative measure. In the case of Pithouse 2, however, all of the posts were preserved in an unburned condition between the charred butts and the surface of the bench. The postholes were not lined with clay but were simply filled with sand.

Following the placement of the posts, it appeared that the upright slab wall was set (Fig. 108) to define the central occupation surface as well as to brace and support the bench. This wall was composed of large, shaped, sandstone slabs which were set from 10 to 20 cm. into Stratum 1. The slab wall thus circumscribed the occupation area and defined the bench which ranged from 74 to 86 cm. wide.

With the wall slabs in place, a 15 to 30 cm. layer of clean sand was used to cover the bench and to slope up to meet the top of the slabs.

The stabilization of the slab wall and the preparation of the outer wall behind the bench involved the use of highly compacted white clay containing some gravel. The slabs were stabilized with the clay at both the bottom and the top with the clay covering the top of the slabs and reaching to the bench

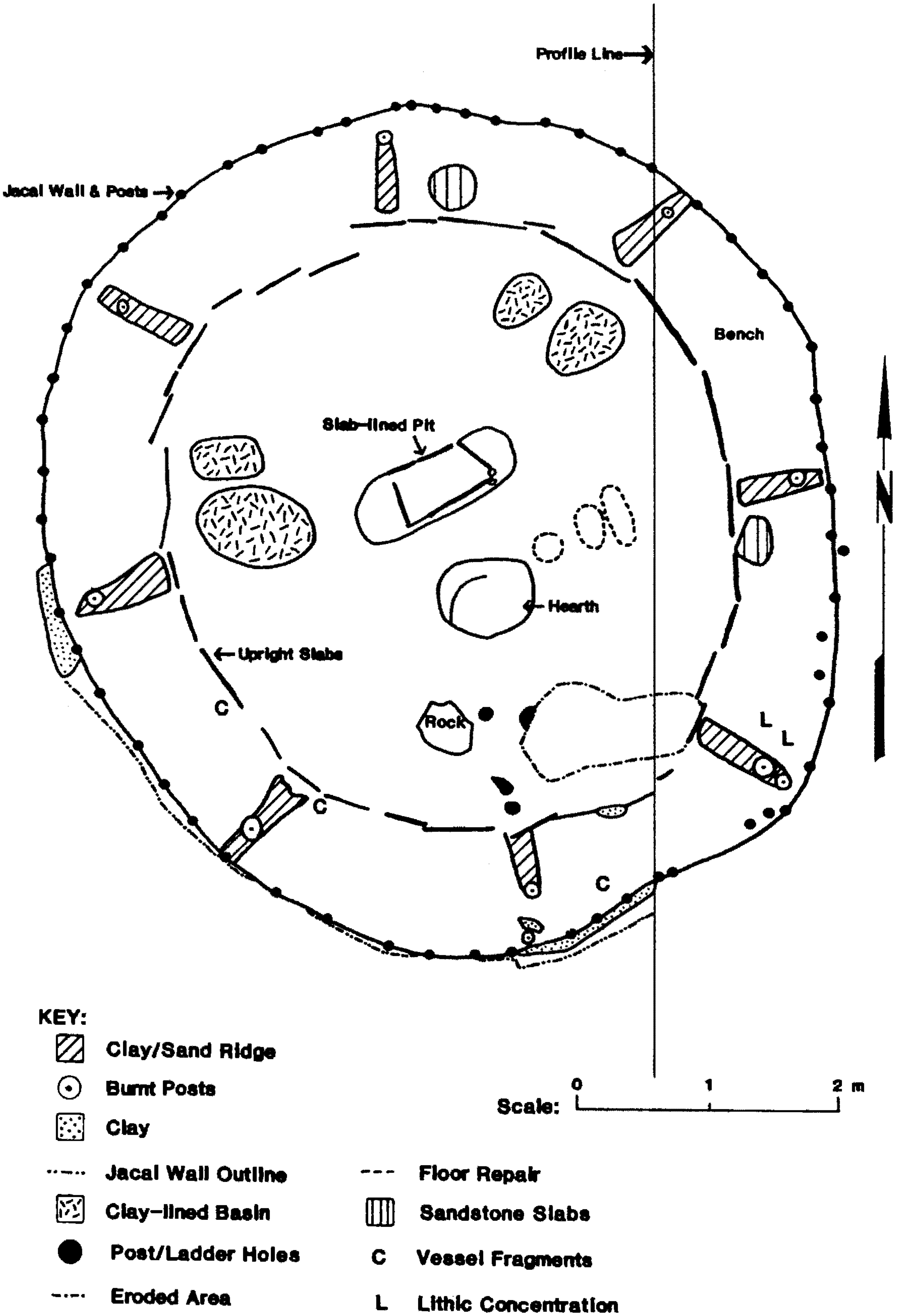



Figure 105. Plan map of Pithouse 2, 42Ws388.

surface to form a smooth edge to the feature. The clay was also used to fill the gaps and joints between the slabs and, in the northwest quadrant, the clay was applied to the face of a recessed slab to make it flush with the rest of the wall. The recessed slab appears to represent the point where slab placement was begun and ended.

The exterior wall that rose behind the bench was also composed of white clay. It proved to be 10 to 15 cm. thick at the base of the wall but thinned to 3 cm. at the top of the extant portion. The clay was also spread a short way onto the bench. The clay wall was 35 to 40 cm. high and poles were set in the wall clay as supports for a jacal superstructure. The supporting wood members were placed at fairly regular intervals from 26 to 34 cm. apart (Fig. 109). The poles varied in diameter from 3 to 12.5 cm. The poles were either aligned around the perimeter of the pithouse before the clay was applied, or the poles were set in the clay while it was still wet. In either case, the interior face of the poles was then covered with a thin layer of clay which had mostly eroded. The supporting poles were burned during the destruction of the pithouse and their presence was marked by the vertical niches containing charred wood and loosely compacted sand.

An examination of the various clay surfaces showed that the slab wall and the outer wall were built before the main living floor and the bench received their final cover. An intermediate step involved the sectioning of the bench by laying eight, radially oriented ridges of sand across the bench in such a manner that each of the ridges surrounded one of the large roof support posts (Figs. 105,109). The ridges were from 60 to 78 cm. long and 10 to 30 cm. wide. They crossed the bench from the outer wall to the top of the slabs of the inner wall. The bench and the sand ridges were then covered with a layer of white clay that varied from 1 to 9 cm. thick. The clay ridges thus divided the bench into eight segments, each from 1.8 to 2.0 m. long (Fig. 105) . The only exception to this was found the southeast quadrant where the two sets of double posts were found to be only 1.6 m. apart. The bench was quite level, although it ranged from 27 cm to 40 cm. above the central clay floor. A sandstone slab was set flush with the bench surface on the eastern side and it was placed against the slab wall. A fair collection of cultural materials was taken from the bench (Table 27).

The principal occupation floor contained a number of features including a clay-rimmed hearth; four clay-lined basins; a covered, slab-lined pit; and several small, round depressions (Figs. 105,107). The larger features appeared to have been excavated before the clay floor was laid.

Four clay-lined pits or basins were found originating from the clay floor and extending into Stratum 1. Two pairs of clay-lined basins were noted along the western and northeastern edges of the floor. In the case of each pair, one pit was significantly larger than the other. The western pair were both filled with orange sand of medium compaction and slightly flecked with charcoal. Both lay within 10 to 15 cm. of the slab wall. The larger of the two pits lay south of the smaller and it measured 67 by 57 cm. and was 18 cm. deep. The sides of the basin were lined with a hard, orange-tan, sandy clay. The lining did not cover the bottom where the material of Stratum 1 could be seen. A thin, ashy, charcoal-flecked lens was also found in the fill. The smaller basin, meanwhile, measured 43 by 31 cm. and it was 9 cm. deep. The walls of the basin were lined with the same clay except at the west end and the bottom where Stratum 1 could again be identified.

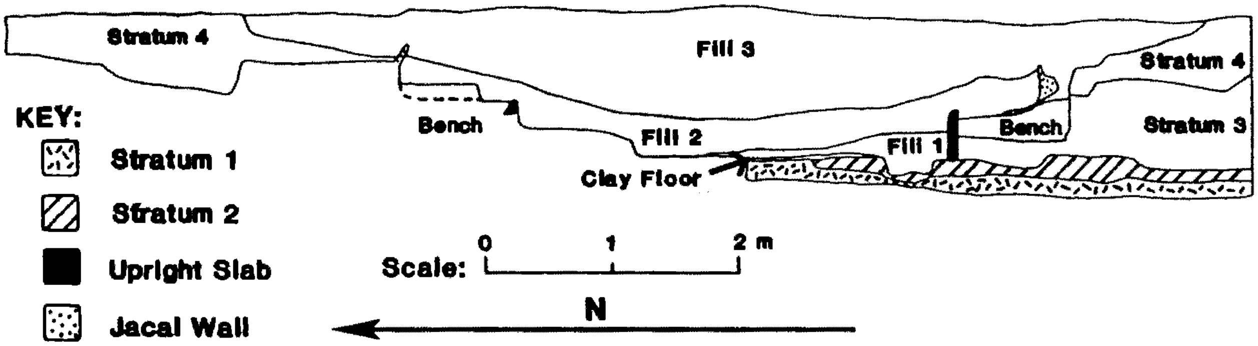



Figure 106. Profile drawing of Pithouse 2, 42Ws388.

Figure 107. View of the fully cleared Pithouse 2, 42Ws388.

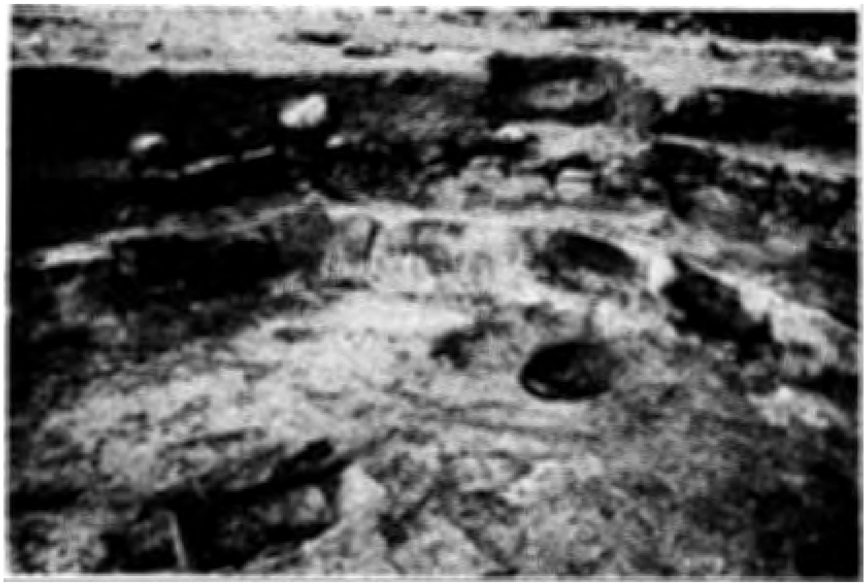


Figure 108. View north of the northern portion of Pithouse 2, 42Ws388. Details interior wall slabs.

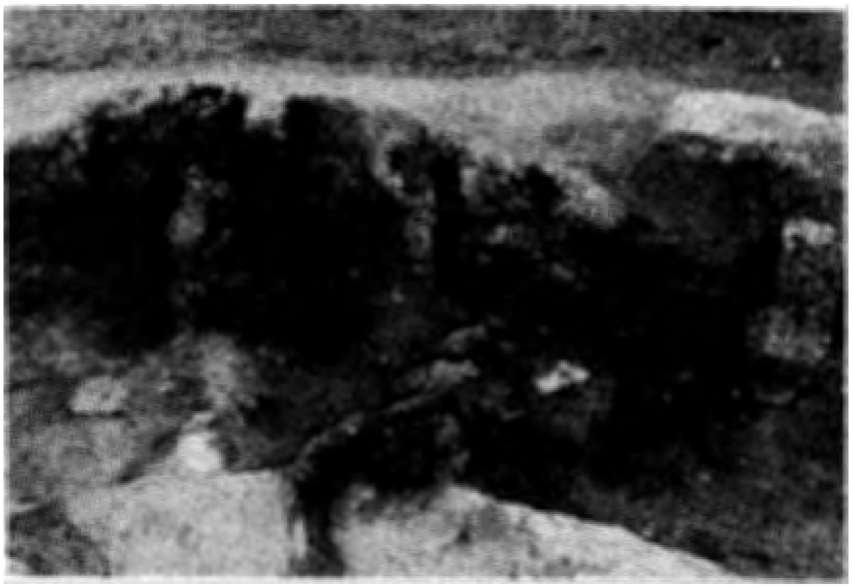


Figure 109. Detail of a portion of the bench in Pithouse 2, 42Ws388. Shows burned support post and associated clay ridge.

The northeastern pair of pits was found within 25 to 30 cm. of the slab wall. The larger basin lay east of the smaller and the larger measured 58 by 49 cm. and was 18 cm. deep. It was fully lined with brown-orange, sandy clay and the fill proved to be orange sand of medium compaction with a scatter of charcoal. The fill of the smaller basin was identical, although the smaller feature did not contain two rocks found in the larger one. The small basin measured 45 by 30 cm. while it was 9 cm. deep. It was lined with a maroon, sandy clay except in the southwestern end where the edge was ill-defined.

A centrally located hearth which had been modified at least once was dug into Stratum 1. The original basin was roughly circular, measuring 64 by 53 cm. with a depth of 21 cm. The feature was lined with gray clay which was about 2 cm. thick at the bottom and which thickened to 4 cm. on the sides. At some point during the occupation, the basin was reduced in size, primarily by filling and replastering the northern edge and the bottom of the basin. The reconstructed basin measured 59 by 42 cm. with a depth of only 14 cm. A white clay rim on the south side of the hearth may have come with the original pit since it was not found on the north side. The clay lining of the pit was slightly blackened from use and the fill consisted of 7 cm. of loose gray ash containing a few scattered charcoal flecks.

One additional major floor feature was noted some 50 cm. north-northwest of the hearth (Fig. 105). This was a rectangular, slab-lined pit measuring 66 cm. by 35 cm. with a depth of 45 cm. The sandstone slabs of the feature appear to have been placed in a pit somewhat larger than the lining. The sandstone slabs were stabilized by using a compacted white clay which was visible in the corners and across the faces of the slabs. Small cobbles were used at the top of the feature as an exterior outline.

This slab 'box' was possibly covered by two alternating layers of slender sticks laid across the slabs. The wood then was covered with a gray clay similar to that covering the clay-lined pits. The clay over the box covered the tops of the slabs. The fill within the feature was orange sand flecked with charcoal and containing scattered lumps of gray and white clay along with a large rock. Cultural debris was also found in the fill (Table 27).

The pithouse floor yielded evidence of wear and modification over time especially in the area of the hearth, the slab-lined box and the southeast quadrant in general. The surface west and north of the hearth exhibited patches of red-gray clay which had been applied to check fragmentation of the original clay. The small floor area between the hearth and the slab-lined box had been heavily repaired.

Sometime during the occupation of the structure, a remedial roof post was added on the southern side. The post abutted the slab wall and may have been used to support a sagging roof area. A rather large floor area measuring 1.2 by 0.6 m. had been heavily impacted by use. The clay floor had disintegrated and had not been repaired. This, plus the presence of double vertical posts and possible ladder holes, strongly suggests that access to the structure was through the roof in this area.

Fill 1 within the pithouse consisted of a discontinuous layer of loose, red-orange sand from 2 to 15 cm. thick (Fig. 106). The sand appeared to have been deposited on both the floor and the bench after abandonment. The fill was thickest in the southeast quarter, suggesting that the postulated roof entry had been left open after the structure was abandoned.

Fill 2 consisted of the burned and collapsed superstructure (Fig. 106). It was 10 to 30 cm. thick and consisted of loose brown sand containing charcoal and ash. The material was intermixed with compact gray-white clay, charred beams, and burned stone. Pieces of fire-hardened clay with twig, stick and log impressions were also found in the fill. Charred timber was found throughout the fill with intact pieces measuring as much as 1.15 m. in length and ranging from 3 to 12 cm. in diameter. As near as could be determined, the initial roof beams radiated from the center of the structure towards the support posts placed in the bench. These timbers were then covered with smaller poles, probably laid in parallels in each of the eight segments of the roof. This was, in turn, covered with sticks and brush and a layer of clay was laid over this to form the roof. A substantial collection of cultural material, including a partically reconstructable ceramic vessel, was recovered from Fill 2 (Table 27) suggesting that the roof may have been used as an activity area.

Two carbon samples were collected from charred beams in Fill 2 and analyzed. One sample produced a date of 1140±50 years: A.D. 810 (Beta 8042), which was consistent with the ceramic and structural evidence accumulated. The second sample deviated from expectations when it yielded a date of 1630±130 years: A.D. 320 (Beta 8041). The second sample, which was small, came from the same area as the first. It may represent old timber used in the construction, although the interpretation is somewhat strained.

The roof and walls of the pithouse appear to have burned and collapsed sometime after abandonment since Fill 1 accumulated prior to the collapse. The timbers must have continued to smoulder following the collapse since the slab wall and the floor were heavily blackened. Fill 2 also contained fragments of the jacal wall.

Fill 3 was made up of an orange-brown sand of medium compaction. The level contained ash lenses and scattered charcoal, most notably in the lower 20 to 30 cm. of the fill. The fill varied from 15 to 85 cm. thick, thinning towards the edges of the conical depression left by the collapse of the roof. The level was similar in composition to Stratum 4 and appears to have been the result of natural deposition. The level was visible on the contemporary surface.

Extramural Features

Hearth 1. Located near the northern end of Cist 7 (Fig. 92). This outdoor feature was constructed by digging a shallow pit entirely within Stratum 4 and then lining the sides with small upright slabs. The bottom of the pit was lined with red and white clay. Exposure of the feature showed it had either suffered from erosion or that it had never been completed. Only five of the slabs remained in situ to form an arc 1.1 m. long. Arguing for an unfinished project was the fact that the slabs showed no evidence of heat and there was no ash in the fill. The large size of the hearth, calculated to have been about 1 m. in diameter, also raises questions concerning its classification. No hearths or roasting pits of similar size were encountered within the project area. The fill above the floor consisted of some 20 cm. of tan, aeolian sand of some clay content along with a small collection of cultural material.

Hearth 2. This outdoor feature (Fig. 92) appeared to have been completed but it suffered some form of post-use damage. It had been dug within Stratum 4 and it was lined with small, blockish, angular slabs of which only three remained in situ when excavated. An extrapolation of the missing slabs indicated that the hearth had originally been 60 cm. in diameter. The bottom of the hearth was clay-lined but only scattered remnants remained for the excavations. Although neither the slabs nor the floor showed evidence of fire, the clay-impregnated sand fill was lightly stained with ash.

Roasting Pit. The feature (Fig. 92,110,111) was a deep, narrow, slab- and clay-lined pit which appeared to have been abandoned before its final contents were removed. The pit was constructed by digging a hole 60 cm. deep which was then lined with six vertical sandstone slabs, some of which extended above the surface of origin. Following this, some 5 to 10 cm. of sand was placed in the bottom of the pit and four small slabs were placed over the sand. The slabs were given a cover of clay 1 cm. thick and the junctions between the wall slabs were packed with the same clay. A ring of small, blockish sandstone slabs two courses high was laid on the surface of origin around the protruding slabs (Figs. 110,111). The completed feature was 45 cm. in diameter at the floor and 60 cm. in diameter at the surface of origin. It appeared to have attained a depth of 50 cm. below the surface of origin.

Excavation showed that the lower portion of the pit contained a 35 cm. thick deposit of large charcoal chunks mixed with finer charcoal, ash and sand that was termed Fill 1. Three pollen and three flotation samples were taken from the level. A carbon sample from the layer assayed a date of 1870±60 years: A.D. 80 (Beta 8044). The upper surface of Fill 1 was capped by a double layer of small sandstone sealing slabs (Fig. 111) which were undisturbed at the time of excavation.

The sealing slabs were covered with an irregular and discontinuous layer of sandy clay that appeared to have been intentionally placed. The roasting pit was apparently left in this condition when the site was abandoned. The upper portion of the pit was filled with clay-impregnated sand of natural origin. The wind-borne deposits continued until only the uppermost course of the encircling masonry was exposed on the surface.

Pit. The final feature to be discussed, this enigmatic feature was dug prehistorically and then gradually refilled through natural deposition (Fig. 112). The pit was placed close to the eastern edge of Pithouse 1 (Fig. 91), but the vague nature of the pithouse boundary did not permit a confident determination of the sequence of excavations. The surfaces of origin for both the pit and the pithouse were identified at the same depth, which suggests that they may have been dug at about the same time.

The pit took the form of an irregular rectangle measuring 1.7 m. wide by approximately 5 m. long. The length was estimated because the central part of the pit was not tested and the southern end was incompletely defined. The pit appeared to have been dug to a depth of 1.8 m. below the surface of origin, after which it almost immediately began to fill with natural deposits (Fig. 112).

Figure 110. View into the roasting pit, 42Ws388.

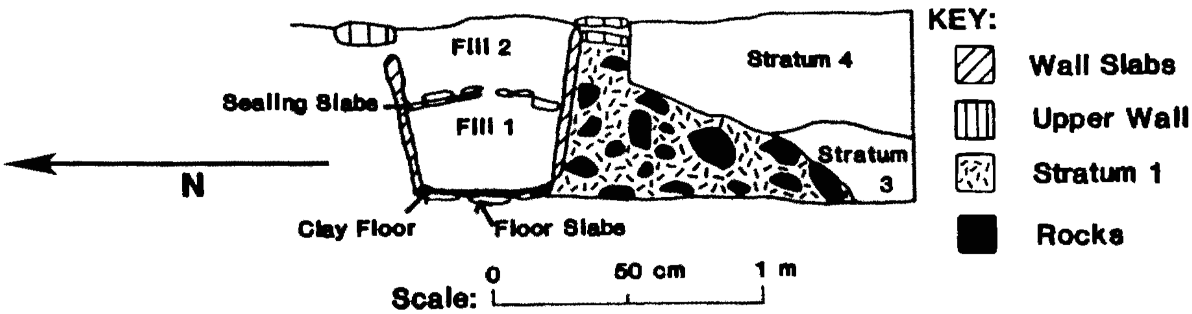



Figure 111. Profile of the roasting pit, 42Ws388.

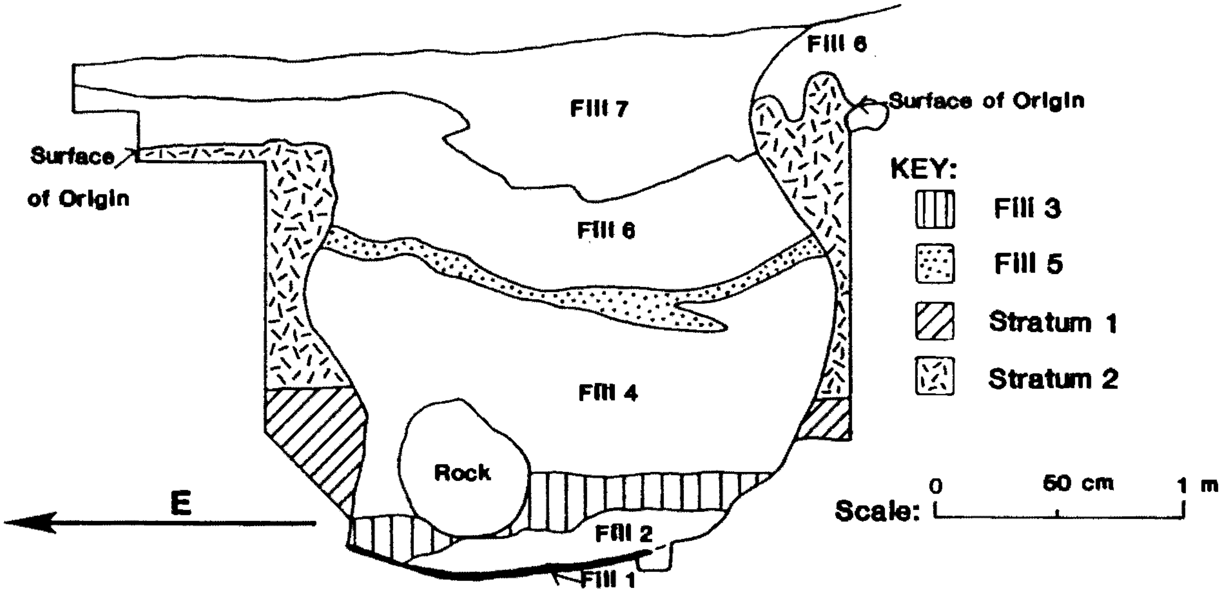



Figure 112. Profile of the pit, 42Ws388.

At the bottom, Fill 1 was marked by a series of closely spaced clay and sand laminae each 1 cm. thick; thick depositional sets were lying on Stratum 1. Fill 1, then, was composed of rain-washed clay with thin aeolian sand layers separating the clay laminae. No cultural material was recovered from the level.

Fill 2 was a tan sand lacking evidence of lamination. It contained no cultural material nor other cultural evidence. Fill 2 may have been a clean sand purposefully dumped into the pit, but its similarity to the Stratum 2 sand which formed the upper walls of the pit suggested that the origin of Fill 2 was in a partial collapse of the pit walls.

A large boulder lay on top of Fill 2 (Fig. 112). The subjective impression was that the boulder had been deliberately set in place, although no reason for such action could be suggested. After the boulder was placed on Fill 2, Fill 3, a gray-brown compact sand began to accumulate. The gray color suggested an ash constituent in the sand and it is possible that this was a cultural deposit of diluted hearth material. Four North Creek Gray sherds were found in Fill 3.

Fill 4 lay above Fill 3 and it took the form of a complex deposit of clay/sand laminae that contained at least 250 total components. It was evident that the layer was deposited while the site was still occupied because cultural debris was found in the layer. Near the top of Fill 4, a thin substratum of gravel and sand had accumulated. The gravel appeared to have been intentionally dumped into the Pit. Fill 4 also revealed a peculiar deposit of gravel, loose sand and fragments of undecomposed brush. The deposit appeared to be the burrow of a large animal such as a badger.

Fill 5 lay on Fill 4 in the form of a thin deposit of clean sand. The layer contained no evidence of cultural activity, but an unexplained disturbance along its interface with Fill 4 suggested that some kind of digging had taken place.

Fill 6 was sand with sparse pea-sized gravel inclusions. A layer indistinguishable from Stratum 4, the aeolian deposit accumulated after the site was abandoned. Fill 6 contained a considerable collection of cultural debris (Table 27) which included sherds that corresponded temporally with those collected in clear provenience in other parts of the site. Since the lower part of Stratum 4 was so similar to Fill 6, it proved impossible to determined whether or not the cultural materials were deposited by human agency, or were washed in from the surrounding surface.

Fill 7 was a mixture of small gravel and sand which also contained some cultural material as well as sparse charcoal flecks. Fill 7 was indistinguishable from Stratum 4 except for the rare charcoal. It was further determined that Fill 7 had been recently disturbed by some type of heavy equipment. Before the test excavation began, the modern surface appeared to have been slightly disturbed as if a piece of tracked earth-moving equipment had turned around. The excavation showed that a blade had been pushed into the ground from east to west. The result was to lift a part of Fill 6 to the surface along the west side of the Pit, and then the resulting hole was refilled with Fill 7. The procedure created an apparent difference between Fills 6 and 7, even though both were composed of Stratum 4 material.

## Discussion

42Ws388 proved to be a good example of a Pueblo I habitation and storage complex. The assumption that the site had a fairly long occupation was based on indicators such as the floor repairs in Pithouse 2, as well as the remedial roof posts added to Pithouse 2, and to four of the seven oval storage compartments. Examples of structural repair were not found in other structures excavated within the project area.

Excavation of the storage complex demonstrated that Cists 4 and 5 had fallen into disuse before the site was abandoned. These two cists had fill material from which a considerable collection of cultural debris was recovered (Table 27). From three to five of the cists were in use until the site was abandoned. In Cists 1,2, and 8 the roof-fall was found immediately upon the floor, a fact which suggested that the cists remained sealed until their collapse. The lack of stone hatch covers in cist fills may imply that other more ephemeral materials were used to close the chambers, but it is also possible that the covers were valued and thus taken to the next site occupied by these people.

Like the storage cists, the roasting pit appeared to be fairly diagnostic of the Pueblo I period in the project area. The roasting pit was slab-lined and circular with exceptional depth in relation to the diameter. It was noteworthy that this roasting pit had been left sealed when it was abandoned. In spite of the fact that the pit was somewhat removed from other site features (Fig. 91), ceramics recovered from within and around the pit clearly associated it with the other features of the site (Table 27).

TABLE 27

COLLECTION SUMMARY, 42WS388

| | |
|---|---|
| **Surface.** | |
| North Creek Gray | 125 |
| Washington B/G | 12 |
| St.George B/G | 2 |
| u/i Virgin Ser. B/G | 8 |
| Boulder Gray | 1 |
| S - manos (1 frag.) | 2 |
| Q - edge grinder | 1 |
| C - utilized flake | 1 |
| LL- utilized flake | 1 |
| Q - utilized flake | 1 |
| C - point (inc.) | 1 |
| Q - biface preform | 1 |
| S - biface | 1 |
| LL- cores | 2 |
| C - core flakes (2 cortex) | 10 |
| C - core shatter flakes (6 cortex) | 10 |
| C - u/i flakes (1 cortex) | 14 |
| LL- core flakes (8 cortex) | 13 |
| LL- core shatter flakes (3 cortex) | 4 |
| LL- u/i flakes (8 cortex) | 9 |
| Q - core flakes (7 cortex) | 11 |
| Q - core shatter flake (cortex) | 1 |
| Q - u/i flakes (2 cortex) | 2 |
| SS- core flake (cortex) | 1 |
| C4- core flakes (2 cortex) | 3 |
| **Unit 1-A 0-10 cm.** | |
| North Creek Gray | 11 |
| Washington B/G | 3 |
| Q - core | 1 |
| C - core shatter flakes (1 cortex) | 2 |
| LL- core shatter flake (cortex) | 1 |
| SS- core flake (cortex) | 1 |
| L - core shatter flake (cortex) | 1 |
| **Unit 1-C 0-10 cm.** | |
| S - grinding slab | 1 |
| **Unit 1-D 40 cm.** | |
| S - metate frag. | 1 |
| **Unit 1-E 0-20 cm.** | |
| S - mano frag. | 1 |
| **Unit 1-G 0-20 cm.** | |
| North Creek Gray | 2 |
| C1- core flake | 1 |
| **Unit 1-I 0-30 cm.** | |
| North Creek Gray | 10 |
| Washington B/G | 4 |
| C - core shatter flake (1 cortex) | 2 |
| LL- u/i flake | 1 |
| **Unit 1-J 0-35 cm.** | |
| North Creek Gray | 22 |
| Washington B/G | 1 |
| C- core shatter flake (cortex) | 1 |
| LL- core shatter flake (cortex) | 1 |
| Q - core flake | 1 |
| C1- core shatter flake | 1 |
| **Unit 1-K 0-40 cm.** | |
| North Creek Gray | 7 |
| u/i Virgin Ser. B/G | 1 |
| C3- core | 1 |
| **Unit 1-O 0-10 cm.** | |
| North Creek Gray | 1 |
| Washington B/G | 2 |
| C - core shatter flake (cortex) | 1 |
| **Unit 2-C.** | |
| North Creek Gray | 1 |
| **Unit 2-E.** | |
| North Creek Gray | 1 |
| C - core flake | 1 |
| C - u/i flakes (1 cortex) | 3 |
| LL- u/i flake (cortex) | 1 |
| Q - u/i flake (cortex) | 1 |
| **Unit 3-A 0-20 cm.** | |
| North Creek Gray | 2 |
| Washington B/G | 1 |
| SS- core flake (cortex) | 1 |
| **Unit 3-C 0-30 cm.** | |
| North Creek Gray | 10 |
| **Unit 4-D 0-40 cm.** | |
| North Creek Gray | 6 |
| C4- core flake (cortex) | 1 |
| **Unit 5-I** | |
| North Creek Gray | 2 |
| Washington B/G | 1 |
| **Unit 5-M** | |
| North Creek Gray | 2 |
| C - drill | 1 |
| LL- core flake (cortex) | 1 |
| **Unit 6-A** | |
| North Creek Gray | 6 |
| Q - core | 1 |
| **Unit 6-B** | |
| North Creek Gray | 4 |
| u/i Virgin Ser. B/G | 2 |
| **Trench 7 0-30 cm.** | |
| SS- core flake (cortex) | 1 |
| **Trench 8** | |
| C - core flake | 1 |
| LL- core flake (cortex) | 1 |
| **Unit 9-J Stratum 4.** | |
| North Creek Gray | 2 |
| C - core flake (cortex) | 1 |
| C - u/i flake | 2 |
| **Cist 1 floor contact 35 cm.** | |
| North Creek Gray | 1 |

# TABLE 27 (continued)

| | |
|---|---|
| **Cist 2 roof-fall 15-45 cm.** | |
| C - core flake | 1 |
| **Cist 4 Fill 1 75-90 cm.** | |
| North Creek Gray (single vessel) | 56 |
| S - grinding slab | 1 |
| C - core flake | 1 |
| C - core shatter flake (cortex) | 1 |
| **Cist 4 Fill 2 0-25 cm.** | |
| North Creek Gray | 8 |
| Washington B/G | 1 |
| Q - core shatter flake (cortex) | 1 |
| **Cist 4 Fill 3 0-25 cm.** | |
| North Creek Gray | 5 |
| u/i Virgin Ser. B/G | 1 |
| **Cist 4 no provenience.** | |
| North Creek Gray | 6 |
| C - core flake (cortex) | 1 |
| **Cist 5 charcoal deposit 65-70 cm.** | |
| Washington B/G | 2 |
| **Cist 5 Fill 1 30-70 cm.** | |
| North Creek Gray | 10 |
| Washington B/G | 5 |
| C - u/i flake | 1 |
| **Cist 5 roof-fall 20-60 cm.** | |
| North Creek Gray | 4 |
| **Cist 5 Fill 2 0-20 cm.** | |
| C - Pinto | 1 |
| **Cist 5 fill no provenience.** | |
| North Creek Gray | 17 |
| Washington B/G | 5 |
| C - core shatter flake (cortex) | 1 |
| **Cist 6 Fill 1 50-70 cm.** | |
| North Creek Gray | 4 |
| **Cist 6 roof-fall 20-50 cm.** | |
| North Creek Gray | 2 |
| St.George B/G | 1 |
| C - core flake | 1 |
| **Cist 6 fill 20-50 cm.** | |
| North Creek Gray | 2 |
| St. George B/G | 1 |
| C - core flake | 1 |
| **Cist 7 floor contact 35 cm.** | |
| C - Elko Side-notched | 1 |
| C - core flakes | 2 |
| C - core shatter flakes (2 cortex) | 5 |
| C - u/i flake (cortex) | 1 |
| **Cist 7 fill 0-35 cm.** | |
| North Creek Gray | 6 |
| Cl- core shatter flake | 1 |
| **Cist 8 Fill 1 0-50 cm.** | |
| C - u/i flake | 1 |

| | |
|---|---|
| **Pithouse 1 floor contact 70 cm.** | |
| North Creek Gray | 4 |
| bone awl tip (large mammal) | 1 |
| **Pithouse 1 Use Surface 60 cm.** | |
| North Creek Gray | 1 |
| **Pithouse 1 Fill 1 and 2 0-70 cm.** | |
| **Ceramics** | |
| North Creek Gray | 28 |
| Washington B/G | 2 |
| **Lithics** | |
| S - mano frag | 1 |
| S - ground stone frag | 1 |
| L - abrading stone frag. | 1 |
| C - biface flake | 1 |
| C - core shatter flake (3 cortex) | 4 |
| C - u/i flake (cortex) | 1 |
| LL- core flakes (2 cortex) | 5 |
| LL- core shatter flakes (5 cortex) | 5 |
| LL- u/i flakes (1 cortex) | 2 |
| Q - core flakes (2 cortex) | 4 |
| SS- core flakes (2 cortex) | 3 |
| L - core shatter flake (cortex) | 1 |
| L - u/i flake (cortex) | 1 |
| Cl- core shatter flake (cortex) | 1 |
| S - core flake (cortex) | 1 |
| **Faunal** | |
| small mammal long bone (burned) | 1 |
| **Pithouse 2 prehistoric bench fill.** | |
| North Creek Gray | 4 |
| Washington B/G | 1 |
| **Pithouse 2 floor contact.** | |
| North Creek Gray | 7 |
| Washington B/G | 1 |
| S - mano frag. | 1 |
| C - core flakes | 2 |
| LL- core flakes (2 cortex) | 2 |
| LL- u/i flake (cortex) | 1 |
| L - core flakes (3 cortex) | 3 |
| **Pithouse 2 bench contact.** | |
| North Creek Gray | 6 |
| Washington B/G (bowl frag.) | 1 |
| u/i Virgin Ser. B/G (bowl frag.) | 1 |
| S - hatch cover | 1 |
| SS- core | 1 |
| C - core flakes | 7 |
| C - core shatter flakes (3 cortex) | 5 |
| C - u/i flakes | 5 |
| LL- core flakes | 2 |
| SS- core flake (cortex) | 1 |
| Q - core flake (2 cortex) | 1 |
| Q - u/i flake | 1 |
| small mammal long bone | 1 |
| small mammal mandible | 2 |
| **Pithouse 2 larger of W. clay pits.** | |
| L - u/i flakes (4 cortex) | 4 |
| **Pithouse 2 smaller of W. clay pits.** | |
| Q - core flake | 1 |

TABLE 27 (continued)

| | |
|---|---|
| **Pithouse 2 hearth fill.** | |
| Q - polishing stone | 1 |
| SS- core flake (cortex) | 1 |
| L - core flakes (2 cortex) | 2 |
| S - core flake (cortex) | 1 |
| **Pithouse 2 slab-lined box fill.** | |
| Ceramics | |
| North Creek Gray | 4 |
| Washington B/G (1 fr.) | 1 |
| u/i Virgin Ser. B/G | 1 |
| Lithics | |
| S - mano | 1 |
| S - ground stone frag. | 1 |
| Q - edge grinder | 1 |
| LL- utilized flake | 1 |
| C - core flakes (2 cortex) | 2 |
| C - core shatter flakes (3 cortex) | 3 |
| C - u/i flake | 1 |
| LL- core flake (cortex) | 1 |
| LL- u/i flake | 1 |
| SS- core flakes (2 cortex) | 2 |
| Q - u/i flake | 1 |
| L - core flake (cortex) | 1 |
| L - u/i flake (cortex) | 1 |
| Cl- u/i flake | 1 |
| bone awls (1 tip only) | 2 |
| large mammal long bone | 1 |
| large mammal u/i | 4 |
| bird long bone | 1 |
| **Pithouse 2 Fill 1.** | |
| Ceramics | |
| North Creek Gray | 28 |
| Washington B/G | 1 |
| u/i Virgin Ser. B/G | 1 |
| Lithics | |
| S - mano frag. | 1 |
| Q - polishing stone | 1 |
| C - drills | 2 |
| C - biface flake | 1 |
| C - core flakes | 6 |
| C - core shatter flakes (7 cortex) | 14 |
| C - u/i flakes (1 cortex) | 6 |
| LL- core flakes (2 cortex) | 6 |
| LL- u/i flakes (4 cortex) | 13 |
| SS- core flakes (3 cortex) | 5 |
| SS- u/i flakes | 2 |
| Q - core flakes (8 cortex) | 10 |
| Q - core shatter flakes (3 cortex) | 3 |
| Q - u/i flakes (3 cortex) | 5 |
| L - core flake (cortex) | 1 |
| L - u/i flake (1 cortex) | 2 |
| **Pithouse 2 Fill 2 and 3.** | |
| Ceramics | |
| North Creek Gray (1 scoop) | 280 |
| Washington B/G | 31 |
| St.George B/G | 1 |
| u/i Virgin Ser.B/G | 6 |
| Lithics | |
| O - Elko Side-notched | 1 |
| O - Rose Spring | 1 |
| C - u/i point (inc.) | 1 |
| C - point frag. | 1 |
| S - ground stone frag. | 1 |
| Q - edge grinders | 4 |
| C - utilized flake | 1 |
| L - utilized flake | 1 |
| Q - core | 1 |
| LL- core | 1 |
| SS- core | 1 |
| S - core | 1 |
| C - core flakes (3 cortex) | 19 |
| C - core shatter flakes (9 cortex) | 21 |
| C - u/i flakes (1 cortex) | 12 |
| LL- core flakes (8 cortex) | 15 |
| LL- core shatter flakes (5 cortex) | 5 |
| LL- u/i flakes (4 cortex) | 5 |
| SS- core flakes (2 cortex) | 5 |
| Q - core flakes (6 cortex) | 12 |
| Q - core shatter flakes (3 cortex) | 5 |
| Q - u/i flakes (2 cortex) | 3 |
| C4- core flakes (2 cortex) | 2 |
| C6- core flake | 1 |
| C4- u/i flake | 1 |
| Q1- u/i flake (cortex) | 1 |
| **Pithouse 2 Bench Fill 1.** | |
| North Creek Gray | 5 |
| Washington B/G | 4 |
| O - Rose Spring | 1 |
| C - utilized flake | 1 |
| LL- core | 1 |
| SS- core | 1 |
| Q - core | 1 |
| C - core flakes | 3 |
| C - core shatter flake | 1 |
| LL- core flakes (2 cortex) | 2 |
| SS- core flakes (1 cortex) | 2 |
| C4- core flake | 1 |
| Faunal | |
| large mammal u/i | 1 |
| **Pithouse 2 Bench fill 2.** | |
| North Creek Gray | 25 |
| Washington B/G | 3 |
| S- triangular shaped blank | 1 |
| LL- core flakes (3 cortex) | 3 |
| large mammal u/i (burned) | 2 |
| **Pithouse 2 Stratum 3.** | |
| C- core flake | 1 |
| C- u/i flake | 1 |
| **Exterior hearth fill 0-20 cm.** | |
| North Creek Gray | 3 |
| u/i Virgin Ser. B/G | 1 |
| Q- edge grinder | 1 |
| C- biface flake | 1 |
| C- u/i flake | 1 |
| u/i bone frags. | 4 |

TABLE 27 (continued)

| | |
|---|---|
| Roasting pit Fill 1 25-60 cm. | |
| North Creek Gray | 2 |
| Roasting pit sealing slab contact 20 cm. | |
| North Creek Gray | 1 |
| S- mano frag. | 1 |
| Trench 11 fill 0-35 cm. | |
| North Creek Gray | 5 |
| C- core shatter flake | 1 |
| LL- core flake (cortex) | 1 |
| Pit fill 3 195 cm. | |
| North Creek Gray | 4 |
| Pit fill 4 80-180 cm. | |
| North Creek Gray | 9 |
| Washington B/G | 1 |
| Q- core | 1 |
| C- core flakes (2 cortex) | 3 |
| C- core shatter flakes (3 cortex) | 3 |
| Pit fill 6 20-100 cm. | |
| North Creek Gray | 10 |
| Washington B/G | 4 |
| S- mano frag. | 1 |
| S- ground stone frag. | 1 |
| Q- edge grinder | 1 |
| LL- core flake (cortex) | 1 |
| LL- u/i flake (cortex) | 1 |
| Pit fill 7 0-65 cm. | |
| North Creek Gray | 6 |
| Q- edge grinder | 1 |

Three of the five carbon dates obtained were clearly aberrant; two of these were probably simply too small for accurate processing. The date of A.D. 320 from a beam in Pithouse 2 and 740 B.C. from a post in Cist 5 were clearly irrelevant to the occupation. Their small sample size accounts for the high standard deviation. The "old wood" hypothesis, so convenient in many contexts, can hardly be applied in this instance. It should be restated, however, that all samples were taken from the outer layers of timber so the results should not have been biased by dating heartwood. The third aberrant date, A.D. 80 was from the roasting pit. Since that feature was clearly associated with the rest of the site, the date must also be rejected.

The final two carbon dates were well within one standard deviation of one another, and they fell within the time range appropriate to a Pueblo I site. These dates were A.D. 780 and A.D. 810 from a Cist 4 post and a Pithouse 2 beam, respectively. They can be accepted as valid dates since they also conform well with other Pueblo I dates in the project area.

The ceramics at the site were dominated by the utilitarian North Creek Gray. Of greater temporal significant, however, was the dominance of Washington Black-on-gray in the painted sherds. The Washington Black-on-gray sherds were recovered from well-defined contexts, and they relate well to the accepted carbon dates from the site.

The provenience for each of the five St. George Black-on-gray sherds is too insecure to associate them with the primary occupation. It should also be noted that St.George Black-on-gray sherds have been found in tradionally small percentages at other Pueblo I sites in Washington and Mohave Counties. It should be noted that the transion from Pueblo I to early Pueblo II designs is a much more gradual one in the Western Anasazi than it was for temporally analgous designs in the Kayenta heartland.

With perhaps a single exception, diagnostic projectile points recovered during the excavation are in temporal alignment with the ceramics. An Elko Side-notched point found on the floor of Cist 7 and another from the fill of Pithouse 2 do not pose particular problems. Their recovery in Post-Archaic contexts is fairly common in southwestern Utah and northwestern Arizona. Two other points from Pithouse 2 included an obsidian Rose Spring taken from the floor and an Abajo-style point, also of obsidian, found in the roof-fall. The Rose Spring style has a lengthy distribution in the formative over a wide geographic area. The Abajo form has a similar temporal range, but is most common in the Four Corners area of the Kayenta and Mesa Verde Anasazi. The single aberrant point was a Pinto form found above the roof-fall of Cist 5. The point is, of course, diagnostic of the Archaic, but its presence in a later context is not much more uncommon than that of the Elko specimens.

The balance of the lithic assemblage recovered at the site consisted of the usual limited range of forms apparently characteristic of Anasazi sites. The small number of points, the single biface preform, two point preforms, and two biface flakes argue that biface manufacture was a limited activity on site. The only other lithic tools found included three drills and seven utilized flakes. It should be noted, however, that the numerous core flakes may include many which were briefly utilized, but were not recognized during analysis.

The predominant lithic material at the site was a chert probably imported from the nearest known source, 42Ws322, several kilometers up the Virgin River. The material was found on site mainly in the form of core flakes and core shatters. Most of the remaining lithic debitage consisted of core flakes and core shatters of lithographic limestone, quartzite, and silicified sandstone, all of which were immediately available in the gravels below the site. Truly imported materials were rare in the assemblage. Most significant perhaps, was the fact that the majority of the points and a single core flake were all of obsidian.

A brief spatial analysis of the overall artifact distribution at the site indicated that the majority of all finds were recovered from within and above the roof-fall of Pithouse 2 (Table 27). This may imply that the roof of the pithouse was a primary activity locus. Large numbers of artifacts, including a surprising quantity of lithic debris, was also found in various floor contexts within Pithouse 2. Two other areas of the site contained relatively high artifact densities. One was the fill and use surface of Pithouse 2, while the other was encountered in Trench Unit 1-I west-northwest of Pithouse 2 (Table 27).

## 42Ws389

### Introduction and Excavation

This small, vandalized rockshelter was located at the base of the Shinarump Sandstone within the narrows of the Southern Gap (Fig. 2). The site lay at an elevation of 2920 ft. and was about 30 m. east of Quail Creek as well as 30 m. above it. The shelter measured 4 m. wide, 2.5 m. high and 2.5 m. deep., and it lay at the top of a steep colluvial slope. Vegetation on the slope included Mormon tea, globe-mallow, creosote bush, buckwheat, brittle-bush, mustard, snakeweed,and peppergrass. A small clump of wild tobacco grew 15 m. north of the site.

A test trench measuring 1 by 2.5 m. and oriented perpendicular to the back wall, was laid out to test the fill from the rear of the overhang to the edge of the steep slope at the mouth of the rockshelter. The trench was excavated to sandstone bedrock which showed a very irregular surface (Fig. 113).

Extending out of the northern profile of the trench and situated on bedrock was a pile of large stones. Several slabs lay on edge to the west between the the rock pile and a distinct hump in the bedrock floor (Fig. 113). Although no clay material was found among the stone, the feature appeared to be of cultural origin even though its function remained undetermined.

The entire fill of the trench was composed of Stratum 1. From the bedrock to the surface the material proved to be a coarse sand containing sandstone detritus and plentiful charcoal flecks. The stratum showed no discernable differentiation with the exception of the hearth and a small area termed Stratum 2.

The hearth was directly above the rock pile (Fig. 113) and the slabs but separated by 15 cm. of Stratum 1. The hearth was a basin-shaped hole dug into the sand from an undetectable surface of origin. It measured 29 cm. in diameter while its fill was 10 cm. thick. The top of the feature lay 5 to 10 cm. below the modern surface. The hearth contained a dense, lenticular concentration of large charcoal fragments with a few small, burned pieces of sandstone. Pollen and flotation samples were taken while a sample sent for analysis produced a radiocarbon date of 'modern' (Beta 8046).

Stratum 2 was an areally limited concentration of lithic materials found at the mouth of the shelter. The fill of Stratum 2 was indistinguishable from Stratum 1 and the limits of Stratum 2 were delineated by the presence of the cultural debris. Stratum 2 varied from 5 to 10 cm. thick and, while its outer edge was exposed on the surface, it was covered by 5 cm. of Stratum 1 in the interior of the rockshelter. The trench was expanded with the excavation of a 50 by 30 cm. unit along the north side in order to continue exploring Stratum 2. Although it proved difficult to establish the horizontal extent of Stratum 2, it appeared to have measured 80 by 50 cm. The high concentration of flaked material within the stratum indicates that it probably resulted from a single knapping episode.

## Discussion

It was unfortunate that all of the Western Anasazi sherds came from uncontrolled contexts, mostly on the slope below the overhang. The material from Stratum 1, however, was indicative of a Post-Archaic occupation because of the presence of an arrow point tip, the base of a Cottonwood Triangular point, point preforms, a biface blank and a biface preform (Table 28). The remainder of the lithics from Stratum 1 indicate that biface manufacture was an important activity. The Cottonwood Triangular point, the arrow point, the preforms, the biface blank, and the preform all represent preliminary manufacturing stages and, since they were all broken, it is likely that they were knapped at the site and discarded upon breakage. Even though the arrow point tip and the biface fragment were from finished tools, they were considered good evidence of manufacturing rather than use because the knife lacked wear polish and because projectile point tips are not often found in occupation loci. The evidence of biface manufacture is further supported by the presence of biface flakes. The good evidence of biface manufacture at this site was atypical for the limited activity sites of the project area.

Stratum 1 also contained a core and numerous core production flakes (Table 28). The unidentified flakes cannot be attribute to either core flake production or biface manufacturing because of the low cortex prevalence. A low cortex percentage suggests, however, prior preparation of the cores from which the flakes at the site were removed.

Since the majority of the lithic artifacts and debitage were of imported chert, a material normally reserved for labor-intensive tools such as bifaces, it is quite reasonable to assume that the artifact assemblage was the result of the full range of biface manufacturing activities from original core flake to finished biface. In contrast, the locally available lithic materials, ordinarily reserved for short term processing activities, were conspicuous in their rarity at this site.

A fine-grained gray chert of excellent quality and certainly suitable for labor-intensive artifacts appears to have been quite rare and perhaps present only in fragments too small for fabrication of either knives or points. The gray chert has a high cortex percentage which still suggested a local origin. Thompson (1978) reported that the material was common in lithic scatters on Purgatory Flat some 3 miles south of the project area, but that it was virtually unknown at the permanent habitation sites along the Virgin River where chert was predominant.

Stratum 2 contained a collection of lithic materials identical to but smaller than the assemblage found throughout Stratum 1 (Table 28).

The rockshelter proved to be a unique limited activity site within the project area because of the importance of biface manufacturing evidence. The cultural affiliation was difficult to determine. Material recovered in good provenience indicate a Post-Archaic occupation that could have been either Western Anasazi or Paiute. The single carbon date from the hearth read "modern" which would suggest historic Paiute, although there was nothing found that would specifically support this. Stratum 1 below the hearth might be of Anasazi origin since that portion of the fill was free of rodent activity. If

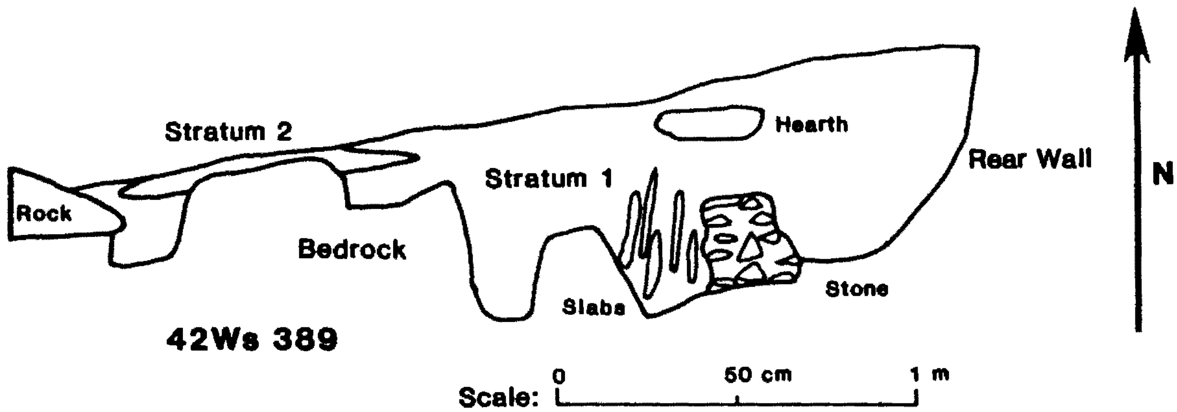



Figure 113. Profile of the test trench through the 42Ws389 deposits.

TABLE 28

COLLECTION SUMMARY, 42WS389

| | |
|---|---|
| **Surface downslope below shelter.** | |
| North Creek Gray | 2 |
| North Creek Corr. | 2 |
| C - biface flake | 1 |
| C - core shatter flakes | 3 |
| C - u/i flakes | 3 |
| **Stratum 1 0-55 cm.** | |
| C - point frag. | 1 |
| C - Cottonwood Triangular | 1 |
| C - point preform frags. | 3 |
| C - knife frag. | 1 |
| C - biface preform frag. | 1 |
| C - biface blank frag. | 1 |
| C - core | 1 |
| C - biface flakes | 15 |
| C - core flakes (2 cortex) | 38 |
| C - core shatter flakes (3 cortex) | 19 |
| C - u/i flakes (1 cortex) | 71 |
| LL- core flake (cortex) | 1 |
| C4- core flakes (2 cortex) | 4 |
| C4- core shatter flake (cortex) | 1 |
| C4- u/i flakes | 4 |
| **Stratum 2 0-10 cm.** | |
| Paiute Corr. | 1 |
| C - knife frag. | 1 |
| C - biface flakes | 2 |
| C - core flakes (1 cortex) | 18 |
| C - core shatter flakes (2 cortex) | 5 |
| C - u/i flakes (4 cortex) | 32 |
| C4- core flakes (2 cortex) | 4 |
| C4- u/i flakes(1 cortex) | 2 |
| glass frags. | 2 |
| **Stratum 2 10-75 cm.** | |
| North Creek Gray | 3 |
| S - mano | 1 |
| B - edge grinder | 1 |
| Q - edge pounder | 1 |
| C - biface blank | 1 |
| C - core flakes | 5 |
| C - core shatter flakes | 3 |
| C - u/i flakes | 5 |
| LL- u/i flakes (3 cortex) | 3 |
| Q1- core flake | 1 |
| O - core flakes (1 cortex) | 2 |
| O - u/i flake | 1 |
| Odocoileus (?)rib frags. | 2 |
| Bos(?) phalange | 1 |
| Neotoma sp. left mandible | 1 |
| small mammal scapula | 1 |
| bird long bones | 2 |

this is true, however, it remains impossible to explain why this one particular site out of all of the limited activity sites in the project area, including two other rockshelters, should have been used almost exclusively for biface manufacture. The site remains enigmatic. It could be argued, of course, that the only significant change over a 2000 year period that might affect the selection of the site would be the presence of Europeans in the region. This would indicate that the date is correct and that other sites used for this purpose were, in historic times, no longer available to the Paiute.

## 42Ws390

### Introduction and Excavation

The site was another of the small group in the project area originally recorded by H. Johnson Hall of the University of Utah in 1970. It was a habitation and storage complex resting on the first terrace above the Virgin River and some 300 m. northwest of the mouth of Quail Creek (Fig. 2). Resting at an elevation of 2820 ft., the site showed vegetation dominated by creosote bush, bursage, range ratany, Mormon tea, prickly pear, and arrow-weed. The site had been heavily vandalized with two of the six cists largely destroyed. A road had been bulldozed up the rocky incline on the west side of the site and it is likely that some surface structures were destroyed. Surface cultural evidence was thinly scattered over the entire site but concentrated in the potholes. Surface stains also offered a clue to the prehistoric occupation. Excavation revealed a total of six slab-lined cists, a pithouse, and a rectangular room possible used for storage (Fig. 114).

A total of eight trenches and test pits were used to explore the site in an attempt to identify structural features while establishing the stratigraphy of the site. Trench 1 measured 1 by 12 m. while Trench 2 was 1 by 14 m. These two trenches were subdivided into 1 by 2 m. units that can be identified by the labels 1-A, 1-B, 1-C, or 2-A, 2-B, 2-C etc. The remaining six trenches were all dug as single units except where they were expanded to encompass a structural feature.

Trench 2 identified two natural strata in the site. Stratum 1 was composed of compact gravel, cobbles, and boulders mixed with a loose, light brown sand, the top of which lay at an average depth of 30 cm. Stratum 2 was formed of a clay-impregnated sand which showed stain by ash of human origin and contained other cultural material. Averaging 30 cm. thick, Stratum 2 included the surface blowsand.

### Structural Features

The structural elements of the site were found to include six semisubterranean slab-lined cists, a pithouse, and a prepared clay surface thought to represent a surface masonry room. In addition, Cist 6 had three slab-paved surfaces associated with it.

Cist 1. This was visible on the surface as an alignment of sandstone slabs measuring 50 cm. long. The cist had been built by digging a pit into Stratum 1 on the north side of a large boulder. The western edge of the pit

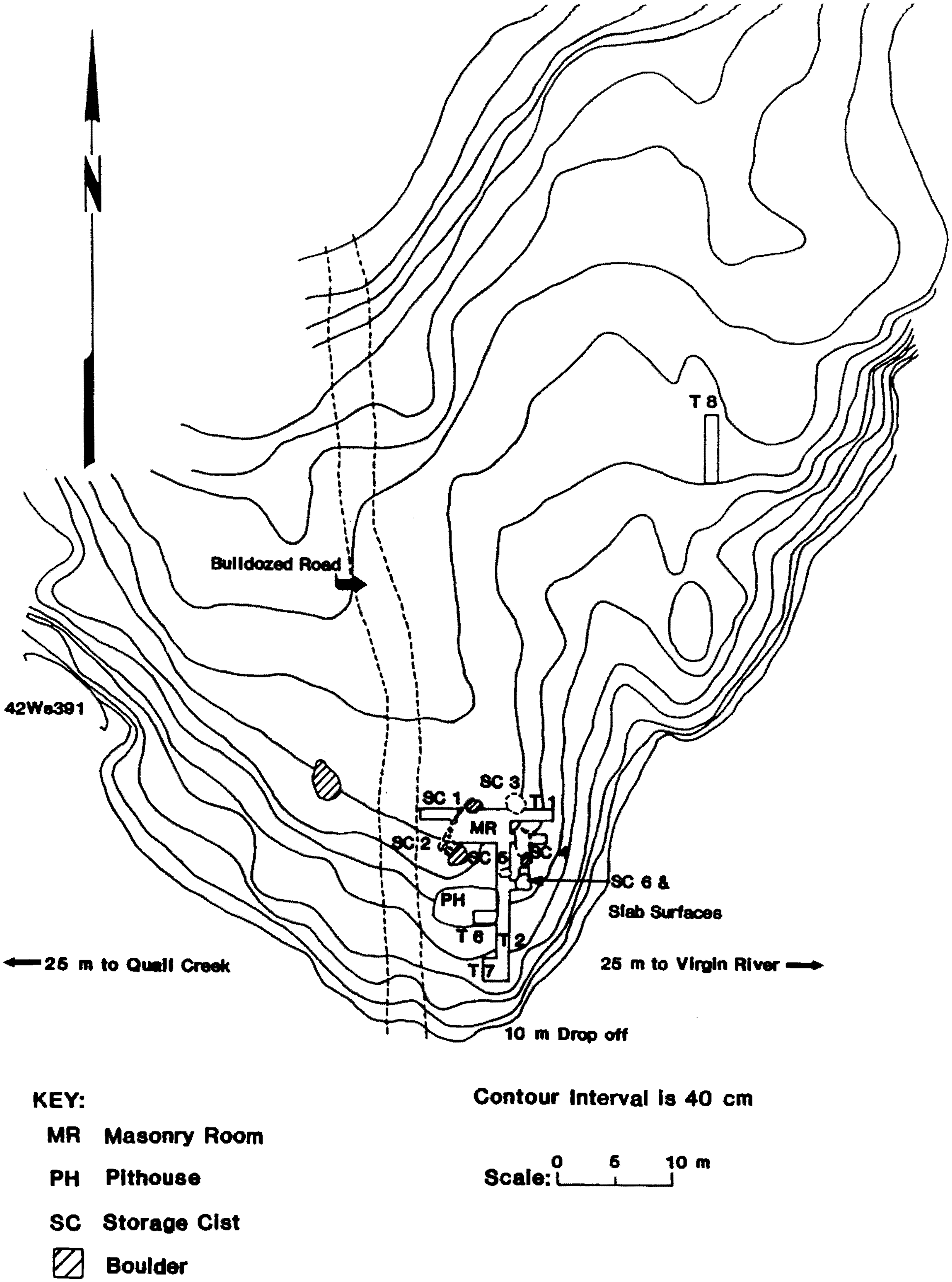



Figure 114. Plan and excavation map, 42Ws390.

Figure 115. View centered on the clay surface thought to be the floor of a surface masonry room. Cist 1 is on the right tied to the boulder. Cist 2 at top-center. 42Ws390.

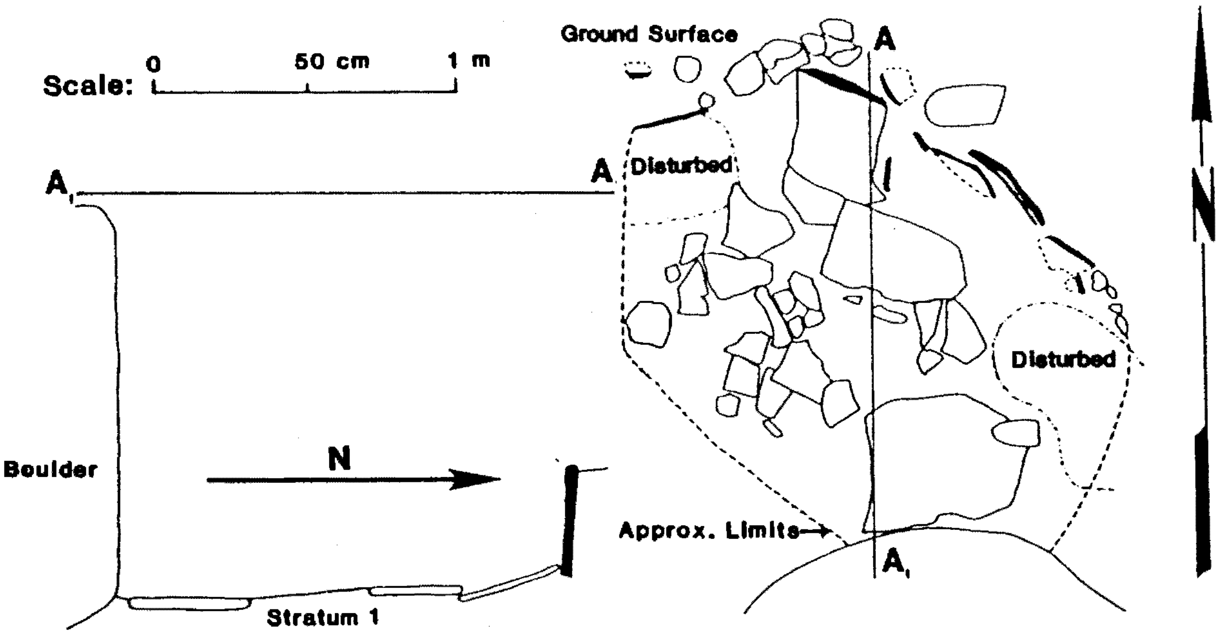



Figure 116. Plan map and cross-section drawing of Cist 3, 42Ws390.

was lined with three vertical slabs set 15 cm. into Stratum 1 and which arced from the boulder to the northeast and then swung southwest to the boulder (Fig. 115). A flagstone floor was laid directly on Stratum 1, but there was no evidence of a prepared clay floor. The 35 cm. fill of the cist was made up of loose, brown sand with a clay mixture. Most of the material appeared to have come from a vandal's pit which also destroyed most of the floor and the eastern wall of the cist as well as its relationship to Cist 2, although a piece of the Cist 1 wall did line up with the western wall of Cist 2.

Cist 2. In this instance, a pit had been dug from 20 to 25 cm. into Stratum 1 and upright sandstone slabs were set 15 cm. into Stratum 1 along the western edge of Cist 1 (Figs. 114,115). The northern edge of Cist 2 was defined by the flagstone floor which had been laid directly on Stratum 1 after the outer wall was built. The floor lay at a depth of 20 cm. No prepared clay cover for the flagstones could be identified.

The eastern edge was limited by a large boulder with one upright slab attached to the boulder with red clay mortar. There may have been additional slabs since other clay marks were visible on the face of the boulder which was otherwise unmodified. The southern and southwestern walls were destroyed by road building just to the west. The northern side, however, was fairly well defined by the floor even though the upright slabs appeared to have been moved during the vandalism aimed at Cist 1. The remainder of the cist floor measured 0.6 by 0.5 m. The fill of the cist involved 20 to 25 cm. of loose brown sand identical to Stratum 2.

Cist 3. The preliminary pit for this cist (Fig. 116) had been dug 20 cm. into Stratum 1, after which upright sandstone slabs were used to line the walls and a flagstone floor was laid directly on Stratum 1. The floor lay at an average depth of 30 cm., but no prepared clay covering was in evidence. The cist measured 2.6 by 3.5 m. at floor level and was located on an easterly slope. The fill of the cist was only 2 to 10 cm. thick and was made up of gravel, rock, broken sandstone slabs and light brown, aeolian sand. The limited fill and the broken condition of the floor resulted both from erosion and vandalism.

Cist 4. The walls of this cist (Figs. 117,118) were again made of upright sandstone slabs set into a pit dug into Stratum 1. With the walls in place, a flagstone floor was laid (Fig. 118). The northwest corner of the cist included a small boulder while other rocks were incorporated into the floor, making it somewhat irregular. The stone floor lay at a depth of 18 to 28 cm. and Stratum 1 was quite visible through gaps between the slabs. The floor was covered with a 3 to 4 cm. thick, highly compacted, white-red clay which continued over most of the slabs. The cist measured 1.65 by 1.45 m. at the floor and the fill was composed of brown-red compact clay which was from 10 to 17 cm. thick.

Cist 5. Again, cist construction began with a pit dug some 15 cm. into Stratum 1 and then lined with upright sandstone slabs that had been set into the sterile stratum. One large diorite boulder and a small basalt rock appear to have determined the size of the feature, since the sandstone slabs were placed hard against both (Fig. 119,120).

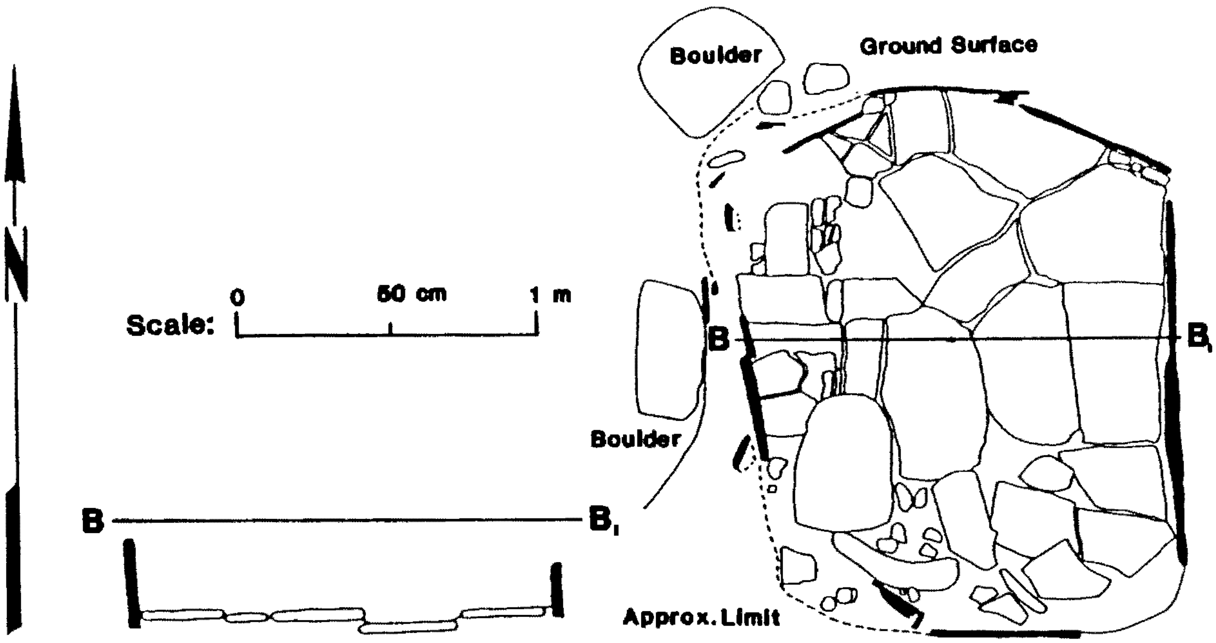



Figure 117. Plan map and cross-section drawing of Cist 4, 42Ws390.

Figure 118. View west of Cist 4 with clay floor partially removed to expose the flagstones, 42Ws390.

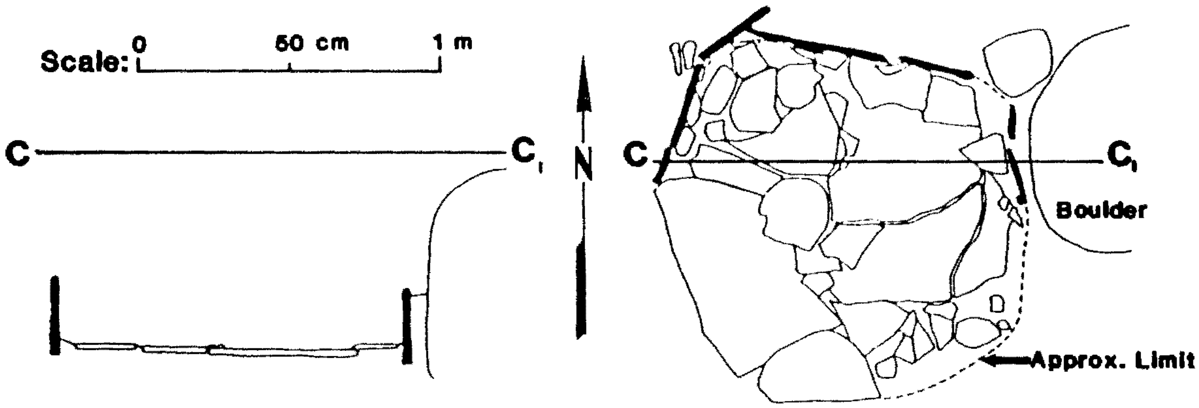



Figure 119. Plan map and cross-section drawing of Cist 5, 42Ws390.

Figure 120. View to the northeast of Cist 5, 42Ws390. Floor clay removed to expose flagstone. Grinding slab fragments in the foreground.

In some places, the lower ends of the slabs were braced with cobbles. The cobbles further served as a part of the floor paving. The flagstone floor was laid on Stratum 1 after the walls had been set. The floor lay at a depth of some 20 cm. and it was covered with a discontinuous, highly compacted, red clay layer some 1 to 2 cm. thick. Some of the clay had also been pushed between and slightly beneath the flagstones. A sandstone grinding slab fragment was located at floor level in the southern end of the feature.

The cist measured 1.25 by 1.3 m. but it was probably incomplete (Fig. 119). Cist fill included a compacted, white-red clay some 20 cm. thick. This fill was overlain by 5 cm. of loose aeolian surface sand. The majority of the fill may represent melted wall clay washed into the feature and mixed with structural sandstone fragments. The southern cist walls were badly displaced by the roots of a creosote bush, although the slab floor apparently represented the limits of the feature. A small basalt boulder found in the fill of the northern half of the cist appears to have destroyed part of the northern wall, possibly by rolling from the slope above.

Cist 6. This feature proved to be more or less associated with four sandstone slab surfaces, one of which, Slab Surface 2, was integral to Cist 6 (Figs. 121,122). One of the other slab surfaces was beneath Cist 6 and two were above it. The group of features is best described as a unit.

The lowest element, Slab Surface 1, was laid directly on Stratum 1, most likely within a prepared pit, at a depth of 45 cm. No vertical wall slabs or other means of defining the edges of the pit were found associated with the slabs.

Slab Surface 2 was laid as the floor of Cist 6 (Figs. 121,122). The original pit seemed to have been dug into Stratum 1 outside the known edges of Slab Surface 1. The northern rim of Cist 6 was marked by two large boulders, as well as vertical sandstone wall slabs set against the bases of the boulders within Stratum 1. A 9 to 16 cm. thick layer of loosely compacted brown sand lay over Slab Surface 1 with Slab Surface 2 resting on the sand fill and on Stratum 1 outside the apparent limits of Slab Surface 1. A white-red, compacted clay 2 to 4 cm. thick was laid over the flagstones to finish the Cist 6 floor. Only the northern and western portions of Cist 6 were excavated within trenches 6 and 7 where the floor measured 1.6 m by 1.9 m.

Slab Surface 3 (Fig. 123) was placed on a 4 to 10 cm. thick layer of loose brown sand slightly flecked with charcoal. The material had been placed in Cist 6. The new surface may relate to a vertical sandstone slab which had been shaped and placed between the two boulders which also made up the northern perimeter of Cist 6. The vertical slab was set 40 cm. north of Cist 6, suggesting that a structure once existing at the Slab Surface 3 level that was even larger than Cist 6.

Slab Surface 4 (Fig. 123) was the highest of the four elements. The flagstone surface was placed on a fill of light, brown-tan sand stained slightly by charcoal. The horizontal stones were covered with a 4 to 5 cm. thick layer of compact, red clay. Slab Surface 4 lay at a depth of 15 cm. and measured 3.2 by 2.0 m. The floor was overlain by an 18 to 22 cm. layer of Stratum 2.

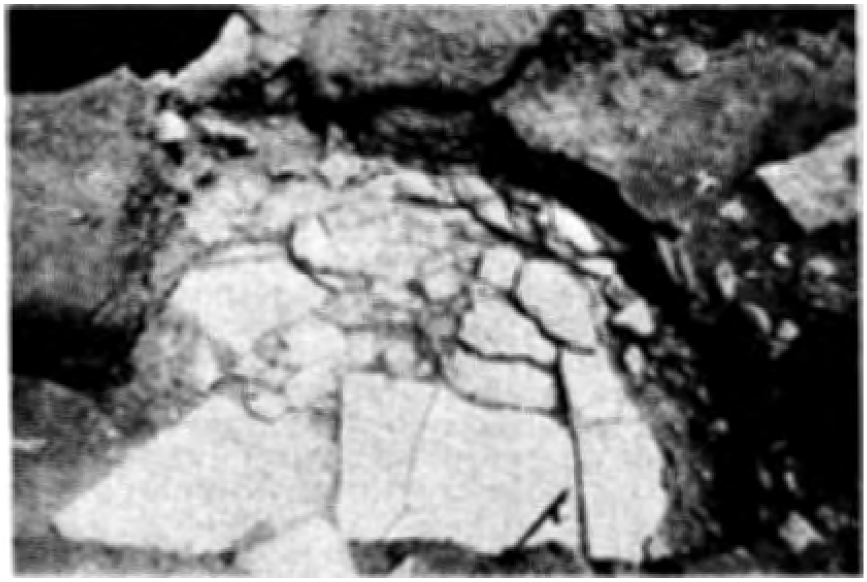


Figure 121. Slab Surface 2 exposed as the floor of Cist 6. View to the north. 42Ws390.

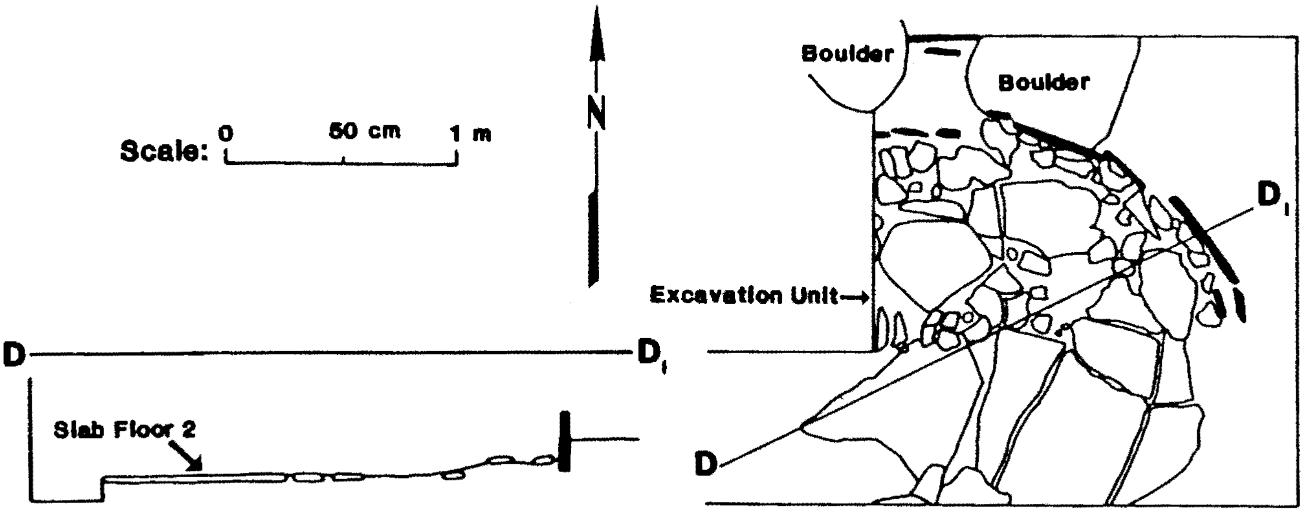



Figure 122. Plan map and cross-section drawing of Slab Surface 2/Cist 6, 42Ws390.

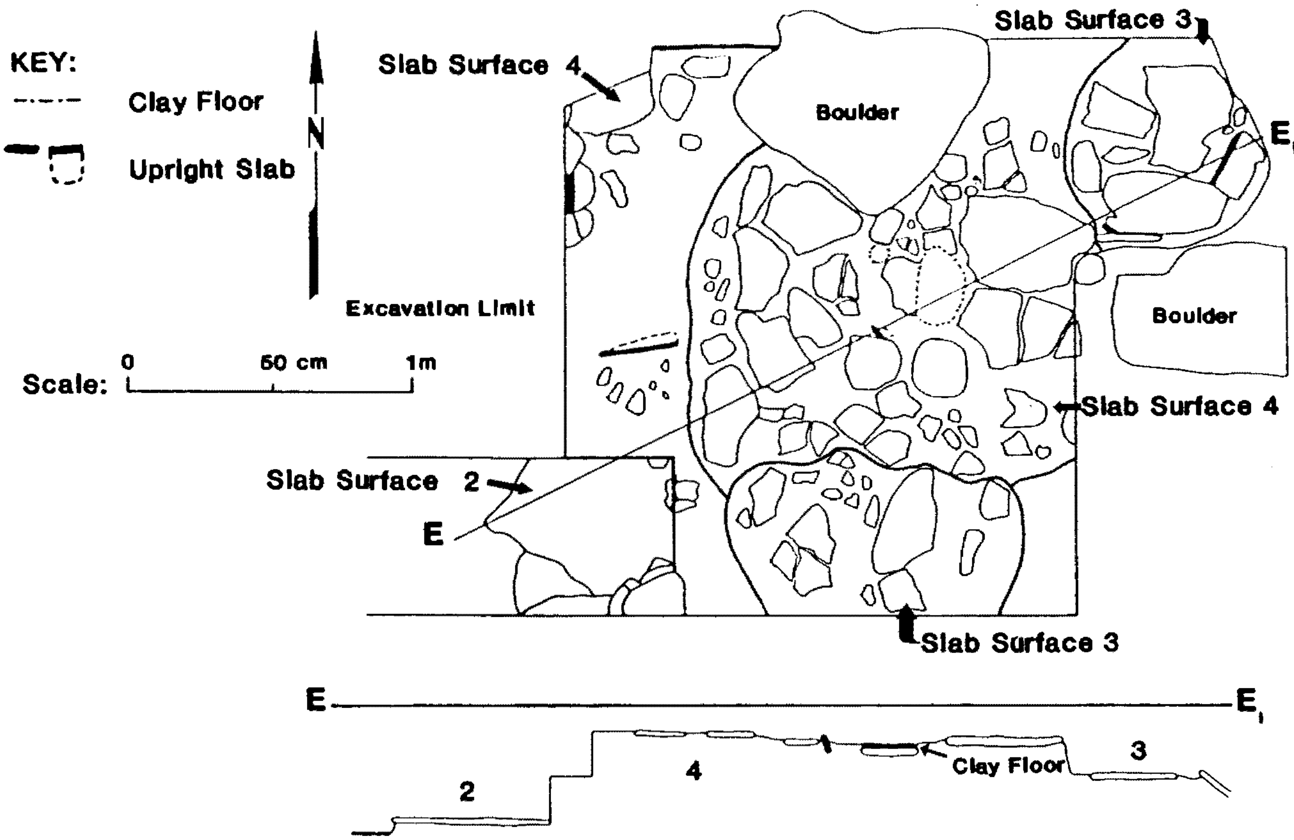



Figure 123. Plan map and cross-section drawing of Slab Surfaces 2, 3 and 4, 42Ws390.

The four flagstone surfaces appear to be the remnants of a series of four cists of which only Cist 6 remains relatively in situ. The sequence was one involving a progressive enlargement of the facility as each cist was larger than the one below it. The site sloped down to the east and it is likely that some erosional damage would explain why the eastern edges of Slab Surfaces 3 and 4 could not be identified. It is likely that there was some vandalism in the area that cause the destruction of other elements in the features.

Masonry Room(?). A prepared clay surface marking this feature (Fig. 115) was first identified in Trench Unit 1-C and 1-D. The compact, red clay was less than a centimeter thick and was highly friable. This apparent floor overlay Stratum 1, but in a few areas a brown sand was laid down to level the irregular surface of Stratum 1. The identifiable portions of the floor measured 1.6 by 1.8 m. The floor was discontinuous and thus difficult to trace.

Directly over the floor came a thin layer of blackened sand, and then a 5 to 18 cm. thick level of compacted, burned, red clay chunks containing carbon and charcoal flecks intermixed with stained brown sand and some ash, all called Fill 1. A number of the clay chunks retained impressions of grass, twigs and sticks, suggesting that the clay was associated with the traditional roof covering used both on pithouses and on masonry structures. A carbon sample recovered from this material was assayed to produce a date of 1800+330 years: A.D. 150 (Beta 8047). The carbon sample was very small and that probably accounts for the aberrant reading since the 'old wood' argument appears to be inapplicable. Certainly the date must be rejected on the basis of the site ceramic collection alone, although other factors also argue against its relevance.

The Fill 1 roof-fall was overlain by 20 cm. of Stratum 2. Cultural debris was recovered from floor contact in the feature as well as from overlying strata (Table 29). A concentration of compact, red clay was noted downslope to the east and south. This material could represent wall and roof wash from the structure. Also, a small test revealed a small concentration of tabular sandstone rubble which could also represent structural material.

The function of the apparent structure was by no means clear. Its size and apparent rectangular shape, along with obvious roof-fall, suggest that it was a surface, and therefore, masonry structure. The absence of a flagstone subfloor would argue against a storage function since, with attraction enough, rodents could work their way through the gravels and rock of Stratum 1.

Pithouse. This was identified at a point 1.5 m. south of Cist 5 (Fig. 114). While time permitted the excavation of only the northern half of the structure (Fig. 124), that work was sufficient to determine that a large pit had been excavated to penetrate 50 cm. into Stratum 1, or a depth of nearly 1 m. from site surface. The surface of origin appears to have lay at a depth of 10 to 30 cm. The large range in the level of the surface of origin was a function of the slope on which the site was located.

It was apparent that the original pit was somewhat larger than the completed pithouse. This was especially noticeable at the western edge of the structure. The structure lacked a prepared clay floor. Instead, a tan-brown layer of sand was laid directly on Stratum 1 to provide a more even surface. The top of the sand came at a depth of 95 to 100 cm. and is simply referred to as the floor.

The eastern and northern perimeters of the pithouse were limited by large boulders as well as by the raw stone and gravel of Stratum 1. The western edge was defined by a vertical slab and an apparent coursed sandstone wall packed with brown-red clay (Fig. 124). The original limits of the pit were detected some 50 cm. behind the coursed wall. A substantial quantity of stone rubble was found in the post-occupation levels, suggesting that other portions of the pithouse were lined with cobbles or coursed stone. There was no evidence of a bench. The nature of the floor and the walls, however, made it difficult to establish that apparent absence with confidence.

Use Deposit 1 (Fig. 125) overlay the clean sand of the floor. The layer was a 10 to 30 cm. layer of loose sand stained dark brown. The level appeared to have been deposited during the occupation of the pithouse or at least prior to its collapse. When the superstructure collapsed, the fill was stained by the debris. Varying concentrations of charcoal and some clay pieces were noted within the fill (see Level 1, below) but no stone was found. This level also contained portions of charred logs at an average depth of from 50 to 60 cm.

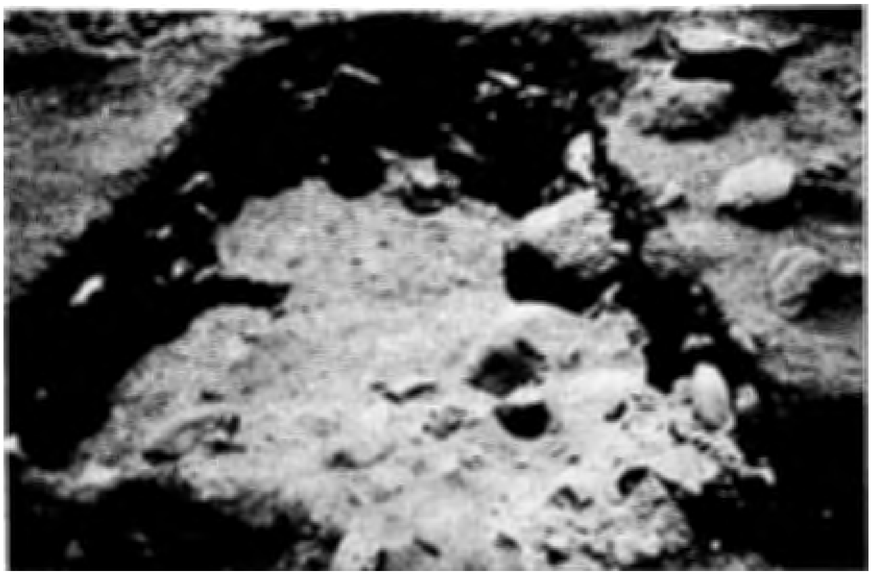


Figure 124. View west-southwest of the sectioned pithouse at 42Ws390. Single slab and trace of coursed masonry at top-center.

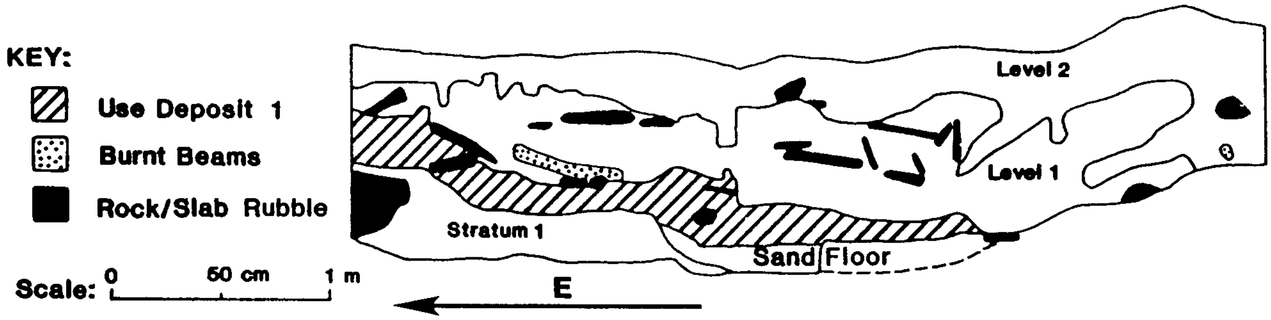



Figure 125. Profile map of the pithouse, 42Ws390.

The structure measured 4.0 by 2.7 m. although this accounts for something less than the complete structure. It is likely that the original north to south dimension was about 4.0 m. making for a circular form. No floor features were identified.

The roof of the pithouse may have been cribbed with logs resting on the masonry walls. The log superstructure was then apparently covered with smaller branches and brush and the entire timbered element then covered with a fairly thick coat of clay. The roof-fall of Level 1 was composed of white-red clay-impregnated sand which averaged 40 cm. thick (Fig. 125). The top of Level 1 lay at a depth of 10 to 25 cm. The fill contained chunks of burned clay and charcoal along with sandstone slab fragments, stone, and small boulders. Within some of the carbon deposits there was evidence of burned grass, twigs and possible *Phragmites communis* fragments, suggesting that a form of thatching was included in the roof construction. Charred beams were found all through Level 1, but they were most abundant at the interface with Use Deposit 1 at a depth of 40 to 50 cm. The remnant timbers were from 29 to 60 cm. long and they averaged 6 to 7 cm. in diameter, with most lying horizontally. The largest number of the timbers were found around the edges of the structure. A carbon sample taken from one of the specimens at a depth of 50 cm. produced a date of 570±60 years: A.D. 1380 (Beta 8048).

Level 2 was composed of Stratum 2 material originating from the surface. This ranged between 10 and 40 cm. thick and contained a large quantity of stone rubble which probably came from the superstructure walls.

## Discussion

The site was a habitation and storage complex consisting of six slab-lined cists, a pithouse, a series of superimposed slab pavements associated with one of the cists, and a problematic room which may have been a surface masonry structure. Heavy vandalism damaged the site and appeared to have destroyed the provenience of most diagnostic artifacts. Finally, the aberrant C-14 dates are of no value since both must be rejected out-of-hand. Any attempt to explain the dates would involve speculation from which there could be no profit.

None of the cists contained carbon samples or temporally diagnostic cultural materials. With these features, then, the position of the site could be evaluated only on the basis of architectural comparisons. The slab-lined, oval, and semisubterranean nature of the cists would seemingly place them clearly in a Pueblo I tradition. Mitigating against assignment to Pueblo I is the fact that none of them clearly had surrounding masonry walls and only one produced clear-cut evidence of roof clay. There is the further fact that the cists were not in a contiguous or near contiguous alignment as has come to be expected for Pueblo I in the Western Anasazi area.

The problematic surface room was too completely demolished to permit an assessment of its position other than to say that, if it was, in fact, a surface room, it would belong to the Pueblo II period. The pithouse did not appear as characteristic of any temporal period but rather seemed indicative of hasty construction, perhaps for limited use.

TABLE 29

COLLECTION SUMMARY, 42WS390

Surface.

| | |
|---|---|
| North Creek Gray | 29 |
| North Creek Corr. | 2 |
| North Creek B/G | 2 |
| u/i Virgin Ser. B/G | 1 |
| Boulder Gray | 5 |
| Trumbull B/G | 1 |
| u/i Moapa Ser. B/G | 1 |
| u/i Tsegi Orange | 1 |
| S - manos (3 frag.) | 4 |
| B - mano | 1 |
| B - grinding slab frag. | 1 |
| S - ground stone frags. | 2 |
| B - ground stone frag. | 1 |
| Q - ground stone frag. | 1 |
| S - edge pounder | 1 |
| Q - edge pounder | 1 |
| Q - edge grinders | 4 |
| B - edge grinders | 2 |
| O - Rose Spring | 1 |
| C - biface blanks | 3 |
| C - point preforms | 2 |
| LL- core | 1 |
| Q - cores | 4 |
| L - core | 1 |
| ST- core | 1 |
| C - biface flakes | 2 |
| C - core flakes | 3 |
| C - core shatter flakes | 4 |
| C - u/i flakes (1 cortex) | 7 |

Trench 2 no provenience fill.
Units B,C,D,E,F.

| | |
|---|---|
| Mesquite Gray | 1 |
| North Creek Gray | 83 |
| North Creek Corr. | 1 |
| St.George B/G | 2 |
| u/i Virgin Ser. B/G | 3 |
| Boulder Gray | 5 |
| u/i Moapa Ser. B/G | 3 |
| u/i Tsegi Orange | 1 |
| C4- point (inc.) | 1 |
| C2- core | 1 |
| C - biface flakes | 7 |
| C - core flakes (3 cortex) | 9 |
| C - core shatter flakes | 5 |
| C - u/i flakes | 16 |
| LL- core flakes (1 cortex) | 2 |
| Q1- core flake | 1 |

Trench 3 fill.

| | |
|---|---|
| North Creek Gray | 2 |
| Boulder Gray | 1 |
| C - biface flake | 1 |
| C - core flakes (1 cortex) | 2 |
| C - u/i flakes (1 cortex) | 2 |

Trench 4 fill.

| | |
|---|---|
| North Creek Gray | 26 |
| u/i Virgin Ser. B/G | 3 |
| Boulder Gray | 2 |
| C - scraper | 1 |
| C - utilized flake | 1 |
| C - biface blanks | 2 |
| C - point (inc.) | 1 |
| C2- point (inc.) | 1 |
| C - point frag. | 1 |
| LL- core | 1 |
| C - biface flake | 1 |
| C - core flakes (1 cortex) | 11 |
| C - core shatter flakes (4 cortex) | 4 |
| C - u/i flakes (2 cortex) | 19 |
| LL- core flakes (3 cortex) | 4 |

Trench 5 fill.

| | |
|---|---|
| North Creek Gray | 15 |
| u/i Virgin Ser. B/G | 1 |
| C - point preform | 1 |
| LL- core | 1 |
| C - core shatter flake (cortex) | 1 |

Trench 6 fill.

| | |
|---|---|
| North Creek Gray | 35 |
| u/i Virgin Ser. B/G | 2 |
| Boulder Gray | 1 |
| u/i Moapa Ser. B/G | 1 |
| S - mano | 1 |
| Q - edge grinder | 1 |
| C - utilized flake | 1 |
| C - point frag. | 1 |
| C - biface blank | 1 |
| C - biface.preform frag. | 1 |
| LL- core | 1 |
| C - biface flake | 1 |
| C - core flakes (1 cortex) | 3 |
| C - core shatter flakes | 7 |
| C - u/i flakes | 3 |
| LL- core flake | 1 |
| CQ- core shatter flake (cortex) | 1 |
| CQ- u/i flake | 1 |
| C4- core flake (cortex) | 1 |
| C4- u/i flake | 1 |
| *Sylvilagus audobonii* right radius | 1 |
| large mammal long bone frags. | 2 |
| large mammal rib | 1 |

Trench 7 Stratum 2.

| | |
|---|---|
| North Creek Gray | 4 |
| North Creek Corr. | 1 |

Cist 2 fill.

| | |
|---|---|
| North Creek Gray | 15 |
| u/i Virgin Ser. B/G | 15 |
| Boulder Gray | 1 |
| u/i Moapa Ser. B/G | 1 |
| Q - core | 1 |

Cist 3 fill.

| | |
|---|---|
| C - core | 1 |
| LL- core | 1 |

Cist 4 fill.

| | |
|---|---|
| North Creek Gray | 38 |
| North Creek B/G | 3 |
| u/i Virgin Ser. B/G | 3 |
| C - drill preform | 1 |
| C - biface blanks | 3 |
| C - biface flakes | 2 |
| C - core flakes | 3 |
| C - core shatter flakes (2 cortex) | 4 |
| C - u/i flake | 1 |
| LL- core flakes (4 cortex) | 5 |
| LL- core shatter flake | 1 |
| large mammal long bone frag. | 1 |

| | |
|---|---|
| **Cist 5 floor contact.** | |
| S - metate frag. | 1 |
| S - grinding slab frag. | 1 |
| LL- core shatter flake (cortex) | 1 |
| **Cist 5 fill.** | |
| North Creek Gray | 7 |
| North Creek Corr. | 1 |
| Boulder Gray | 1 |
| Q - polishing stone | 1 |
| C - biface blank | 1 |
| C - biface preform | 1 |
| C - point preforms | 2 |
| C2- core | 1 |
| C - biface flake | 1 |
| C - core shatter flakes | 3 |
| C - u/i flakes | 3 |
| C4- core flake (cortex) | 1 |
| **Slab Surface 4 Stratum 2.** | |
| North Creek Gray | 10 |
| u/i Virgin Ser. B/G | 4 |
| Boulder Gray | 1 |
| u/i Moapa Ser. B/G | 1 |
| Q - utilized flake | 1 |
| C - biface blank | 1 |
| C - point preform | 1 |
| C - core flakes | 4 |
| C - core shatter flakes (2 cortex) | 11 |
| C - u/i flakes | 13 |
| LL- core flake | 1 |
| LL- u/i flakes | 4 |
| **Slab Surface 4 below.** | |
| North Creek Gray | 9 |
| North Creek Corr. | 1 |
| Boulder Gray | 2 |
| **Room 1 floor contact.** | |
| North Creek Gray | 20 |
| North Creek Corr. | 1 |
| St.George B/G | 1 |
| S - mano | 1 |
| C - utilized flake | 1 |
| C - Cottonwood Triangular | 1 |
| C - biface flakes | 2 |
| C - core flakes | 6 |
| C - core shatter flakes (1 cortex) | 3 |
| C - u/i flakes | 15 |
| C4- core flake (cortex) | 1 |
| C6- core flake (cortex) | 1 |
| L - core flake | 1 |
| large mammal u/i frag. | 1 |
| large mammal teeth | 2 |
| **Room 1 Fill 1 and 2.** | |
| North Creek Gray | 128 |
| North Creek Corr. | 11 |
| u/i Virgin Ser. B/G | 8 |
| Boulder Gray | 13 |
| u/i Moapa Ser. B/G | 3 |
| D - mano frag. | 1 |
| S - metate frag. | 1 |
| S - grinding slab frag. | 1 |
| S - ground stone frag. | 1 |
| Q - ground stone frag. | 1 |
| Q - edge grinder | 1 |
| SS- scrapers | 2 |
| C - Rose Spring | 1 |
| C - biface blank | 1 |
| C - point preform | 1 |
| C - core | 1 |
| LL- core | 1 |
| C2- core | 1 |
| C - biface flakes | 11 |
| C - core flakes (2 cortex) | 20 |
| C - core shatter flakes (5 cortex) | 13 |
| C - u/i flakes | 29 |
| LL- core flakes | 3 |
| LL- core shatter flakes (1 cortex) | 4 |
| LL- u/i flake (cortex) | 1 |
| Q - core flakes (2 cortex) | 2 |
| Q - u/i flake (cortex) | 1 |
| C4- core flake | 1 |
| large mammal long bone frags. | 2 |
| **Pithouse Use Deposit.** | |
| North Creek Gray | 27 |
| North Creek Corr. | 1 |
| u/i Virgin Ser. B/G | 1 |
| Boulder Gray | 4 |
| Trumbull B/G | 1 |
| u/i Moapa Ser B/G | 1 |
| D - mano | 1 |
| Q - edge grinder | 1 |
| C - utilized flake | 1 |
| O - Rose Spring | 1 |
| C - point frag. | 1 |
| C - Cottonwood Triangular | 1 |
| C - biface blank | 1 |
| C - biface preform frag. | 1 |
| C - biface flake | 1 |
| C - core flakes (1 cortex) | 7 |
| C - core shatter flakes (2 cortex) | 7 |
| C - u/i flakes (1 cortex) | 5 |
| LL- core flake | 1 |
| LL- core shatter flake | 1 |
| LL- u/i flake | 1 |
| Q - core flake (cortex) | 1 |
| C4- biface flake | 1 |
| yellow ocher frag. | 1 |
| *Sylvilagus* humerus frag. | 1 |
| large mammal long bone frags. | 5 |
| bird long bone frags. | 2 |
| u/i frags. | 7 |
| **Pithouse Fill 1 and 2.** | |
| **Ceramics** | |
| North Creek Gray | 134 |
| North Creek Corr. | 7 |
| St.George B/G | 4 |
| North Creek B/G | 1 |
| u/i Virgin Ser. B/G | 9 |
| Boulder Gray | 22 |
| Trumbull B/G | 2 |
| u/i Moapa Ser. B/G | 3 |
| Middleton Red | 2 |
| Middleton B/R | 1 |
| unidentified | 1 |
| **Lithics** | |
| LL- disk pendant | 1 |
| S - ground stone object | 1 |
| S - manos (1 frag.) | 4 |
| B - mano frag. | 1 |
| S - metate frag | 1 |

TABLE 29 (continued)

| | |
|---|---|
| S - abrading stone | 1 |
| B - abrading stone | 1 |
| B - grinding slab frag. | 1 |
| S - ground stone frag. | 1 |
| C - Parowan Basal-notched | 1 |
| O - Parowan Basal-notched | 1 |
| C - Cottonwood Triangular | 1 |
| C - point frag. | 1 |
| C - point preform | 1 |
| O - point preform | 1 |
| C2- knife | 1 |
| C - biface preforms | 3 |
| C - biface blanks | 2 |
| C4- biface blank | 1 |
| C - utilized flake | 1 |
| C - core | 1 |
| CQ- core | 1 |
| C - biface flakes (1 cortex) | 12 |
| C - core flakes (1 cortex) | 28 |
| C - core shatter flakes (6 cortex) | 16 |
| C - u/i flakes (2 cortex) | 38 |
| LL- core flakes (7 cortex) | 9 |
| LL- core shatter flakes (1 cortex) | 2 |
| LL- u/i flakes (3 cortex) | 5 |
| Q - core flake | 1 |
| SS- core flake | 1 |
| C4- core flakes (2 cortex) | 3 |
| C4- biface flake | 1 |
| C4- core shatter flakes (3 cortex) | 3 |
| C4- u/i flake (cortex) | 1 |
| Faunal | |
| large mammal long bone frags. (1 burned) | 5 |
| large mamal rib (burned) | 1 |

Given the circumstances faced at 42Ws390, the ceramic collection retrieved offers perhaps the best clue (Table 29). Even though the site was heavily vandalized, it is reasonable to assume that the sherds found on the site were related to its occupation. Vandals may remove sherds but there has been little evidence that they introduce them. By taking the ceramic collection as a whole and adopting a synchronic point of view, some estimate of the temporal position may be made by attempting to determine if there is a single point in time during which all of the ceramic types might be present.

The dominant sherds were North Creek Gray and Boulder Gray. Although North Creek Gray is thought to have appeared during Pueblo I, there is evidence that it is found in Basketmaker III as well. More to the point, however, it continues to dominate as the Western Anasazi utility ware until termination some time after A.D. 1150. It can thus fit almost any temporal position in the Formative.

Much the same thing is true of Boulder Gray. Although Colton thought it characteristic of Basketmaker III and Pueblo I, it has long since been established that the type persists as the dominant utility ware until termination.

The presence of small quantities of North Creek Corrugated in the collection (Table 29) would apparently insist that the occupation must have occurred at some time after A.D. 1050. Turning to painted designs, the dominant styles were St.George Black-on-gray and Trumbull Black-on-gray. These styles are analogues and occupy the same temporal position, being the dominant style in the Western Anasazi from ca. 900 to about A.D. 1075. Given the presence of corrugated ceramics, this would seemingly fix the site occupation at some point between A.D. 1050 and 1075.

The only ceramic evidence that may call this into challenge is the presence of a single sherd each of North Creek Black-on-gray and Moapa Black-on-gray, again temporal analogues and assigned to late Pueblo II and perhaps early Pueblo III. Along with this evidence were a few sherds of Middleton Black-on-red which fit in the same time period. This minor evidence would simply appear to indicate that the occupation was closer to A.D. 1075 than to 1050.

The single Rose Spring point, thought by some to be diagnostic of Pueblo I, is well known in Pueblo II contexts in southwestern Utah and should occasion no difficulty.

While the ceramics recovered at the site appear to provide a reasonably clear temporal position, it should be recognized that this does not 'fit' with the form taken by the cists. Although the construction of the cists would appear to place them in Pueblo I, the pattern of arrangement, or lack of it, would put them into Basketmaker III where the slab-lined cist lacking masonry walls has been widely identified.

While no brief is held for a priority in accuracy of ceramics over architecture, the fact remains that at this site, the ceramic assemblage was tightly clustered while the structures produced problematic data at every turn. To use the architecture to establish the temporal position of the site would be to rely on ambiguous evidence that would require two occupations (a not wholly unlikely proposition) to account for the ceramic collection.

## 42Ws391

This heavily vandalized rockshelter located at the base of the Shinarump Sandstone in the narrows of the South Gap, lay some 35 m. east of Quail Creek (Fig. 3). The site elevation was 2840 ft. and the surrounding vegetation included Mormon tea, screwbean mesquite, prickly pear, creosote bush, mustard, cheatgrass, and snakeweed. The shelter itself was 3 m. wide, 2.5 m. high, and 2 m. deep. A trench was excavated perpendicular to the rear wall of the shelter at a point thought most likely to produce extensive fill. A test pit was excavated on the south side of the trench at a point near the rear wall of the shelter.

The trench, measuring 1 by 2.5 m., abutted the rear wall of the shelter and was taken to a depth of 75 cm. The trench profile revealed two strata. Stratum 1 was a natural deposit of gravel, sand, sandstone detritus, and boulders which formed an irregular surface. Some 45 cm. away from the rear wall, Stratum 1 dove abruptly towards the front. The gap above the descending Stratum 1 and the modern surface was filled with Stratum 2, a dark gray-brown, ashy sand which contained scattered pieces of charcoal and disintegrating sandstone. In the area between the rear wall and the dip in Stratum 1, two decomposing vertical sandstone slabs were found set at an angle of some 35° to each other. The slabs appeared to be a remnant of a cist which used the rear shelter wall.

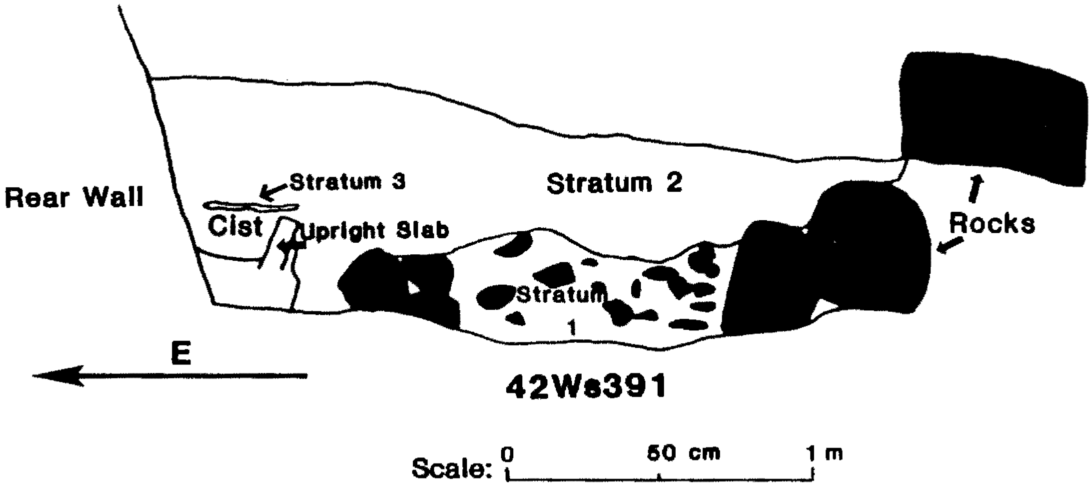



Figure 126. Profile of the test trench through the deposits of 42Ws391.

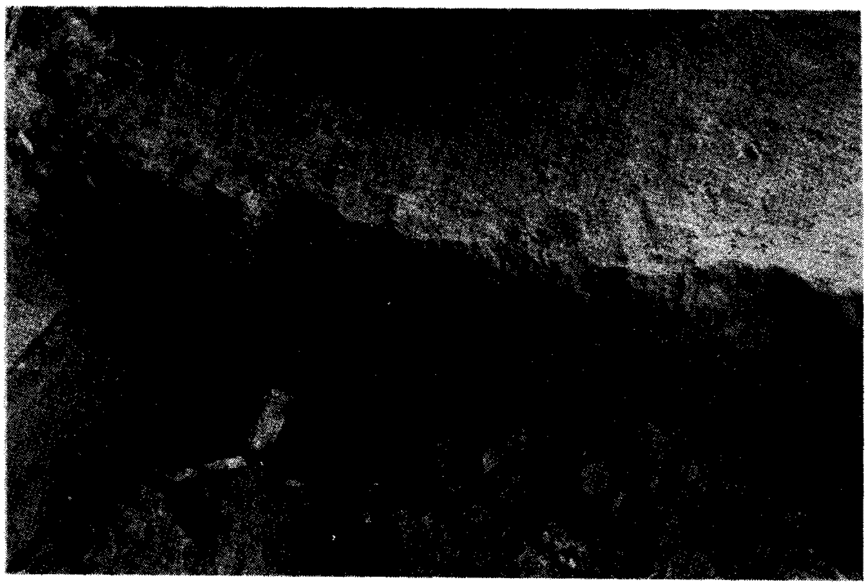


Figure 127. View south of the test trench profile showing the remnant of the cist tied to the rear wall of the shelter, 42Ws391.

The test pit was 1 $m.^2$ and was placed on the south side of the trench to more fully explore the cist. No additional slabs were found nor was a floor to the cist identified. The cist was about 30 cm. wide at the top but it was unclear how long it may have been. The cist fill proved to be indistinguishable from Stratum 2. The test pit exposed a thin layer of brown clay, called Stratum 3, at a depth of 45 cm. or slightly above the top of the cist. Stratum 3, however, was only 30 cm. in diameter, poorly defined and, because it lay above the 'missing' part of the cist, it could not be related to it. It is likely that Stratum 3 was of cultural origin because the shelter was well above the Quail Creek floodplain and no clay could have entered the shelter through natural agency. It was also possible that the stratum could have been reduced in size by some of the vandalism that disturbed so much of the fill. Two large carbon samples were taken as were pollen and flotation samples. In view of the heavy disturbance, however, none of the samples were analyzed.

Three unidentified modern glass sherds were found. Their age was not determined, but they were not recent. A single Paiute Corrugated sherd was found near the surface of Stratum 2. Also coming from Stratum 2 were three North Creek Corrugated sherds. The balance of the material from the heavily disturbed Stratum 2 were typical of most limited activity sites in the area in that they included grinding artifacts and core flake production debitage. A single biface blank was atypical, but the presence of the complete blank and the absence of biface flakes argues the blank had been prepared elsewhere.

The bone found in the fill was all unmodified and all unburned. Its presence was likely due to the work of rodents rather than man.

The site was a limited activity locality with a collection typical of the site type within the project area. Cultural affiliation remains speculative because of site disturbance and the limited diagnostic material. Three North Creek Gray sherds can readily be ignored. With focus on the glass and the single Paiute sherd, the best 'guess' would be an occupation by historic Paiute.

## 42Ws392

### Introduction

The site was the largest of the cluster recorded by H.Johnson Hall in 1970. It was, long before Hall found it, frequently visited by vandals and, in the years between 1970 and 1983, it appeared to have received still more unwelcome attention. 42Ws392 proved to be a Western Anasazi habitation and storage complex with a lengthy occupation. It may have been occupied briefly in the Pueblo I period, but its most extensive use came in middle and late Pueblo II.

The site rested at the edge of a terrace that rose 10 m. above the west bank of Quail Creek (Fig. 2). With an elevation of 2920 ft., it was approximately 1/2 mile above the mouth of the creek. With the site covering an area of 70 by 35 m., the vegetation in the site area was dominated by creosote bush, bursage, range ratany, snakeweed, hilaria grass, prickly pear, cholla, burro-brush, and fluffgrass.

The survey team's initial collection of cultural materials prompted an estimate that the site had been occupied from A.D. 1100 to 1150. The surface examination also reported a vandalized masonry room or room block and an extensive scatter of structural sandstone rubble. Although the 1982 survey amended Hall's report of heavy vandalism, it remained underestimated. Once systematic excavation began, it soon became clear that vandalism was greater than indicated in the surface examination. With the exception of 42Ws390, 42Ws392 was the only seriously vandalized site in the project area. This would appear to have resulted from the fact that access was so easy.

A total of 12 trenches were run during the work with excavation first being accomplished with shovels and hand tools, and then later trenches were opened through the use of a backhoe (Fig. 128). Trenching was destined to expose a pithouse with two well-defined floors and three other surfaces, an apparent room block or storage unit, three cists, two contiguous masonry rooms and two subsurface structural units (Fig. 128). Also to be identified were vandalized floor surfaces and isolated or outdoor hearths. Only the shortest trenches were excavated as a single unit. The longer trenches, mostly 1 m. wide, were subdivided into 1 by 2 m. units. While the paper will focus on features rather than trenches, some identification of arbitrary units may prove desirable. Each of the two meter units in Trench 1, for example, were designated 1-A, 1-B, 1-C and so on. The same subdivision applied to all of the longer trenches as well.

The excavation of Units 1-A through 1-E exposed the natural straigraphic sequence which could be identified, with minor variations, over most of the site.

Stratum 1. This was the lowest layer exposed by the excavation. The sterile feature was composed of a red-white, clay-caliche mixture interspersed with lenses of bar gravels and some stone. Most excavations reached this stratum before they were terminated.

Stratum 2. Stratum 2 was composed of a brown-red sand that sometimes acquired an orange hue. The layer was usually sterile, but it also served as the stratum of origin for many structures at the site so that it was not uncommon to find cultural evidence near its upper limits. In the southwestern portion of the site, Stratum 2 emerged as the surface layer while along the northeast and central part of the site, Strata 1 and 2 were heavily disturbed and so mixed that it proved impossible to separate the two. Stratum 2 ranged from 10 to 25 cm. thick.

Stratum 3. This stratum overlay most of the site, although it was badly disturbed by vandalism in many areas. When undisturbed, it proved to be composed of loose, brown sand that frequently showed stains resulting from human activity. It also served as the stratum of origin for many, if not most, of the features encountered at the site. It contained occasional clay and gravel lenses.

## Architectural Features

A good number of architectural features, mostly vandalized, were excavated at the site (Fig. 128). The features (Fig. 128) included a pithouse with five occupation levels and three associated hearths, plus four apparent masonry

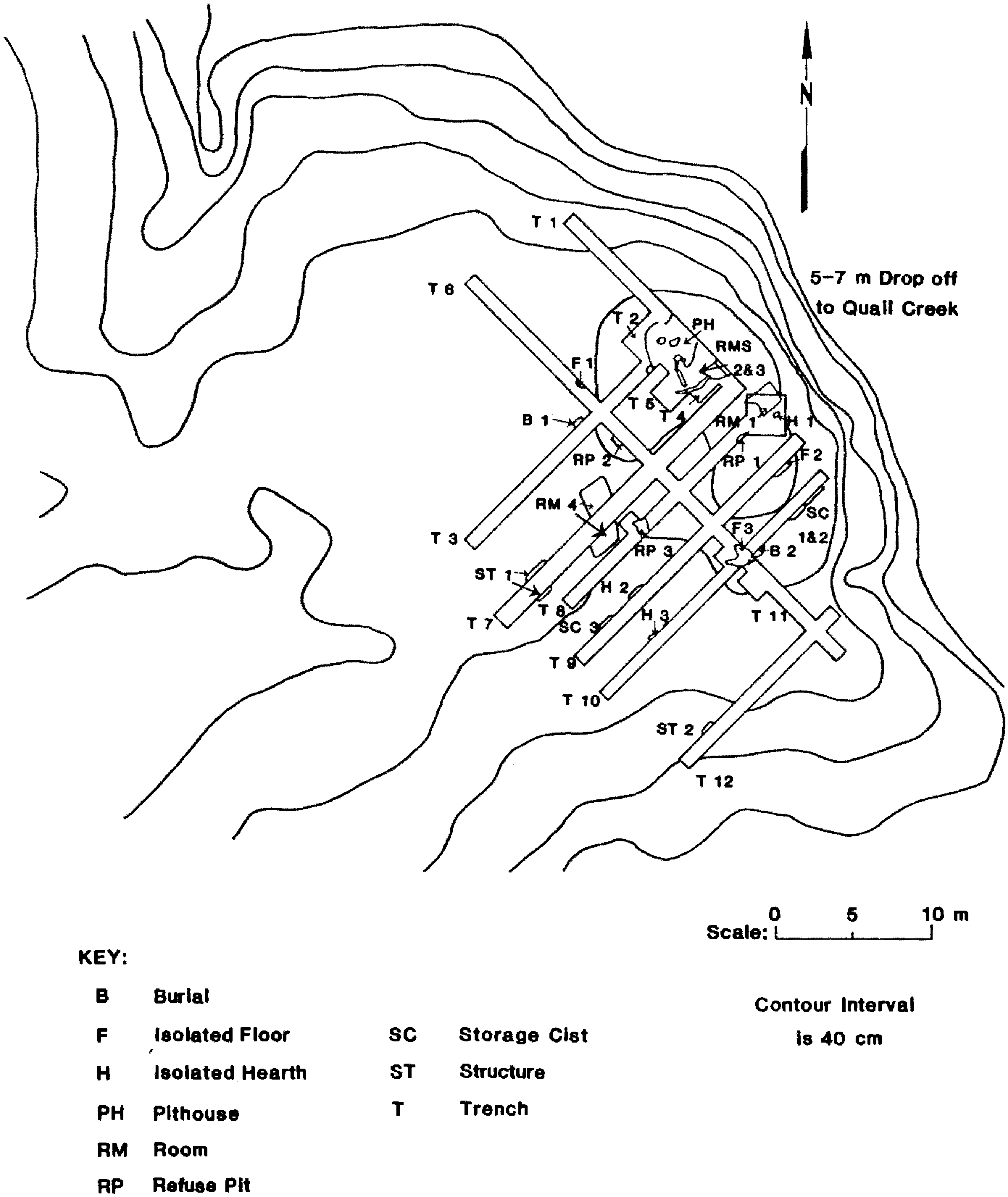



Figure 128. Site plan and excavation map, 42Ws392.

rooms, some with coursed and some with a combination of slab and coursed walls. Three cists were identified in the sidewalls of backhoe trenchs and were partially exposed. Two semisubterranen structures of unknown function were also exposed.

Fill material in nearly all structures had become quite mixed through the efforts of pot hunters. This made attempts to date structures through ceramic cross-dating virtually impossible for individual structures. Taking the ceramic collection as a whole (Table 30), the evidence suggests that the site experienced two occupations. The first may have been a brief Pueblo I stay while the major one seems to have centered on late Pueblo II.

Masonry Rooms.

Four masonry rooms, all apparently surface structures, were excavated. Three were found in the northeast to north-central part of the site, while the fourth was located some 8 m. southwest of the other three.

Room 1. This room was first noted by the survey team as a heavily vandalized rubble area. The northern end of Trench 8 crossed the structure and the top 15 cm. of Stratum 3 was removed in an effort to obtain its outline. The northeastern end of Trench 8 was expanded to an area 3 $m.^2$ in order to investigate more fully, not only the room itself, but also the surrounding area. Within the room the excavation concentrated on the southeast corner. Excavation was pursued to a depth of some 50 cm. without finding a floor. Since this was beneath the remaining courses of the southwestern wall, it became obvious that the interior of the room had been vandalized and that the fill was, in large measure, a secondary deposition. The fill was a clean, red sand with gravel and some charcoal flecking.

A thin, 1 to 5 cm. thick ash layer was seen in the northwest profile of the arbitrary excavation unit. Further digging revealed that the ash lens lay at a depth of from 40 to 57 cm. in the profile. The lens also ran beneath interior wall-fall and thus the lens might safely be construed as an interior feature of the room. The ash lay directly on Stratum 1 as did the base of the walls of Room 1, suggesting the relationship.

It should be noted that the ash lens lies under wall-fall from two sides of the room, but the pothole in the center of the room eliminated the chance to determine if it crossed the room. Circumstantally, it did cross and this interpretation views it as an interior feature of the room. If the ash represented part of the interior fill, fragments of a prepared clay floor should have been found beneath it. A fragment of red clay wall plaster was found at the eastern corner of the room and, so far as is known, plastered masonry rooms have invariably yielded prepared clay floors.

The temporal position of the room could not be subjected to ceramic cross-dating since most of the fill was disturbed. In a general way it seems safe to view the room as part of a room block, perhaps one of the central rooms, of a Pueblo II storage facility. Rooms 2 and 3 to the northwest may also have been a part of the unit.

Room 2. This room (Figs. 129,130) was built by first digging a pit 10 cm. into the top of Stratum 1, in part, and partly into the upper fill levels of the pithouse. In this instance the slab floor was laid, in the case of the western wall at least, prior to the construction of the walls, since in some areas the slab floor forms the base of the wall. At the same time, two upright slabs found in situ in the southwestern wall showed that the slabs had here been set into Stratum 1 and secured with a red clay wall-mortar which was also used as the basal element for the walls, with sandstone slabs and clay mortar set in the base to construct the coursed masonry walls of the unit.

Although some empirical data are missing, the floor area was calculated to have measured 1.3 m. northeast to southwest while it was 0.8 m. wide. With flagstones laid on Stratum 3, the floor was completed by laying compact tan sand some 1 to 3 cm. thick. The floor surface was, where extant, found at a depth of from 51 to 54 cm.

Although details of the room were fragmentary, it was actually unexpected that so much could be learned in the face of extensive damage. Vandals destroyed the northeastern end of the room, while much of the southern wall had been erased by a combination of vandalism, erosion, and perhaps rodent activity (Fig. 129). Much of the western wall, except at its northern end, was in good condition and remained standing as much as 45 cm. above the slab floor.

The extensive disturbance within and around the structure required that it be assumed that the cultural materials recovered come from secondary deposition and thus cannot reliably contribute to the interpretation of the room. From architectural remnants it could be determined that a part of the construction involved coursed masonary behind slab-lined lower walls. Experience in the field indicates that this is characteristic of storage units normally found in late Pueblo II.

Room 3. This remnant structure (Fig. 129). proved to be the most heavily vandalized of the three damaged rooms reported. In Room 3, the only portion intact was the extreme eastern end, though this did include the northern and southern corners. The room measured 1.3 m. north to south but only 56 cm. of its incomplete length survived. It is likely that it originally measured somewhere between 2 and 3 m. long. The floor lay at a depth of 59 to 62 cm. while the remaining eastern wall rose to 56 cm. above the floor.

Fill within the room was composed of mixed Stratum 3 sands which overlay the floor remnants. The eastern wall of the room was shared with Room 2, although within Room 3 the walls were faced with upright sandstone slabs. Similar slabs were noted in Room 2 but not on its western wall. The slabs were set in red clay mortar laid on the pithouse fill. As with Rooms 1 and 2, the disturbed nature of Room 3 makes any attempt to date the feature through the use of ceramics a rather tenuous process. At the same time, some of the structural features and the presence of North Creek Corrugated sherds seems to assign the room a late Pueblo II affiliation.

Room 4. This room, located at some distance from Rooms 1, 2 and 3, caused some early consternation for the crew. Trench 7 bisected the feature (Fig. 131) and, for a time, it was thought the excavators had cleared the common wall of two rooms without identifying the structure. It was at this point

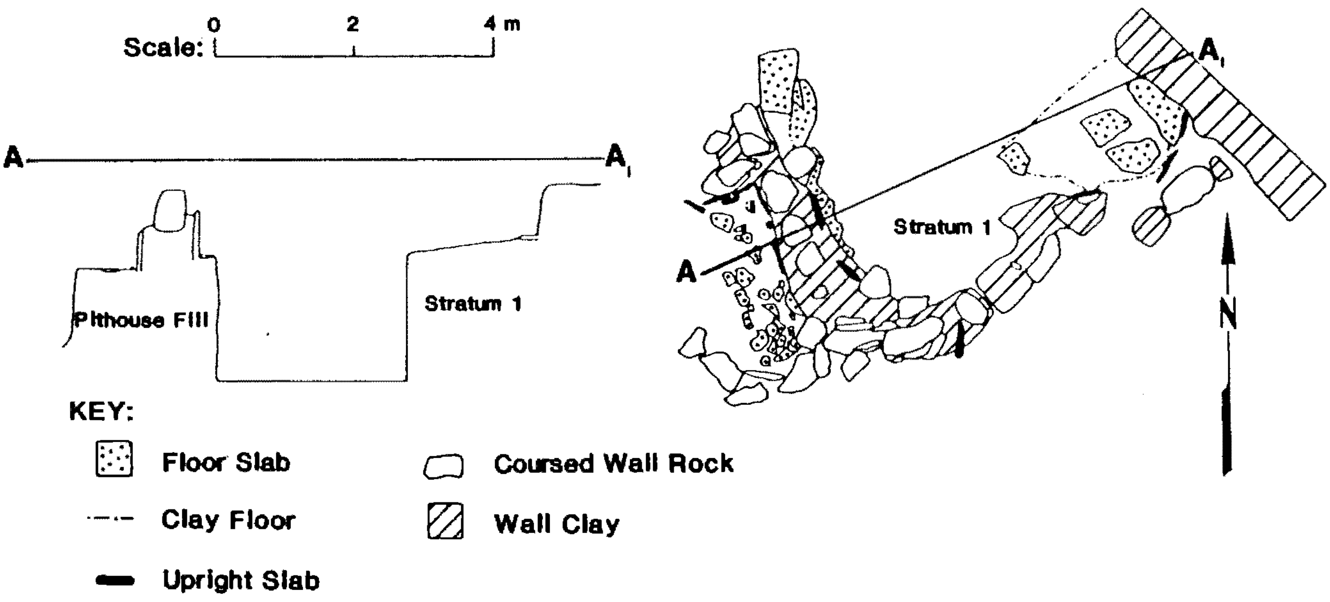



Figure 129. Plan map and cross-section drawing of Rooms 2 (plan right) and 3 (plan left), 42Ws392.

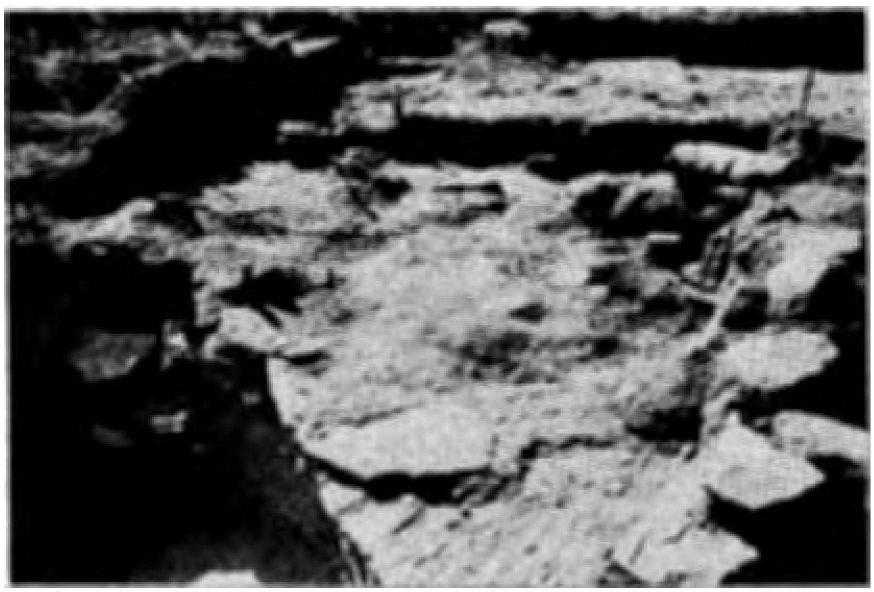


Figure 130. View southeast of Room 2, 42Ws392. Southwest wall at right, clay floor in the foreground.

that the designations were made of Room 4a for the northwestern element, and Room 4b for the southeastern portion (Figs. 131-133). A later comparison of 4a and 4b convinced the crew that, while there had in fact been two rooms, the trench had crossed them at the point where earlier vandalism had already destroyed the connecting structural elements. The coincidence did not, in retrospect, seem particularly striking since the entire area had been heavily vandalized to the extent of complete destruction of at least two and probably more associated rooms. Rooms 4a and b originated well up in Stratum 3. The floor of each was begun in a shallow excavation upon which sandstone flagstones were laid and then covered by a 2.5 to 3.5 cm. thick layer of compact yellow-tan clay. Both elements displayed similar floor construction, but they differed in wall construction, suggesting they were built at different times and thus must be two separate rooms.

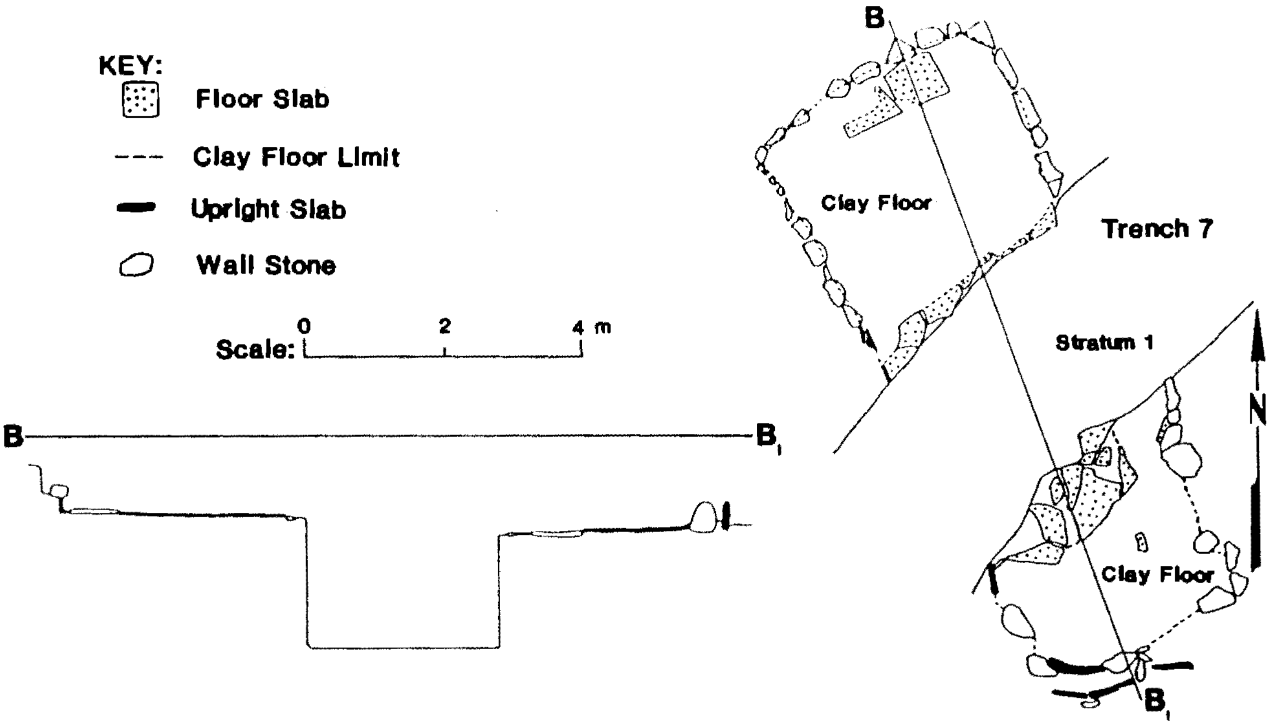



Figure 131. Plan map and cross-section drawing for Rooms 4a (northwest) and 4b (southeast), 42Ws392.

<u>Room 4a</u> (Fig. 132), the northwestern element, measured 1.75 m. on all four sides, but the southeastern portion had been destroyed and it is likely that this dimension for the complete structure would have been 2.0 or 2.5 m. The remaining masonry walls of the structure stood from 16 to 20 cm. above the floor. The walls were composed of coursed slabs set into the underlying Stratum 2 as well as Stratum 3. Stone rubble was also evident outside the room and probably came from it since no other rooms were found in the area.

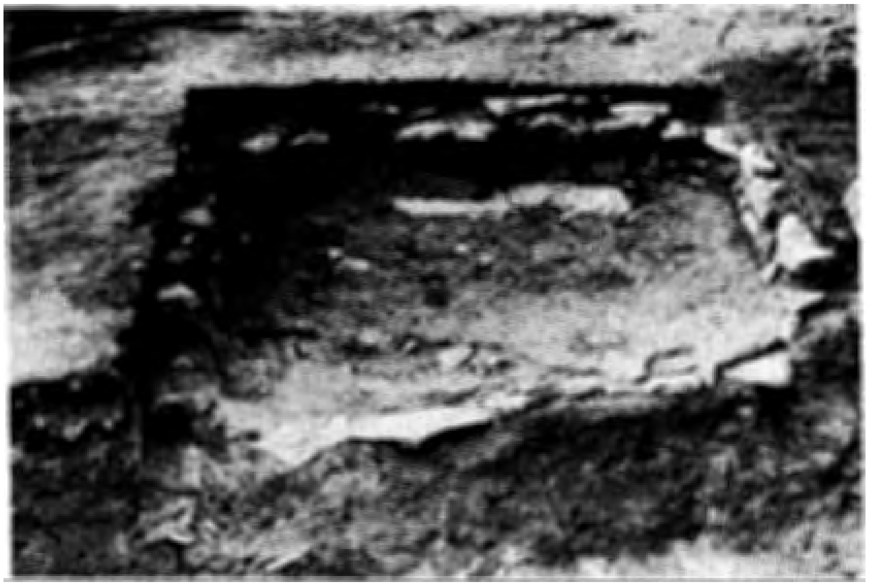


Figure 132. View north of Room 4a, 42Ws392, showing the clay surface laid over flagstones. Coursed masonry is also evident.

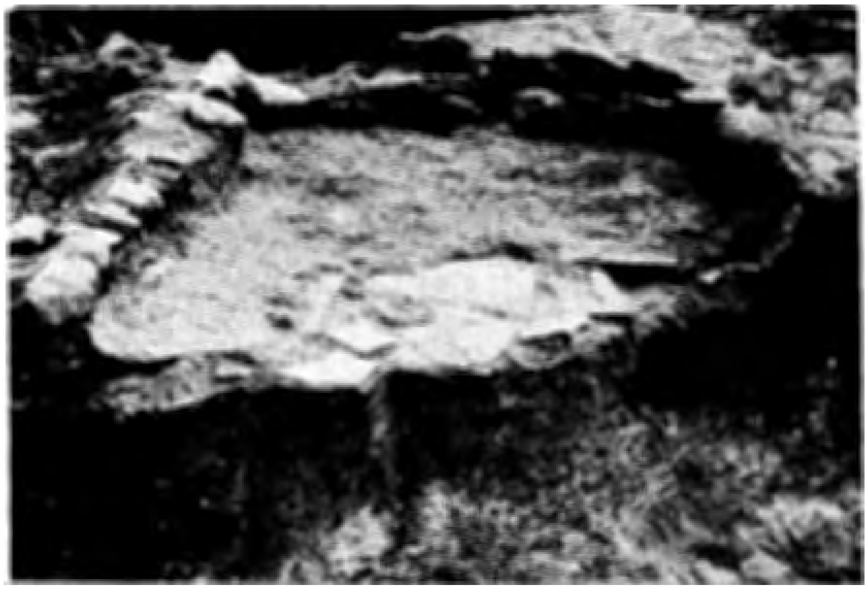


Figure 133. Room 4b, 42Ws392, showing the clay over flagstone floor and the single upright slab at the right. View to the south.

Room 4b (Fig. 133) extended south from the southeastern side of the initial trench. The remnants of the room measured 1.5 by 1.55 m. The 1.5 m. north to south dimension was probably some 50 cm. longer prior to the room's destruction. The remaining walls produced one or two courses of stone, the walls standing from 9 to 19 cm. above the clay floor that covered the flagstones. There was limited evidence that upright sandstone slabs had ringed the interior of Room 4b, although no such lining was noted in 4a.

The differences in wall construction were not great but perhaps significant enough to argue construction at different points in time. Supporting this was the fact that the floor in 4b was between 5 and 10 cm. higher than the floor of 4a.

Again, vandalism made ceramic cross-dating a tenuous proposition, but the collection recovered definitely placed construction after 1050 A.D. and probably after A.D. 1075.

Storage Cists.

The outlines of three storage cists were identified in the walls of backhoe trenches. Time constraints prevented the complete excavation of any of these features, and all three were diagrammed in profile only (Figs. 134,135). All three appeared to be slab-lined with clay-covered slab floors.

Cist 1. Exposed in the backhoe portion of Trench 10, this cist was thought to have been associated with Cist 2 which lay to the southwest. A part of the cist was excavated to the upper floor in order to secure pollen and flotation samples.

A study of the profile (Fig. 134) showed that the cist originated at the upper surface of Stratum 2, from which point a pit was excavated into Stratum 3. Although it was not evident at the surface, the profile showed that the cist had been vandalized on its southwestern side which made a full description impossible.

The cist fill was a mixture of Stratum 3 sand from 80 to 105 cm. thick which had been disturbed and redeposited, apparently by pothunters. At the same time, from the evidence still visible, it appeared that the pit had been dug into Stratum 2. The one visible wall slab indicated that the slab walls had been placed into the top of Stratum 1 before the floor was laid. Slab and cobble rubble noted from 10 to 50 cm. above the vertical slab may have been remnants of wall elements forming the superstructure of the cist.

With the walls constructed, a thin layer of sand was laid at the bottom of the pit and a subsequent layer of sandstone slabs set to form the base of Floor 1. The slabs were then capped with a 1 cm. thick layer of compact red clay. Above this was found a 1 cm. thick layer of sand. It is possible that this was placed in the pit to form the base of Floor 2 which, once more, involved the laying of sandstone slabs that were less even than those of Floor 1. The southwestern slabs were buckled upward, perhaps as the result of vandalism. The slabs were then covered with a 1 cm. thick layer of compacted red clay.

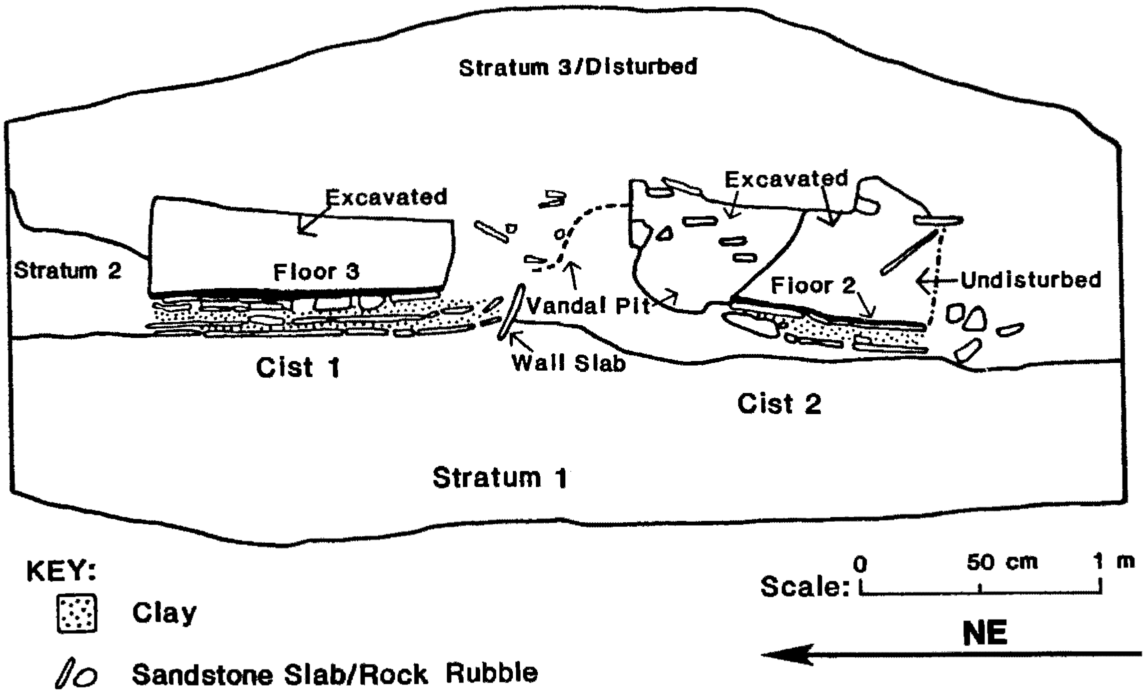



Figure 134. Profile of Cists 1 and 2, 42Ws392.

Figure 135. Detail view of Floor 3, Cist 1, 42Ws392. Shown are stone and part of the clay floor. Mano in situ on the floor.

Floor 3 (Fig. 135) was the final one built for the cist and the only one actually exposed. In this case, an area measuring 1.2 m. long and 25 to 28 cm. wide was cleared. The stone subfloor was composed of two layers of sandstone slabs on the northeastern side and a chinked cluster of river cobbles on the other. The stone was then covered with a 4 to 6 cm. thick layer of compacted tan-orange clay to smooth out the exceptionally irregular stone surface.

The limited nature of the collection of cultural material as well as the partially disturbed condition of the cist made a temporal placement of the feature difficult. The construction form is indicative of Pueblo I, while the presence of a North Creek Corrugated sherd would appear to argue a late Pueblo II use. A single sherd can be disregarded as significant evidence in such a context and the inclination is to accept the Pueblo I position. The matter must remain highly tentative, however.

Cist 2. This cist was located just to the southwest of Cist 1 and, again, it was identified in a trench profile. The cist had been heavily vandalized and some of the remnant had also been cut by the backhoe (Fig. 134). The result was that only about 30 percent of the cist remained for examination.

Cist 2 probably originated at the same level as Cist 1 (Fig. 134), but the stratigraphic evidence had been obliterated and all of the wall elements had also been destroyed. At the same time, however, a good piece of the floor remained. It was evident that the original pit only reached the lower portion of Stratum 2, lying 2 to 10 cm. above the top of Stratum 1. A highly compact layer of sand had been laid in the pit and covered with sandstone slabs. The floor was then covered with a 2 to 8 cm. thick layer of sand which, in its turn, was covered with a 1 cm. thick layer of red clay.

Slab fragments lying in the fill, as well as some recovered from the spoil dirt of the backhoe trench, gave good evidence that the cist had been slab-lined. Remnants of the post-use fill above the floor were composed of compact, red-brown sand flecked with charcoal and deposited in a lenticular pattern.

The presence of North Creek Gray and North Creek Corrugated sherds in the fill appeared to argue a late Pueblo II position for the feature. However, if the cist was constructed as believed, it seems more likely that it related to a Pueblo I occupation with the recovered ceramics representing refuse from later occupations.

Cist 3. The third cist lay some 17 m. southwest of Cists 1 and 2 and did not seem to have a clear relationship with the two previously described. The profile indicated that Cist 3 originated at the top of Stratum 2 while the bottom barely penetrated Stratum 1. The floor of the cist was basin-shaped and flagstones were laid directly on the exposed Stratum 1 surface. A layer of compact, tan-yellow clay 2 to 2.5 cm. thick was laid over the stone to produce a level surface. The top of the cist was found at a depth of 20 cm., while the floor lay at 77 cm. The feature was some 90 cm. wide at floor level although not enough remained to suggest its length. Fill was composed of compacted, red-brown sand which showed charcoal flecks of moderate density. A considerable amount of sandstone slab rubble lay horizontally in the fill. The fill rose to a point some 10 cm. below the top of Stratum 2 with the balance being covered by Stratum 3 material.

No prepared walls of either clay or slabs were noted although slabs may have been used and removed by later prehistoric occupants of the site. The outline of the apparently undisturbed walls suggested that the cist was ovoid in shape. The ceramics argue a late Pueblo II use, but elements of the construction are sufficiently similar to Cists 1 and 2 to suggest a Pueblo I structure.

Structures.

Two structures of undetermined function were noted in the profiles of the backhoe portions of Trenches 7 and 12 (Fig. 128). Both were built in a similar manner, but both were different from other structures at this site, as well as from structures excavated at other sites within the project area.

Structure 1. Structure 1 was observed in both profiles of Trench 7 (Fig. 136) some 4 m. northeast of its southwestern end. The relationship between the two profiles indicated that the backhoe trench had cut the structure at an oblique angle which seemed to indicate that the feature was aligned to true north and south.

The profiles indicated that the level of origin for the structure was within Stratum 2 and that the initial excavation had carried well into Stratum 1, thus indicating its semisubterranean nature. The floor appeared to be a use-compacted surface of Stratum 1 with a thin, 1 to 1.5 cm. thick layer of sand over it--either accumulated during occupation or deposited shortly after abandonment. The floor ranged from a depth of 70 to 103 cm., the lowest portion being in the southern end. The profiles suggested a width of from 1.28 to 1.7 m.

The fill proved to be composed of brownish sand stained and flecked with charcoal and containing small pebbles. Sandstone slabs and other stone rubble were also mixed into the fill (Fig. 136) and perhaps represented the upper walls of the superstructure. The lower walls appeared to have been made of unprepared Stratum 1 clay rising from 30 to 45 cm. above the floor.

Ceramics recovered from the fill suggested a late Pueblo II occupation. The semisubterranean construction as well as the width argue that the feature was part of a storage unit. No direct evidence concerning the superstructure was found, but the material found in the fill suggests coursed masonry.

Structure 2. The second structure was found in the northwestern profile of Trench 12, within 3.5 m. of the southwestern end of the trench. This was, then, the most southerly feature identified during the testing. As was the case in Structure 1, neither the floor nor the walls appeared to have been prepared. The floor was use-compacted Stratum 1, while the walls appeared to have been excavated some 15 cm. into Stratum 1. The upper 40 cm. of the structure's walls were cut through Stratum 2 sand.

The profile of the structure (Fig. 137) indicated that it was, in fact, a semisubterranean unit either square or rectangular in shape. The floor slanted down toward the northeast with an apparent structural width of 1.4 m.

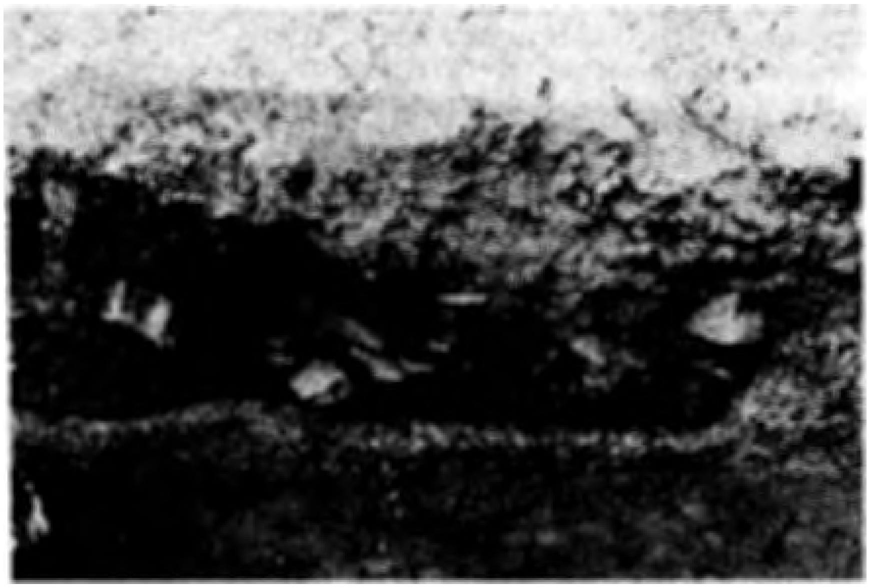


Figure 136. Detail view of a Structure 1 profile, 42Ws392.

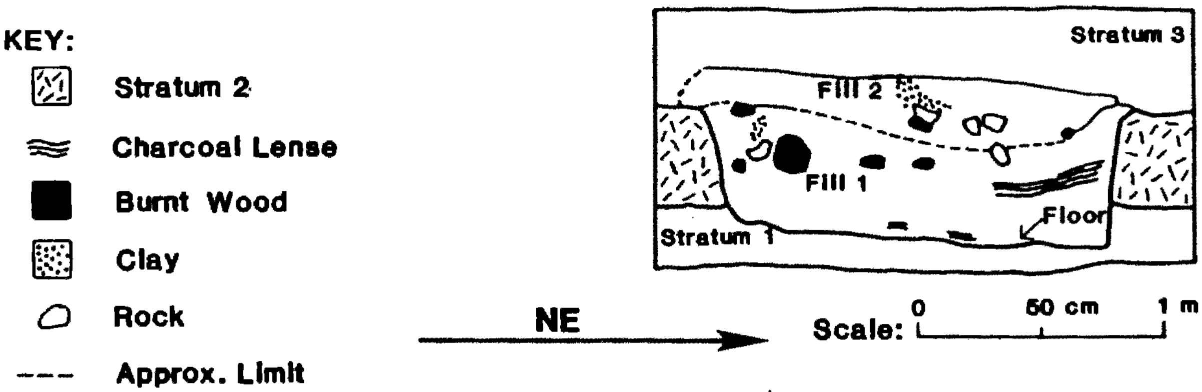



Figure 137. Drawing of the Structure 2 profile, 42Ws392.

Fill 1 made up most of the post-occupation fill, extending from a depth of 40 cm. at the top, to 105 cm. at floor level. The fill was made up of loose sand which was stained brown-gray by ash and charcoal. The level also included ashy charcoal lenses and burned beams 8 to 18 cm. in diameter. The beams were presumed to have been structural. The beams lay in a horizontal alignment near the upper of Fill 1.

Fill 2 was composed of compacted, tan sand mixed with pebbles and some concentrations of highly compacted, orange-tan sand and white clay. It was also somewhat mixed in the upper portion with Stratum 3 sand. The lower part of the level also contained charred beams such as those found in the upper part of Fill 1. Fill 2 was found at a depth of from 23 to 53 cm.

One of the beams from Fill 2 produced a carbon sample which assayed to 840$\pm$50 years: A.D. 1110 (BETA 8477). This conforms quite well with the dates for the late Pueblo II period suggested by the ceramic collection.

Pithouse

The only pithouse found at 42Ws392 lay beneath Room 3 and part of Room 2 near the edge of the terrace overlooking Quail Creek. Although it had been badly vandalized along its southeastern and northwestern edges, sufficient remained to establish that it had been used in five different episodes and that it would prove to be the most complex structure encountered within the project area (Fig. 138). At a date late in the project, Trench 3 was extended by the backhoe to a point just outside the southwestern edge of the pithouse. The profile thus exposed aided substantially in establishing the stratigraphic association of the structure and in determining the construction sequence.

The pithouse was of average size by Western Anasazi standards, measuring 3.9 m. north to south and 3.6 m. east to west. The surface of origin lay at a depth of 67 cm. with the excavation for the room entering into the elements of Stratum 1 (Fig. 138). At the higher levels around the edges, the structure pit penetrated only the white clay, while the deeper parts were sunk into the sand and gravel zone in the center and southeastern parts of the pit. In the center the pit reached 65 cm. below the surface of origin, apparently to facilitate the construction of the slab-lined vault that would be found in Floor 1 (see below).

Floor 1. This lowest of five distinct floor levels defined in the pithouse (Figs. 138-140) was composed of a discontinuous surface of white-tan clay that, in most areas, proved to be quite friable. The clay ranged from 2 to 8 cm. thick and it directly overlay Stratum 1 where it rested on some apparent cultural fill. Although seen only in the western edge of the structure, it appeared as though upright sandstone slabs ringed Floor 1 in its entirety. It is possible that the apparent surface of origin noted on the southwestern perimeter may have represented a bench, but there was insufficient evidence to be certain.

The slabs had been set some 10 to 30 cm. into Stratum 1 and the base of the slabs in the depression had been packed with clean, red sand. The remainder of the pit or trench was then filled with a compacted red clay that was also used to seal the spaces between slabs. The slabs were then covered with a 2 to 8 cm. thick clay plaster of the same material which also served to stabilize the slabs.

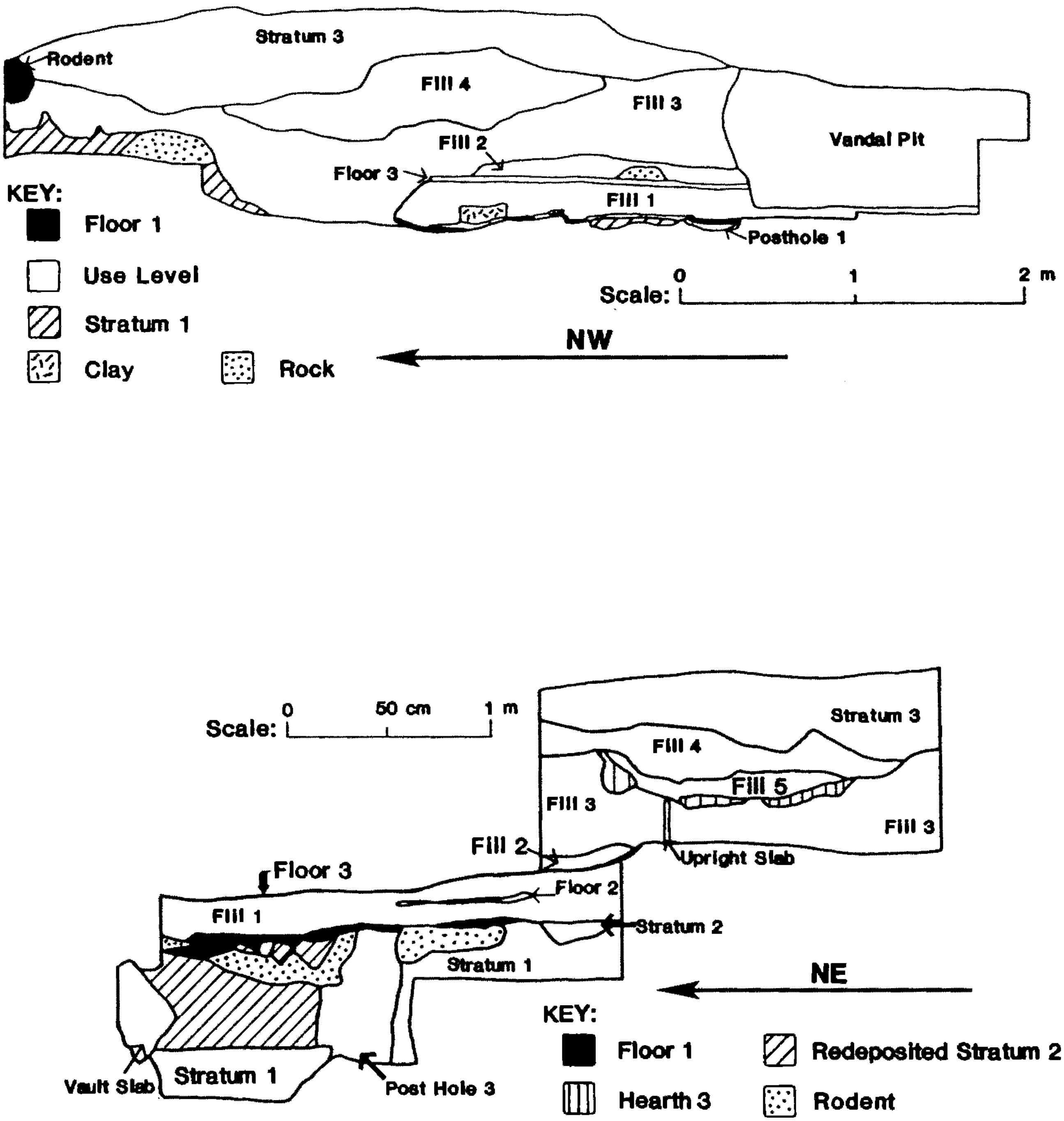



Figure 138. Profile drawings of the 42Ws392 pithouse showing the occupational and fill complexity. Top, initial definition in the test trench; bottom, following excavation (not all features show on this cut).

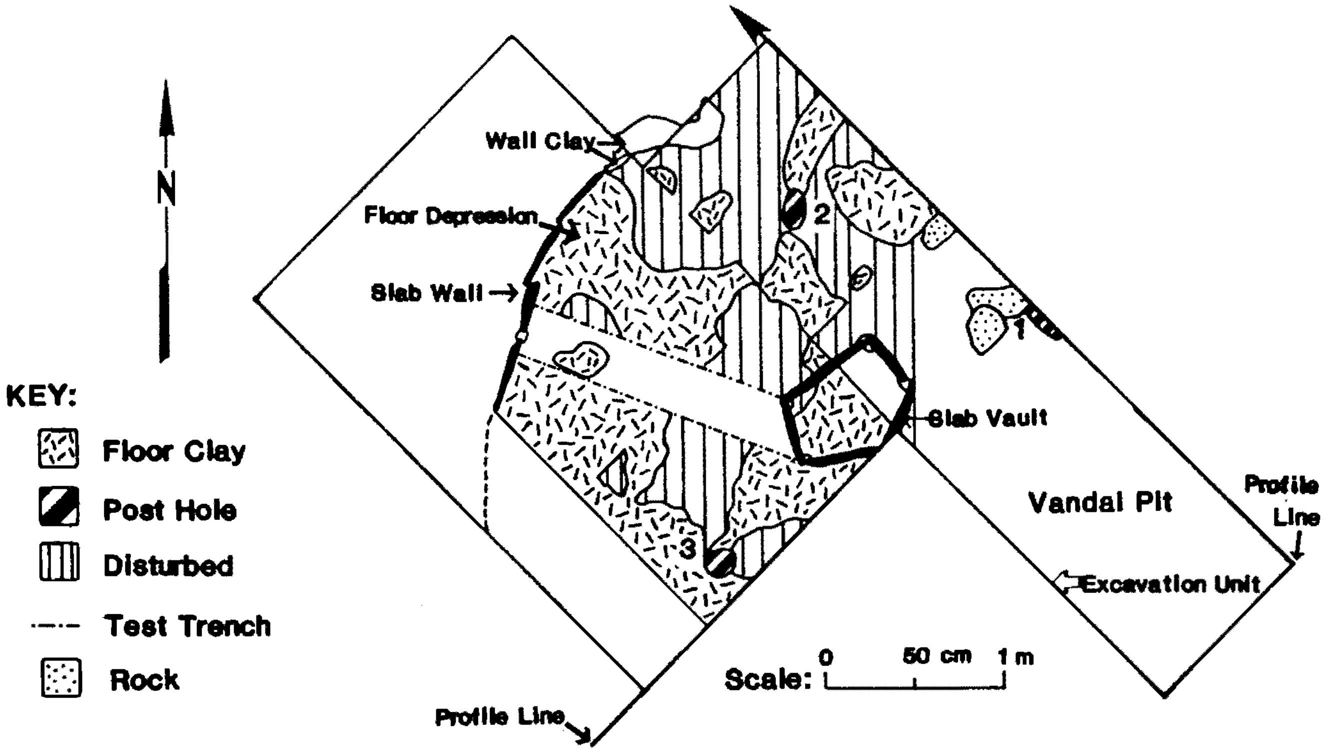



Figure 139. Plan map of Floor 1 in the 42Ws392 pithouse.

Figure 140. 42Ws392 pithouse. View of Floor 1 and the vault overlain by Floor 3 and Hearth 1. Note clay ridges radiating from Hearth 1 (bottom-left).

The only Floor 1 features in the pithouse included three postholes and a deep slab-lined firepit or "vault." The vault (Figs. 138-140) was essentially rectangular but asymmetrical in the sense that the southeastern side bulged a bit to the east. The vault measured 75 cm. northeast to southeast while it averaged 55 cm. wide. The feature proved to be 55 cm. deep, as measured from the top of the slabs.

The bottom of the fill within the vault suggest it was used as a roasting pit or firepit since it contained charcoal, burned corn, and also a few sherds. The fill above the lower layer was made up of fairly clean, loose, red-tan sand which included scattered fragments of charcoal. About midway through the sandy fill a slanted sandstone slab which had apparently become dislodged from the southeastern side of the vault was found.

The use of the feature as a hearth or as a roasting pit would appear to have been limited since the clay lining did not appear to be charcoal stained or heat-altered. This would imply that the charcoal found would simply have been refuse, a fact which may be borne out by the fact that a carbon sample collected from this material produced a date of 1070±60 years: A.D. 880 (Beta 8050). Sometime later in the use of Floor 1, the vault was filled with additional sand and the clay of Floor 1 was plastered over it.

Although most of Floor 1 sloped up to the slabs lining the perimeter excavation, in the northwest quarter it dropped to a point some 20 cm. below the surrounding surface. This depression, measuring 1.3 m. north to south by 1.0 m. east to west, appeared to have been a part of the original construction since the original floor clay sloped smoothly into the depressed area (Fig. 139). At the same time, there was a lip or rim around the upper portion of the slope.

A cut beneath the floor of the depression revealed that, unlike the material under Floor 1 over the rest of the room, there was cultural fill beneath the depression. Such a phenomena would suggest activity in the area prior to the construction of the pithouse, and it may be that the depressed area was nothing more than an accommodation for this fill.

Three apparent postholes (Fig. 139) were identified on Floor 1. Two appeared to have had only temporary use while the third appeared to have been added sometime after the construction of the slab-lined vault. Posthole 1 was a small depression measuring 30 cm. in diameter and penetrating only 5 cm. below the level of Floor 1. Having fallen into disuse, the hole had been capped by a layer of compact clay from 1 to 3 cm. thick which smoothed out the floor in the area. Posthole 2 was found northwest of the first. It was 18 cm. in diameter and it reached an undetermined depth below the floor. This hole had been capped with clay to produce an even Floor 1 in the same manner as found with Posthole 1.

Posthole 3 was found near the southwest edge of the pithouse. It proved to be 18 cm. in diameter and it extended to a depth of 25 cm. below the floor. The posthole appeared to have centered in a larger pit dug from Floor 1. The post which formed Posthole 3 was placed within the larger pit and, once it was in place, the pit was filled with clean Stratum 2 red sand. Fill within the posthole consisted of loose, brown sand containing occasional charcoal flecks. A few stones found in the hole may have been used to stabilize the post within the fill.

The structural features associated with Floor 1, particularly the slab lining of the room and the slab-lined vault, would appear to indicate a Pueblo I occupation. Unfortunately, no temporally diagnostic materials, such as the ceramics, lend support to such a view. It is obvious that Floor 1 was subject to lengthy use or to repeated use at unknown time intervals, but the time of origin must remain uncertain.

Use Level 1 was a 1 cm. thick layer of reddish sand overlying Floor 1. It was lightly charcoal stained and contained a few small ash lenses of unknown origin lying almost on the floor. Above this thin layer was Fill 1 that extended to Floor 3. It was composed of tan-red sand flecked with charcoal and it was found to average 20 cm. thick. A few pieces of red clay were recovered from Fill 1, notably in the area of the northwestern floor depression. This was the only slight evidence of a structural collapse following the abandonment of the Floor 1 occupation and it does not appear sufficient to indicate a total superstructure collapse.

Floor 2. There was minimal evidence of an occupation midway between those represented by Floors 1 and 3. Floor 2 was identified only in the profile of an arbitrary trench. It was noted as being 2 cm. thick and composed of a friable layer of tan clay. The fragment noted was 88 cm. wide and 95 cm. long. The surface seemed obviously another habitation floor, but it had been heavily impacted both by vandals and rodents and thus little more could be learned. The assumption that it was an occupation level was strengthened by the discovery of a metate laying directly on the floor fragment.

Fill 1 (Fig. 138) could perhaps more properly have been designated as two distinct depositional episodes but, due to the late recognition of Floor 2, it was excavated and collected as a single unit. It proved almost impossible to determine whether or not Fill 1 was of natural or human origin and it could well have been the product of both factors.

A carbon sample recovered from Fill 1 produced a date of 1340±60 years: A.D. 610 (Beta 8049). The date is some 500 years too early for the general view of site occupation. It does conform, however, with the architectural evidence noted for Floor 1. The ceramics, on the other hand, do not conform.

Floor 3. Floor 3 (Figs. 140-143) was a well-defined occupation level with a hearth in association. The preserved floor section measured 3.9 m. north to south by 3.6 m. Both measurements were incomplete as the result of vandalism. Floor 3 was a highly compacted, red clay surface which varied from 2 to 3 cm. thick. It appeared as though the floor was laid within the area defined by the vertical slab wall associated with Floor 1. The clay had not been extended to the slabs; rather, there was a 12 to 21 cm. gap between the edge of the floor and the slab wall. The floor itself terminated in a thin lip of hard red clay. Clean tan sand filled the gap between the edge of the floor and slab wall.

The clay-rimmed Hearth 1 was the only feature found with Floor 3 (Figs. 140-142). It lay on the southern side of the room underlying Rooms 2 and 3. The hearth measured 40 cm. in diameter and was almost completely circled by a raised clay rim 10 cm. wide. The pit was 14 to 16 cm. deep with vertical sides and a prepared clay interior. A small slab lay on the bottom of the hearth while a small vertical slab cut across the clay rim on the northwestern side. The interior of the hearth was heavily stained gray and black from repeated fires.

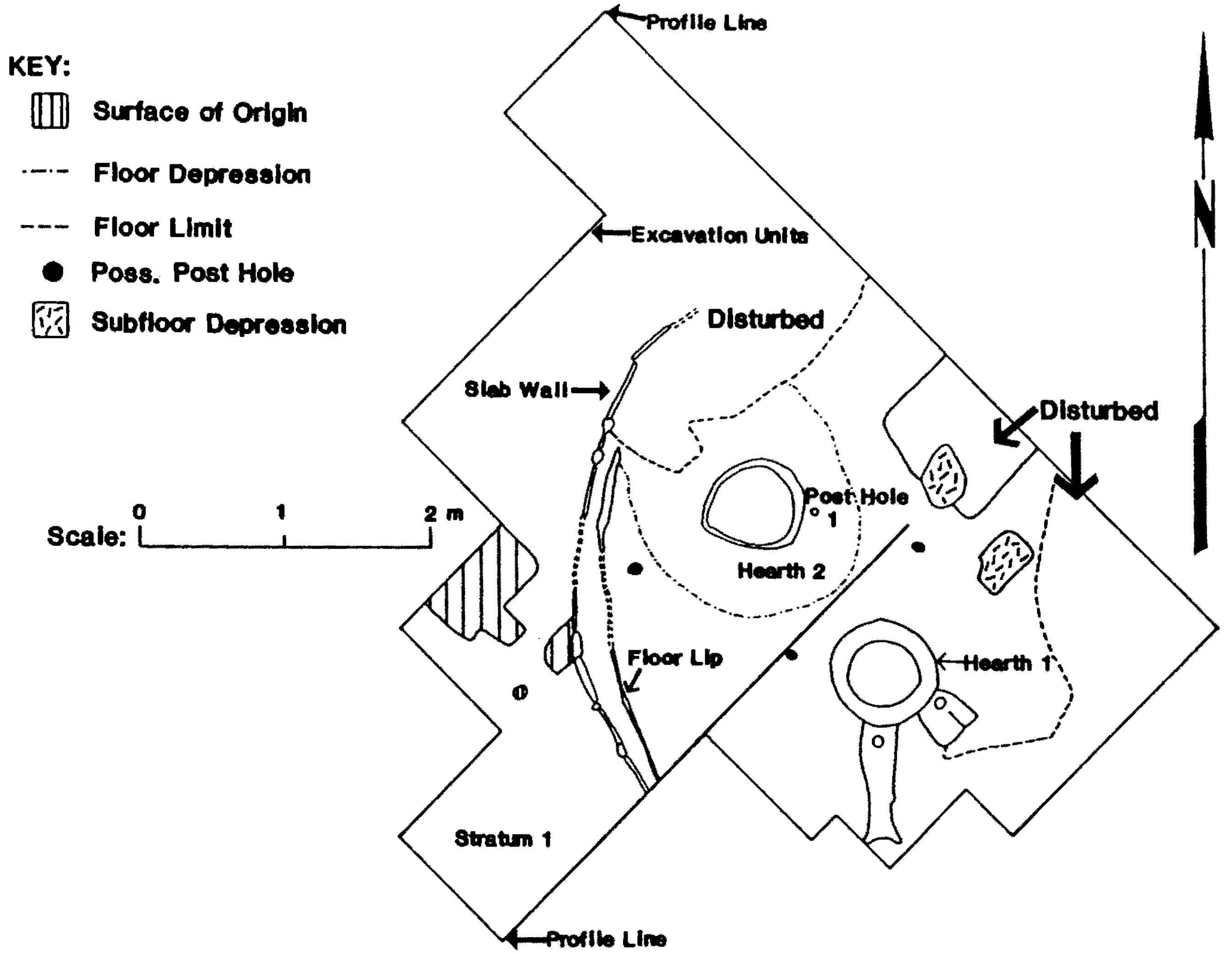



Figure 141. Plan map of Floors 3 and 4 and associated features in the 42Ws392 pithouse.

Four distinct fill elements could be identified within Hearth 1. Most of the fill was composed of lightly stained, tan sand containing small charcoal fragments. This material was 14 cm. thick on the northeastern side, but in much of the remainder of the basin, it was only 4 cm. thick over the bottom. Apparently, then, some of this fill was removed. The second fill, overlying the lower parts of the first, was composed of white and red sand with an ashy texture. The layer was from 7 to 10 cm. thick. The third lens was some 25 cm. in diameter and only 1 to 3 cm. thick, covering the center of the hearth area. The sand of this layer was heavily charcoal stained. The final fill covered the northwestern half of the hearth and ranged from 2 to 10 cm. thick, the deepest portion being near the edge of the hearth. This was a loose brown sand with heavy charcoal stains and a few lumps of red clay that are often characteristic of roof-fall.

Figure 142. View southeast of Floor 3 and the associated Hearth 1 in the 42Ws392 pithouse. Note vandal pit at left.

Figure 143. View of Floor 3 in 42Ws392 pithouse detailing the depression at approximately photo center.

Two clay ridges radiated from the hearth toward the edge of the room, one going to the south and the other to the east (Fig. 140). Both were formed of red and white clay similar to that used to lay the floor, although they were evidently placed in position only after the floor was completed. Both ridges displayed small, circular holes on their upper surfaces 10 cm. away from the hearth rim. The holes were 4 cm. in diameter and both were 3 cm. deep. Though the function of the holes could not be determined, they must have related to the hearth. The eastern clay ridge of 20 cm. wide, 5 to 7 cm. high, and 40 cm. long, while the southern ridge was 20 cm. wide, 8 to 9 cm. high and 90 cm. long. The depression contained within the two ridges was 12 cm. wide at the hearth and 47 cm. wide at the southeastern end, while it lay 5 cm. below the surrounding floor. The use of the feature has not been determined, although similar features have been seen in Pueblo II contexts such as 42Ws288 in the project area.

A large depression in Floor 3 (Figs. 141,143) was also cleared in the northwest quarter of the room. The feature roughly overlay a similar depression in Floor 1. At maximum, the Floor 3 depression was 1.5 m. on each side and 22 cm. deep. It proved, therefore, to be larger than the Floor 1 depression and this higher one appeared, in some way, to be associated with the hearth.

It seemed as though there were a number of postholes in Floor 3 but, upon close examination, only one could be fully defined. This was near the center of the pithouse and was 7.5 cm. in diameter. The hole was clay-lined on one side and it appeared that the post it once contained had been burned. The 6 cm. deep hole was filled with burned, black sand and burned clay. The interior clay lining was also stained.

Three possible postholes were completely unprepared and could only be identified as three circular openings in the floor. Each had a diameter of 4 cm., but the depth could not be established because of the soft nature of the fill. It was tentatively assumed that the posts were used as roof supports during the course of repairs to the structure.

Fill 2 accumulated on Floor 3 (Fig. 138). Fill 2 was a 4 to 20 cm. thick layer of compact, red and white clay mixed with charcoal flecks. This appeared to be the level made of collapsed roof and wall materials which may well have formed the superstructure for the first three occupations. Above Fill 2 lay Fill 3, a red-brown sand and gravel material which contained charcoal and chunks of burned clay (Fig. 138). The recovery of some clay in Fill 3 suggested that, although the structure had partially collapsed into Fill 2, perhaps as the result of fire, some of the material remained intact and then gradually weathered. Fill 3 was basically a natural deposit found at a depth of 69 to 96 cm.

Floor 4. Floor 4 (Fig. 141) was a red clay layer averaging some 2 cm. thick and found at a depth of 50 to 54 cm. The fragment of Floor 4, and its associated Hearth 2 was identified only on the northwestern side of the pithouse.

The hearth was a circular and partially clay-lined basin measuring 71 by 62 cm. The sides were definitely lined with clay. Rodent disturbance made the bottom of the hearth more difficult to evaluate but it seems likely that it was also covered with clay. The edge of the hearth was circled by a red clay rim which averaged 4.5 cm. thick. The fill of the hearth was composed of brown-gray sand similar to that of the overlying fill. It was of interest to note that Hearth 2 was located just above the southeastern end of the two depressions found in Floors 1 and 2.

Floor 5. Overlying Floor 4 and Hearth 2 was Fill 4 (Fig. 138). The fill was a layer of dark brown to tan sand found at a depth of 12 to 56 cm. and which ranged from 10 to 40 cm. thick. While it is not certain, it appeared as though Floor 5 and its Hearth 3 (Fig. 144) were used while Fill 4 was accumulating. Floor 5 was a patchy red-orange clay which had been severely damaged by rodent activity. Hearth 3 was a basin-shaped feature some 70 cm. in diameter found at a depth of 40 cm. The basin was lined with a compact red-orange clay with a rim of similar material from 2 to 5 cm. thick. Fill 5 was a thin depositional layer seen discontinuously over Floor 5. This was composed of a brown-white sand with some clay mixed in. Fill 5 ranged from 5 to 12 cm. in thickness. Over Fill 5 was a continuation of the depositional pattern of Fill 4 (Fig. 138). Finally, over this material lay a 10 to 30 cm. thick layer of Stratum 3 which had been heavily disturbed by pot hunters.

Hearths 2 and 3 and their associated floors appear to have used only parts of the original pit structure. This was particularly noted in the case of Floor 5 which extended to the southwest outside the limits of the original structure. Also, Floors 4 and 5 appeared to be at almost the same level although there was no apparent connection between them and they were built with different clays.

Figure 144. View of Hearth 3 and associated patches of Floor 5 in the 42Ws392 pithouse.

## Discussion

The pithouse may have first been built in Pueblo I times. Diagnostics that support such an interpretation include the slab-lined vault and the upright slabs of the pithouse wall. The C-14 date also appears to be in line, but the ceramic data is either negative or ambivalent.

While very little could be established concerning Floor 2, Floor 3 would appear most likely to represent a Pueblo II occupation. The hearth with its radiating clay ridges is known in the Western Anasazi for both Pueblo I and Pueblo II, but it was dominant during neither period. The ceramics appear to support a Pueblo II interpretation a little more fully, but not conclusively. There appeared to have been some use of the area during the accumulation of Fills 2 and 3, and Fill 2 produced the evidence of a major structural collapse.

Later use of the pithouse locality was indicated by the appearance of Hearths 2 and 3 in association with Floors 4 and 5. At this point, however, it became impossible to determine if later superstructures were built or whether the basin areas were simply used as they existed. The final features did not appear to have made use of the entire earlier basin area. Thus, the hearths may represent outdoor uses relating to very late Pueblo II occupations.

It was never possible to establish the presence or absence of a bench, although one might be expected if the initial building was done during Pueblo I. A bench was found at 42Ws268 where it proved to be what was first thought to be the surface of origin. A similar possibility was suggested here, but there was an insufficient portion of the apparent surface of origin left to make a thorough investigation.

## Other Site Features

Included here are three hearths apparently out of structural context, three apparent refuse pits, and two human burials. Also described are three 'isolated floors' that are probably remains of structures but which could not be definitely so defined.

### Isolated Floors.

Three isolated clay floors were uncovered during the excavations. None of them had walls nor were well-defined perimeters established. All had apparently been disturbed by recent vandalism which destroyed significant associations.

Isolated Floor 1. Measuring 80 by 30 cm., this feature (Fig. 145) was formed by two layers of clay. The first was 2 cm. thick and proved to be a compact red clay surface made of Stratum 3 material. This was overlain by a layer of compact, tan sandy clay which also appeared to be 2 cm. thick. The upper layer may well be a repair effort on the original surface, made necessary either by weathering or by use. The floor curved up to the northwest in an area where Stratum 2 sands were also seen to rise. No cultural materials were found associated with the surface.

Isolated Floor 2. This was found with an apparently associated hearth (Fig. 146). The floor was made of compact, orange-brown clay 2 to 2.5 cm. thick over an area 70 cm. long. The floor was cut off by a vandal's pit in

Figure 145. Detail view of Isolated Floor 1 in the northeast wall of Trench 6, 42Ws392.

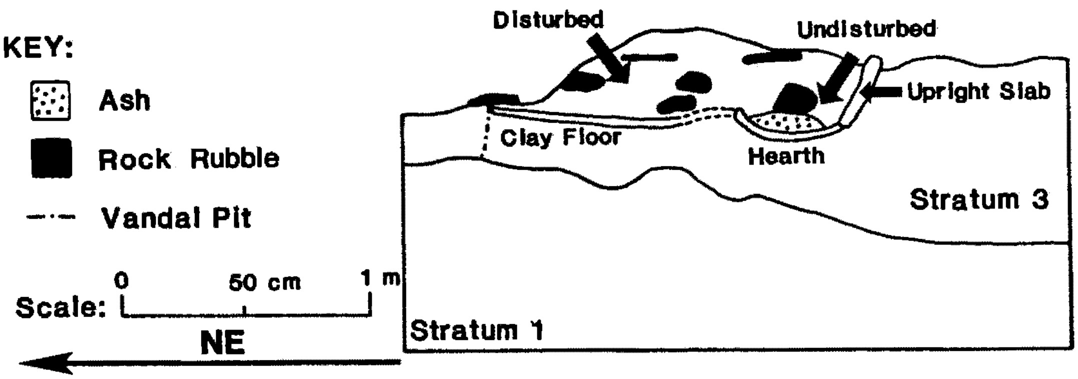



Figure 146. Profile drawing of Isolated Room 2, 42Ws392.

the northeastern area while the roots of a creosote bush on the southwest had disturbed the floor and rendered uncertain its connection with the hearth. The overburden was composed of loose brown sand containing a mix of sandstone slab and cobble rubble. The layer was from 2 to 35 cm. thick and appeared to be the result of mixed natural and cultural strata, redeposited by pothunters as they destroyed so much of the site.

The hearth appeared to be a feature of this floor, although the roots of the creosote bush damaged the direct evidence. The hearth was basin-shaped with a small slab marking its southwestern side. The slab also appeared to mark the southwestern edge of the floor. The northeastern arc of the hearth came up just to the level of Isolated Floor 2, the most significant fact in suggesting their association. The hearth was lined with a thin layer of clay which was fire-reddened on the southwestern side. The fill included a 3 to 10 cm. thick layer of fine, loose, white-gray ash which was capped by a rock. The overlying fill was composed of alternating bands of red-brown clay laminae and sand averaging 25 to 30 cm. thick.

The position of this isolated floor suggested that it was built during a late occupation. The associated clay and sandstone rubble suggested that the feature was once a masonry structure, possibly related to Rooms 1,2, and 3. The hearth in Isolated Floor 2 would indicate it was a habitation unit even though the hearth may have been built against the exterior wall.

Isolated Floor 3. This floor was composed of a compact layer of red clay from 2 to 3 cm. in thickness. Extensive vandalism left only a highly irregular shape and a maximum measurement of 2.06 m. northeast to southwest and 1.52 m. southeast to northwest. The floor lay at a depth of 50 cm. The fill above the floor was almost entirely vandal backdirt except for the northern corner which appeared to be undisturbed. In this corner the overburden was a dark brown, stained sand with orange and red clay pieces that were obviously heat-altered. The clay doubtless represented a portion of the collapsed roof or walls.

Disturbance by vandals and rodents made an assessment of the construction sequence impossible. Isolated Floor 3 appeared to have been an occupation or use level of some unidentified structure. Because of the ephemeral evidence of a hearth, it is likely that a habitation unit was involved. An ample presence of structural rubble in the disturbed fill seems to indicate the remnant of a structure of some size. Cultural materials found in the fill above the floor suggest a late Pueblo II activity. While the midden was heavily disturbed, that interpretation can at least be accepted in a provisional manner.

Isolated Hearths

Isolated Hearth 1. This was one of three isolated hearths identified during the backhoe trenching. It was found southeast of Room 1 and was partially protected by the wall-fall from that room. About half of the hearth remained intact when identified. It proved to be a basin-shaped feature with small sandstone slabs lining the the northeast and southwest sides (Fig. 147). The sides of the basin were lined with a thin layer of red-white clay while a raised, red clay rim partly encircled it. The hearth appeared to originate in Stratum 3 but no related floor could be identified. A charcoal-stained sandy soil was all that could be seen in the hearth area.

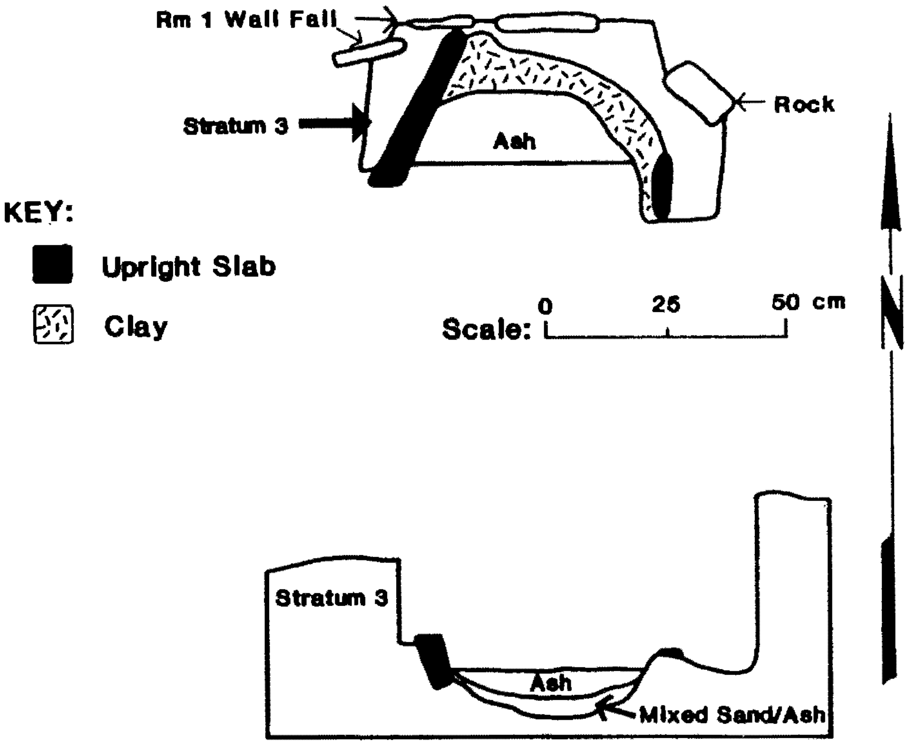



Figure 147. Isolated Hearth 1 plan and profile, 42Ws392.

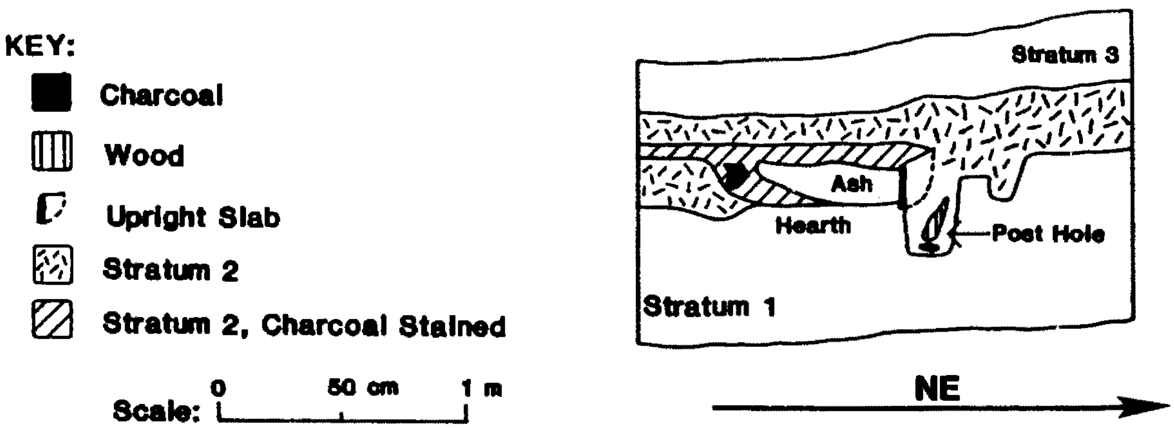



Figure 148. Profile drawing of Isolated Hearth 2, 42Ws392.

The hearth had a diameter of 45 cm. and was found at a depth of 52 cm. Stratum 3 sands formed the bottom of the feature. Over this lay a 2 to 8 cm. thick layer of red sand lightly mixed with ash. Over this lay a 3 to 7 cm. fill of white to gray loose sand.

Heavy destruction in the area made it impossible to relate the hearth to any known feature. It could have been an outdoor hearth relating to Room 1 and the rest of that block. Another possibility would be that it was at once time central to a habitation room in the room block, but that this was entirely destroyed. All of this is, of course, speculative.

Isolated Hearth 2. Again, the hearth was identified only in profile (Fig. 148). It was basin-shaped and appeared to have been dug from a surface of origin within Stratum 2 but reaching Stratum 1. Although the basin was unlined, small slabs on the northeast reached into Stratum 1. The remaining portion of the hearth measured 80 by 25 cm. and it was found at a depth of 40 cm. The fill overlying Stratum 1 was 8 to 15 cm. thick and consisted of ashy brown sand containing some fairly large charcoal fragments. The deposit was surrounded by Stratum 2 sand lightly flecked with charcoal. The hearth was capped by Stratum 2 sands which, in turn, was topped by Stratum 3 material. A carbon sample from the hearth was assayed and produced a date of $730 \pm 60$ years: A.D. 1220 (Beta 8476).

Just northeast of the upright slab of the hearth rim an apparent posthole was identified. It had penetrated Stratum 1 to a depth some 20 cm. below the bottom of the hearth. Disturbance in the area made it difficult to establish the surface of origin, but it may have been within Stratum 2. It was not, however, visible in the profile above Stratum 1. The posthole fill was composed of loose, stained, brown sand containing a few pebbles. Approximately halfway down in the Stratum 1 part of the hole, a piece of wood was recovered which proved to be 10 cm long and 5 cm. in diameter. Some 3 cm. below the wood there appeared a thin charcoal lens 1 cm. thick very near the bottom of the hole. The posthole diameter was 19 cm.

There was nothing to indicate that the hearth was associated with a structure. The size of the posthole did suggest that a substantial beam had been used, but nothing suggests how it was used. The carbon date suggests a very late use of the hearth while the ceramics point only to a middle Pueblo II occupation.

Isolated Hearth 3. This feature was seen in the northwest profile of Trench 10 some 5 m. from its southwest end (Fig. 128). The hearth proved to be a shallow basin originating 10 cm. above the bottom of Stratum 3 and penetrating 10 cm. into Stratum 2. The diameter was 65 cm. The basin was unlined except for a small slab placed on the southwestern edge and another in the bottom. The underlying sand had been heat-altered for 3 cm. into Stratum 2. Fill of the hearth was loose white and gray ash confined to a layer 10 to 15 cm. thick. This was overlain by 30 to 40 cm. of Stratum 3 sand.

The origin of the hearth within Stratum 3 suggested that it was involved with a fairly late occupation. This does not constitute good evidence, however, and since neither structures nor temporally diagnostic cultural debris was found in association, its position in the occupational sequence must remain undetermined.

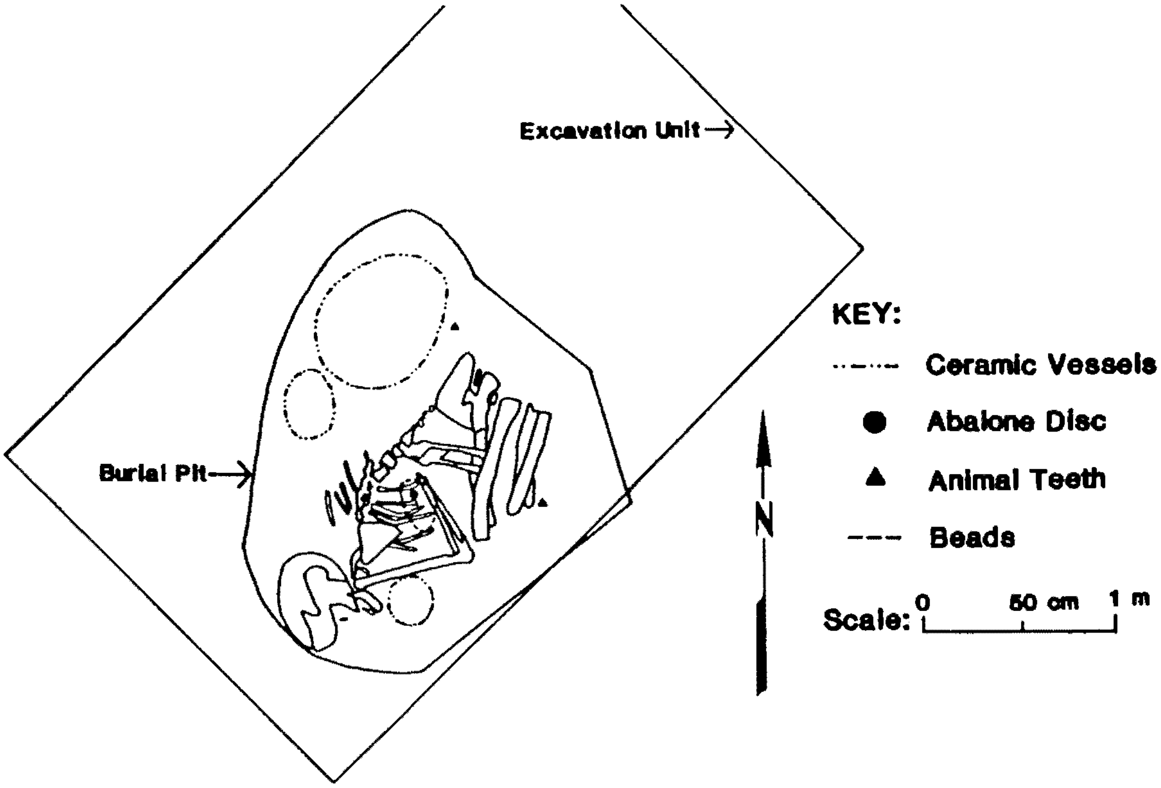



Figure 149. Plan map for Burial 1, 42Ws392.

Figure 150. View from above of Burial 1, 42Ws392. Some vessels removed to expose the skeleton.

Refuse Pits

Refuse Pit 1. This was identified in the southeastern profile of Units 8-A and 8-B (Fig. 128) and in the bottom of 8-B as an irregular outline where it extended 33 cm. northwest. The pit appeared to have originated within Stratum 1 and it was 60 cm. deep and 85 cm. long. The fill was a compacted, gray-brown ashy sand with a few cobbles and slabs near the top. The primary function appeared to have been as a dumping place for ash.

Refuse Pit 2. This feature showed in the southwestern profile of Units 6-H and 6-I (Fig. 128) as an ash and charcoal filled depression. It seemed to originate at the top of Stratum 2 and, since it proved to be only 45 cm. deep, it did not penetrate Stratum 1. The pit originated at a depth of 25 cm. and penetrated no more than 70 cm. The pit area was 98 cm. wide at the top and only 23 cm. wide at the bottom. Length could not be determined. The fill was composed of stained, brown sand mixed with charcoal and ash. A small lens contained pebbles and ash. There was no evidence of periods of natural deposition and the lack of stratification in the refuse argued that it must have been filled within a fairly short period of time. Cultural material found within the refuse would argue a middle and late Pueblo II use.

Refuse Pit 3. This was first identified in the southwestern profile of Unit 8-F and it was subsequently followed into 8-G (Fig. 128). Although highly irregular in shape, the outline was sharply defined. At a maximum, it was 1.4 m. southeast to northwest and 1 m. wide. The pit originated in Stratum 2 at a depth of 64 cm. and bottomed in Stratum 1 at 95 cm. The fill of the pit was a compacted and darkly stained, gray-brown sand which contained ash, charcoal and burned clay. Most of this material concentrated in the bottom 10 cm. of the fill. This lower fill was unstratified, but above it there were some apparent natural deposits containing small pebbles and a few stones as well as sand lenses. This was a natural deposition, as was the accumulated Stratum 3 sand that covered the entire feature. Cultural materials came almost entirely from the natural deposits.

Burials

Burial 1. This formally interred human was found in Trench 3 along the southwestern edge of the site (Fig. 128). The body, that of an elderly male, was apparently exposed to the elements until partly decayed before it was buried in a flexed position with a number of burial offerings including ceramics, turquoise, an animal mandible, and an abalone shell. The burial pit was dug into Stratum 1 on the outskirts of the site before there had been any cultural accumulation in the area. As a result, the surface of origin of the burial could not be correlated stratigraphically with any of the cultural strata or features of the site. The location of the burial at a point some distance from the main center of occupation protected it from the vandalism which so severely damaged much of the site.

Trench 3 was a backhoe trench dug to search for isolated features. The trench by good fortune crossed the edge of the burial pit without disturbing its contents. This allowed the profile and the surface of origin to be defined before excavation began. The burial pit originated at the top of Stratum 2, a culturally sterile layer that here consisted of an upper member of light red clay. The pit extended through Stratum 2 and 30 cm. into Stratum 1 to a depth of 65 cm. below the surface of origin. Once the top of the pit was defined, Stratum 3 was removed in order to expose the entire upper surface of the pit.

Figure 151. Burial 1 detail, 42Ws392. Shows legs, pelvis, right hand and forearm with left forearm and lower rib cage on the left. Feet are missing. Errant phalange top-center above hand.

Once the top of the pit had been exposed, the fill was carefully removed from the top down. Fill material consisted of a mixture of red sandy clay and light gray clay with sparse amounts of charcoal found throughout. The removal of the fill proceeded rapidly until the top of the first corrugated jar was reached. From this point, pit fill was removed much more slowly until the cranium was located. After that, the exposure of the skeleton was accomplished by the usual laborious means with small brushes, dental picks, squeeze bulb etc. The bone proved to be in extremely poor condition. The skull, for example, was little more than a dark stain while all bone was exceptionally fragile and required delicate manipulation. Because of fill moisture, it was usually necessary to remove small amounts of midden and then allow as long as 24 hours for further drying. It was quickly learned that, without prolonged drying periods, bone surfaces would adhere to the surrounding fill if removed while wet. Even with this care, it proved impossible to remove the remains for analysis.

The burial pit was an irregular oval measuring 99 cm. north to south by 95 cm. east to west at the surface of origin and 94 cm. north to south by 90 cm. east to west at the bottom. Thus, the walls were nearly vertical and were unlined. The bottom of the pit was relatively flat with rounded corners.

The body had been placed in a flexed position on its right side with the head to the southwest (Fig. 149,150). The right arm was placed so that the humerus lay beneath and parallel to the spine while the radius and ulna angled forward and lay between the right and left femora. The left leg was placed directly on top of the right leg and the disarticulated remains of the right hand were located in the crook between the legs. Of the 27 bones of the right hand, only 19 were present, including one errant phalange (Fig. 151).

The left humerus angled down towards the flexed knees and its distal end lay beneath a Kanab Black-on-red jar. The proximal end of the left radius and ulna lay beneath both the jar and the distal end of the left humerus. Although both ends of the bones forming the left elbow were severely deteriorated, the superposition of the bones indicated that the elbow was disarticulated prior to burial. In addition, the left radius and ulna extended at an unnatural angle from the elbow back towards the lower abdomen where the left hand lay beneath the left ribs in the area of the abdominal cavity. The left hand was represented by only a few highly decomposed bones which, based on their size, were probably metacarpals.

As has been mentioned, the legs were tightly flexed and placed with the left leg directly on top of the right. Both knee articulations were severely deteriorated and lacked patellae and, additionally, no trace of either foot was found (Fig. 151). In spite of the generally poor preservation of the osseous materials, it is still unlikely that the feet would have preferentially decayed. It seems more likely, therefore, that the feet were intentionally removed or inadvertently lost during the period of postmortem exposure.

It should be noted that the orientation and positioning of the body was similar in many respects to the burial found at 42Ws395. Both burials also exhibited peculiar disarticulations and missing body parts.

Burial offerings included ceramics, abalone shell, turquoise jewelry and an animal mandible (Fig. 149). Two North Creek Corrugated jars, Vessels 1 and 2, were set in the northern end of the burial pit behind the pelvis and lower back (Fig. 150). Vessel 1 contained some sandy ash in the bottom but was otherwise filled with a mixture of Stratum 1 and Stratum 2. Vessel 2 contained only Stratum 2 fill. Vessel 3, a Kanab Black-on-red jar containing Stratum 2 fill, was placed on top of the left elbow while Vessel 4, a Hildale Black-on-gray bowl, was inverted over the red jar. All of the vessels had been crushed by settling fill, but all were completely reconstructable.

A poorly preserved animal mandible was placed near Vessel 1. Due to its fragmentary condition it was only tentatively identified as a bobcat (Felis rufus) mandible (Olsen, 1973:55). When first exposed, the molar was intact in the mandible and portions of the premolars were also recovered.

Two abalone shell pendants and 67 turquoise beads were placed in the abdominal region near the vicinity of the left hand fragments (Fig. 149). The pendants lay immediately on top of each other and were surrounded by most of the turquoise beads. The remaining beads were scattered throughout the interior of the lower rib cage in an apparently fortuitous distribution. None of the material was found above the rib cage or near the neck. This would seem to indicate that the ornaments were placed on the abdominal area at interment.

Following the placement of the deceased and the associated grave goods, the pit was refilled with Stratum 1 and Stratum 2 so that the distinct red and gray clays of the two strata were mixed. The pit fill also contained a few artifacts. At the time the pit was dug, there did not appear to have been an accumulation of cultural debris in the burial area. Stratum 2, however, did contain artifacts with some ash. It would thus appear that Stratum 3 was deposited after the burial pit had been filled.

Because of the extremely fragile nature of the skeletal remains, osteological analyses were severely limited. None of the bones were sufficiently intact, for example, to warrant an attempt at detailed measurements. Measurements of the extant remains of the left femur (ca. 36.6 cm.) and the left tibia (ca. 34.5 cm.) were taken in an attempt to calculate approximate stature. Using a relationship derived empirically from a sample of modern Mexicans (Genoves, 1967), these measurements indicate a stature of at least $146.6 \pm 3.4$ cm. (4' 10") based on the femur length and $158.9 \pm 2.8$ cm. (5' 3") based on the tibia length. Genoves states that the estimate based on tibia length is generally more accurate. He also remarks that work by Bennett on Indian groups in New Mexico and Arizona indicated that the stature formula worked well for these North American populations (1967:74). This would seem to justify an estimate of the stature of this individual as having been at least 5' 3".

No evidence of disease was found on the skeletal remains. Once again, the preservation of bone was so poor that only various advanced pathologies would have been evident. The few surviving articulations such as the left phalanges and a few of the thoracic vertebrae were examined for arthritic lipping, but none was found.

The individual was determined to be a male on the basis of the narrow sciatic notch and large mastoid processes. The age of the man could not be established exactly, but the epiphyses of the surviving phalanges were all fused, indicating an age of at least 21 years. The extremely heavy wear noted on the five teeth would imply much greater age, however. These teeth included one upper molar, one lower molar, and three premolars. Except for the upper molar, all of the teeth were worn sufficiently to completely expose the primary dentine, leaving only a ring of enamel. One of the premolars exhibited such extensive attrition that the primary dentine and enamel was worn to within 1 mm. of the root.

Burial 2. This human burial was found in the eastern part of the site. This part of the site was so heavily disturbed by vandalism that the surface of origin of the burial pit could not be established. Since several human bone fragments were found in the fill above the burial, it was obvious that the burial itself had been disturbed. Bone fragments found in the fill included a partial cranium, an eroded lumbar vertebra, a long bone fragment apparently from a femur, one metacarpal, four phalanges, and numerous unidentifiable splinters.

Because of the disturbed fill above the burial and the removal of the northern end of the pit by the backhoe excavation, the exact dimensions of the burial pit could not be determined. The remnants of the pit suggest it was at least 60 cm. long and 40 cm. wide with a north to south alignment. The prehistoric excavation of the pit extended through an undetermined depth of cultural fill and then through about 20 cm. of undisturbed Stratum 1 clay. It was from the lowest levels that the dimensions could be inferred.

Very little skeletal material remained in situ. Only one long bone, three rib fragments, and three other unidentifiable fragments were noted. The long bone may be a humerus, but like the remainder of the bone, it was so fragile and so badly deteriorated that no confident identification could be made. The southern end of the bone appeared to be the proximal articulation of the humerus but the distal articulation was missing. The presence of 57 tiny hematite beads at the approximate location of the missing distal articulation seems to verify that this bone was a humerus, since similar beads were found in the right wrist area of the burial at 42Ws395 where they were interpreted as a bracelet.

If the remaining bones are really in situ, then the original orientation of the burial placed the head to the south. The size of the burial pit also indicated that the body was in a flexed position, although the exact orientation could not be determined.

The burial was heavily disturbed and thoroughly looted by vandals before being identified by the excavation. This conclusion was based on the presence of the errant human bone fragments, the disturbed fill above the burial, and the lack of significant grave goods. The stratigraphy above the burial was so disturbed that the burial pit walls and their surface of origin were not discernable. In addition, a few large human bone fragments were found in the disturbed fill. Since no evidence of other burials were found in the area, it was assumed that the fragments were from Burial 2. The lack of burial goods also argued that the grave had been vandalized. The other two burials excavated in the Quail Creek project were undisturbed and each contained at least four ceramic vessels, turquoise, and other offerings. Burial 2 contained only the tiny hematite beads which could have been easily overlooked by vandals. Because of the vandal disturbance which obliterated all straigraphic correlations and because the diagnostic artifacts were apparently removed, Burial 2 could not be dated.

## Discussion

This site is best defined as having been a complex Western Anasazi habitation and storage site which had suffered heavy damage at the hands of vandals. It was apparently occupied in two distinct periods with the first coming in late Pueblo I and early Pueblo II. A total of 20 cultural features were identified during the excavation. The site proved to have been the largest in the project area and is perhaps best explained by what appeared to be its ideal location in the center of the valley on a bluff above Quail Creek.

The earlier occupation is supported by a C-14 date of A.D. 880 derived from charcoal recovered in the slab vault that lay beneath Floor 1 of the pithouse. The vault itself was similar to one found at 42Ws388 and both thus suggest that the pithouse may first have been built during Pueblo I. Cists 1, 2, and 3 also show construction elements characteristic of Pueblo I forms but the similarities are only suggestive. Unfortunately, there was only limited supporting evidence for an early occupation from the ceramics, although a few sherds were recovered.

## TABLE 30

## COLLECTION SUMMARY, 42WS392

| | |
|---|---|
| **Surface.** | |
| North Creek Gray | 13 |
| North Creek Corr. | 69 |
| North Creek B/G | 1 |
| Hildale B/G | 1 |
| Glendale B/G | 1 |
| u/i Virgin Ser. B/G | 6 |
| Hurricane B/G | 1 |
| Pipe Spring B/G | 4 |
| u/i Virgin Ser. B/G-Corr. | 1 |
| Boulder Gray | 1 |
| Middleton Red | 2 |
| Middleton B/R | 1 |
| C - Elko Corner-notched | 1 |
| **Trench 1 Stratum 3. Units A,C,D,E,G,I.** | |
| North Creek Gray | 79 |
| North Creek Corr. | 162 |
| St.George B/G | 1 |
| North Creek B/G | 8 |
| Glendale B/G | 2 |
| u/i Virgin Ser. B/G | 15 |
| Orderville B/G | 1 |
| Hurricane B/G | 1 |
| Pipe Spring B/G | 1 |
| u/i Virgin Ser. B/G-Corr. | 4 |
| Boulder Gray | 7 |
| Moapa Corr. | 5 |
| Trumbull B/G | 1 |
| u/i Moapa Ser. B/G-Corr. | 1 |
| Middleton Red | 3 |
| Middleton B/R | 1 |
| Kana-a B/W | 1 |
| Sosi B/W | 1 |
| u/i Tusayan White | 5 |
| S - mano | 1 |
| Q - edge pounder | 1 |
| C - utilized flakes | 2 |
| C - Parowan Basal-notched | 1 |
| C - Cottonwood Triangular | 1 |
| C - point frags. | 3 |
| C - point preforms | 3 |
| C4- point preform | 1 |
| C4- core | 1 |
| C - biface flakes | 12 |
| C - core flakes (8 cortex) | 29 |
| C - core shatter flakes (3 cortex) | 14 |
| C - u/i flakes (6 cortex) | 58 |
| LL- core flake (cortex) | 1 |
| LL- core shatter flake (cortex) | 1 |
| LL- u/i flakes (3 cortex) | 4 |
| Q - core flakes (1 cortex) | 2 |
| C4- core flake (cortes) | 1 |
| SS- core flake (2 cortex) | 2 |
| SS- u/i flake | 1 |
| **Trench 6 Fill. Units A,B,C,D,E,F,G,H, K, L.** | |
| North Creek Gray | 54 |
| North Creek Corr. | 106 |
| North Creek B/G | 1 |
| Hildale B/G | 3 |
| u/i Virgin Ser. B/G | 7 |
| Moapa Corr. | 1 |
| S - mano frags. | 2 |
| LL- edge pounder | 1 |
| C - scrapers | 2 |
| C - Rose Spring | 1 |
| C2- u/i point | 1 |
| C - point preforms | 2 |
| C - core | 1 |
| LL- core | 1 |
| C - biface flakes | 5 |
| C - core flakes (5 cortex) | 15 |
| C - core shatter flakes | 5 |
| C - u/i flakes (2 cortex) | 20 |
| LL- core flakes (4 cortex) | 7 |
| LL- core shatter flake (cortex) | 1 |
| LL- u/i flakes (4 cortex) | 5 |
| Q - core flakes (2 cortex) | 2 |
| Q - u/i flakes | 3 |
| SS- core flake (cortex) | 1 |
| SS- u/i flake | 1 |
| C4- u/i flake | 1 |
| C6- core flake (cortex) | 1 |
| B - core shatter flake | 1 |
| B - u/i flake | 1 |
| **Trench 6 Stratum 3. Units M,P,Q,S.** | |
| North Creek Gray | 115 |
| North Creek Corr. | 137 |
| Washington B/G | 1 |
| St. George B/G | 4 |
| North Creek B/G | 6 |
| Hildale B/G | 4 |
| Glendale B/G | 1 |
| u/i Virgin Ser. B/G | 14 |
| u/i Virgin Ser. B/G-Corr. | 2 |
| Middleton Red | 1 |
| Middleton B/R | 1 |
| S - basin metate frag. | 1 |
| Q - polishing stone | 1 |
| C - Parowan Basal-notched | 1 |
| C - blank | 1 |
| C - preform | 1 |
| C - biface flakes | 6 |
| C - core flakes (1 cortex) | 14 |
| C - core shatter flakes (1 cortex) | 10 |
| C - u/i flakes (3 cortex) | 5 |
| LL- core flakes (4 cortex) | 5 |
| LL- core shatter flakes (2 cortex) | 2 |
| LL- u/i flake (cortex) | 1 |
| SS- u/i flake | 1 |
| Q - core flake (cortex) | 1 |
| C4- biface flake | 1 |
| C4- core flakes(2 cortex) | 2 |
| C4- u/i flake (cortex) | 1 |
| C6- core shatter flake (cortex) | 1 |
| **Trench 7 fill.** | |
| North Creek Gray | 7 |
| North Creek Corr. | 11 |
| North Creek B/G | 1 |
| Hildale B/G | 3 |
| Glendale B/G | 1 |

## TABLE 30 (continued)

Trench 8 Stratum 3 0-15 cm.

| | |
|---|---|
| North Creek Gray | 167 |
| North Creek Corr. | 393 |
| St. George B/G | 1 |
| North Creek B/G | 7 |
| Hildale B/G | 10 |
| u/i Virgin Ser. B/G | 31 |
| Pipe Spring B/G | 2 |
| u/i Virgin Ser. B/G-Corr. | 6 |
| Boulder Gray | 5 |
| Moapa Corr. | 1 |
| Fern Glen B/G | 3 |
| Shinarump Gray | 1 |
| Shinarump Corr. | 1 |
| Wahweap B/G | 2 |
| Sosi B/W | 2 |
| Dogoszhi B/W | 1 |
| Flagstaff B/W | 1 |
| u/i Tusayan White | 2 |
| Middleton Red | 3 |
| Middleton B/R | 1 |
| u/i San Juan Poly. | 1 |
| Tusayan B/R | 1 |
| Snake Valley B/G | 1 |
| unidentified | 3 |
| S - mano frags. | 4 |
| D - mano frag. | 1 |
| S - grinding slab frags | 3 |
| S - ground stone frags. | 2 |
| Q - edge grinder | 1 |
| LL- edge pounders | 2 |
| Q - edge pounder | 1 |
| Q - hammerstone | 1 |
| white ochre frag. | 1 |
| C - Parowan Basal-notched | 2 |
| C - Eastgate Expanding Stem | 1 |
| C - u/i point (inc.) | 1 |
| C - point frags. | 2 |
| C - knife frag. | 1 |
| LL- utilized flake | 1 |
| C - blanks | 2 |
| C - preforms | 3 |
| C2- preform | 1 |
| C - point preforms | 6 |
| LL- cores | 3 |
| C - biface flakes | 24 |
| C - core flakes (2 cortex) | 45 |
| C - core shatter flakes (9 cortex) | 27 |
| C - u/i flakes (6 cortex) | 74 |
| LL- core flakes (7 cortex) | 13 |
| LL- core shatter flakes (2 cortex) | 2 |
| LL- u/i flakes (4 cortex) | 7 |
| SS- u/i flakes | 2 |
| Q - core flakes (1 cortex) | 3 |
| Q - u/i flake (cortex) | 1 |
| C4- biface flakes | 2 |
| C4- core flake | 1 |
| C4- u/i flake | 1 |
| O - biface flake | 1 |

Trench 8 Strata 2 and 3.
Units B,C,D,E,F,H,I,J.

| | |
|---|---|
| North Creek Gray | 50 |
| North Creek Corr. | 91 |
| Washington B/G | 1 |
| Hildale B/G | 6 |
| Glendale B/G | 1 |
| u/i Virgin Ser. B/G | 7 |
| Hurricane B/G | 1 |
| Pipe Spring B/G | 3 |
| Moapa Corr. | 1 |
| u/i Moapa Ser. B/G | 1 |
| Middleton Red | 2 |
| Sosi B/W | 1 |
| Dogoszhi B/W | 1 |
| hematite frag. | 1 |
| S - mano | 1 |
| C - utilized flake | 1 |
| LL- utilized flake | 1 |
| C - u/i point (inc.) | 1 |
| C - point frag. | 1 |
| C - blanks | 2 |
| C - preform | 1 |
| LL- hammerstone | 1 |
| C - biface flakes | 11 |
| C - core flakes (2 cortex) | 24 |
| C - core shatter flakes (3 cortex) | 9 |
| C - u/i flakes (6 cortex) | 27 |
| LL- biface flake | 1 |
| LL- core flakes (2 cortex) | 2 |
| LL- core shatter flake (cortex) | 1 |
| LL- u/i flakes (4 cortex) | 1 |
| SS- core flake (1 cortex) | 3 |
| Q - core flake (cortex) | 1 |
| Q - core shatter flake | 1 |
| C4- core flake | 1 |
| C6- core flake | 1 |

Trench 9 fill.

| | |
|---|---|
| North Creek Gray | 34 |
| North Creek Corr. | 60 |
| North Creek B/G | 2 |
| u/i Virgin Ser. B/G | 2 |
| Middleton Red | 1 |
| Middleton B/R | 1 |
| S - mano | 1 |
| PW- hammerstone | 1 |
| C - Rose Spring | 1 |
| C - blank | 1 |
| C - point preform | 1 |
| LL- core | 1 |
| C - core flakes | 3 |
| C - core shatter flake (cortex) | 1 |
| C - u/i flakes | 3 |
| LL- core flake | 1 |
| C4- core flake (cortex) | 1 |

Trench 10 Stratum 3.
Units A,D.

| | |
|---|---|
| North Creek Gray | 38 |
| North Creek Coor. | 115 |
| North Creek B/G | 1 |
| Hildale B/G | 3 |
| u/i Virgin Ser.B/G | 8 |
| u/i Virgin Ser.B/G-Corr. | 4 |
| Boulder Gray | 1 |
| Moapa Corr. | 1 |
| Middleton B/R | 3 |
| u/i Tusayan White | 1 |
| unidentified | 3 |

TABLE 30 (continued)

| | |
|---|---|
| D - mano | 1 |
| S - grinding slab frag. | 1 |
| S - ground stone frag. | 1 |
| O - u/i point | 1 |
| C - preform | 1 |
| C - core flakes (1 cortex) | 6 |
| C - core shatter flakes (1 cortex) | 3 |
| C - u/i flakes (1 cortex) | 5 |
| LL- core flakes (2 cortex) | 2 |
| LL- u/i flakes(2 cortex) | 5 |
| Q - core flake (cortex) | 1 |
| C4- core flake (cortex) | 1 |
| C4- u/i flake | 1 |
| large mammal long bone frags. | 5 |
| u/i bone frag. 1 | 1 |
| **Trench 10 fill (backhoe segment).** | |
| North Creek Gray (50 recon panel) | 97 |
| North Creek Corr. | 115 |
| Washington B/G | 2 |
| St.George B/G | 1 |
| North Creek B/G | 2 |
| Hildale B/G | 1 |
| u/i Virgin Ser. B/G | 7 |
| Pipe Spring B/G | 1 |
| u/i Virgin Ser. B/G-Corr. | 2 |
| Moapa B/G | 1 |
| Middleton B/R | 1 |
| S - basin metate frags. | 2 |
| C - utilized flake | 1 |
| LL- core | 1 |
| L - core | 1 |
| C - core shatter flake | 1 |
| C - u/i flake (cortex) | 1 |
| LL- core flake | 1 |
| LL- core shatter flake (cortex) | 1 |
| LL- u/i flakes (2 cortex) | 3 |
| **Trench 11 Stratum 3.** | |
| North Creek Gray | 42 |
| North Creek Corr. | 61 |
| Mesquite B/G | 1 |
| North Creek B/G | 1 |
| Hildale B/G | 3 |
| Glendale B/G | 1 |
| u/i Virgin Ser. B/G | 4 |
| u/i Virgin Ser. B/G-Corr. | 4 |
| Boulder Gray | 2 |
| Moapa Corr. | 3 |
| LL- core | 1 |
| C - core flakes | 6 |
| C - core shatter flake | 1 |
| LL- core flake (cortex) | 1 |
| C4- core flake | 1 |
| **Trench 12 fill.** | |
| North Creek Gray | 13 |
| North Creek Corr. | 16 |
| Hildale B/G | 1 |
| u/i Virgin Ser. B/G | 3 |
| Hurricane B/G | 1 |
| Moapa Corr. | 1 |
| C - utilized flake | 1 |
| C - core shatter flake | 1 |
| **Room 1 fill.** | |
| North Creek Gray | 24 |
| North Creek Corr. | 3 |
| St.George B/G | 1 |
| u/i Virgin Ser. B/G | 2 |
| Q - edge pounders | 2 |
| C6- Rose Spring | 1 |
| C - u/i point | 1 |
| C - utilized flake | 1 |
| C - knife | 1 |
| C - biface flake | 1 |
| C - core flakes | 3 |
| C - core shatter flake | 1 |
| C - u/i flakes | 6 |
| **Room 2 fill.** | |
| North Creek Gray | 24 |
| North Creek Corr. | 22 |
| St.George B/G | 1 |
| u/i Virgin Ser. B/G | 7 |
| Middleton Red | 1 |
| Middleton B/R | 1 |
| C - blank | 1 |
| C - core flakes (1 cortex) | 6 |
| C - core shatter flakes (5 cortex) | 7 |
| C - u/i flakes (1 cortex) | 8 |
| LL- core flakes (2 cortex) | 2 |
| LL- u/i flakes (1 cortex) | 2 |
| C4- u/i flake | 1 |
| **Room 3 fill.** | |
| North Creek Gray | 23 |
| North Creek Corr. | 33 |
| North Creek B/G | 1 |
| Nankoweap Poly. | 1 |
| S - ground stone frag. | 1 |
| SS- hammerstone | 1 |
| LL- cores | 2 |
| C - biface flakes | 4 |
| C - core flakes (2 cortex) | 3 |
| C - core shatter flakes (2 cortex) | 4 |
| C - u/i flakes | 3 |
| LL- core flake (cortex) | 1 |
| LL- core shatter flakes (2 cortex) | 2 |
| LL- u/i flakes (2 cortex) | 3 |
| Q - core flake (cortex) | 1 |
| Q - u/i flake (cortex) | 1 |
| L - core flake (cortex) | 1 |
| **Room 4-a floor contact.** | |
| North Creek Gray | 1 |
| North Creek Corr. | 11 |
| North Creek B/G | 1 |
| u/i Virgin Ser. B/G | 2 |
| Moapa Corr. | 1 |
| **Room 4-a fill.** | |
| North Creei Gray | 3 |
| North Creek Corr. | 52 |
| Hildale B/G | 3 |
| u/i Virgin Ser. B/G | 2 |
| S - mano frag. | 1 |
| S - ground stone frag. | 1 |
| LL- scraper | 1 |

## TABLE 30 (continued)

| | |
|---|---|
| LL- utilized flake | 1 |
| C - drill frag. | 1 |
| C - point preform | 1 |
| C - blank | 1 |
| C - preform frag. | 1 |
| LL- core | 1 |
| C - biface flakes | 2 |
| C - core flakes | 4 |
| C - core shatter flakes (1 cortex) | 7 |
| C - u/i flakes | 7 |
| LL- core flakes (4 cortex) | 4 |
| LL- core shatter flakes (2 cortex) | 2 |
| LL- u/i flakes (1 cortex) | 3 |
| Room 4-b fill. | |
| North Creek Gray | 4 |
| North Creek Corr. | 3 |
| Hurricane B/G | 1 |
| Pipe Spring B/G | 1 |
| L - core | 1 |
| C - core flakes | 3 |
| C - u/i flake | 1 |
| LL- u/i flake | 1 |
| Cist 1 fill. | |
| North Creek Gray | 3 |
| North Creek Corr. | 1 |
| S - mano | 1 |
| Cist 2 fill. | |
| North Creek Gray | 5 |
| North Creek Corr. | 4 |
| Q - polishing stone | 1 |
| powdered azurite | 1 |
| L - core | 1 |
| C - biface flakes | 3 |
| C - core flakes | 5 |
| C - core shatter flakes (1 cortex) | 5 |
| C - u/i flakes (1 cortex) | 10 |
| LL- core flakes (2 cortex) | 3 |
| LL- core shatter flakes (1 cortex) | 2 |
| Q - u/i flake | 1 |
| C4- biface flake | 1 |
| C7- core flake | 1 |
| L - core flake (cortex) | 1 |
| Cist 3 fill. | |
| North Creek Gray | 26 |
| North Creek Corr. | 62 |
| Hildale B/G | 2 |
| u/i Virgin Ser. B/G | 2 |
| u/i Virgin Ser. B/G-Corr. | 1 |
| Slide Mtn. B/G | 1 |
| Middleton B/R | 4 |
| Structure 1 fill. | |
| North Creek Gray | 3 |
| North Creek B/G | 14 |
| Pipe Spring B/G | 3 |
| S - grinding slab frag. | 1 |
| C - knife | 1 |
| Structure 2 Fill 2. | |
| North Creek Gray | 5 |
| North Creek Corr. | 18 |
| Hildale B/G | 2 |
| u/i Virgin Ser. B/G | 3 |
| Boulder Gray | 1 |
| C - core flakes (1 cortex) | 2 |
| C - u/i flake | 1 |
| SS- u/i flake (cortex) | 1 |
| Q - core shatter flake | 1 |
| Pithouse Cultural Fill. | |
| North Creek Gray | 1 |
| North Creek Corr. | 3 |
| u/i Virgin Ser. B/G-Corr. | 1 |
| C2- Rose Spring | 1 |
| C - utilized flake | 1 |
| C - biface flake | 1 |
| C - core shatter flake | 1 |
| C - u/i flake | 1 |
| *Sylvilagus* pelvis | 2 |
| large mammal u/i frag. (burned) | 1 |
| small mammal long bone frags. | 3 |
| small mammal u/i frags. | 3 |
| Pithouse Slab-lined vault. | |
| North Creek Gray | 7 |
| Pithouse Fill 1. | |
| North Creek Gray | 14 |
| North Creek Corr. | 15 |
| St.George B/G | 1 |
| u/i Virgin Ser. B/G-Corr. | 1 |
| Middleton Red | 1 |
| Middleton B/R | 1 |
| C2- knife frag. | 1 |
| C - point preform | 1 |
| C - core flakes | 2 |
| C - u/i flakes | 3 |
| LL- u/i flakes (1 cortex) | 3 |
| Q - core flake | 1 |
| L - core flake | 1 |
| *Canis* right incisor | 1 |
| large mammal long bone frags. | 3 |
| Pithouse Floor 3 contact. | |
| North Creek Gray | 15 |
| Hildale B/G | 1 |
| Pithouse Hearth 1 fill. | |
| North Creek Gray | 24 |
| C - point preform | 1 |
| LL- core flakes (1 cortex) | 3 |
| Q - core flakes (1 cortex) | 2 |
| Pithouse depression near hearth | |
| North Creek Gray | 23 |
| North Creek Corr. | 12 |
| Boulder Gray | 1 |
| Middleton B/R | 3 |
| C - point preform | 1 |
| C2- point preform | 1 |

## TABLE 30 (continued)

| | |
|---|---|
| C4- blank | 1 |
| C - biface flakes | 18 |
| C - core flakes (3 cortex) | 28 |
| C - core shatter flakes (3 cortex) | 13 |
| C - u/i flakes (4 cortex) | 43 |
| L - core flakes (3 cortex) | 5 |
| LL- core shatter flakes (1 cortex) | 3 |
| L - u/i flakes (2 cortex) | 4 |
| SS- core flake (cortex) | 1 |
| Q - core flakes (3 cortex) | 5 |
| Q - core shatter flakes (2 cortex) | 2 |
| Q - u/i flakes (1 cortex) | 2 |
| C4- core flakes (2 cortex) | 3 |
| C4- u/i flakes | 2 |
| Pithouse Fill 3 and 4. | |
| North Creek Gray | 267 |
| North Creek Corr. | 472 |
| Washington B/G | 1 |
| St. George B/G | 3 |
| North Creek B/G | 11 |
| Hildale B/G | 12 |
| u/i Virgin Ser. B/G | 32 |
| Orderville B/G | 2 |
| Pipe Spring B/G | 1 |
| Parashant B/G | 1 |
| u/i Virgin Ser. B/G | 9 |
| Boulder Gray | 9 |
| Moapa Corr. | 7 |
| Slide Mtn. B/G | 1 |
| u/i Moapa Ser. B/G | 1 |
| Sosi B/W | 4 |
| u/i Tusayan White | 10 |
| Middleton Red | 10 |
| Middleton B/R | 3 |
| Tusayan B/R | 1 |
| u/i Tsegi Orange | 3 |
| B - manos (1 frag.) | 2 |
| S - ground stone frags. | 3 |
| Q - edge grinder | 1 |
| LL- edge grinder | 1 |
| Q - edge pounder | 1 |
| C2- Parowan Basal-notched | 1 |
| C2- u/i point | 1 |
| C - knife frag. | 1 |
| C4- knife | 1 |
| C - drills | 2 |
| C - blanks (1 frag.) | 7 |
| LL- blank | 1 |
| C2- blank | 1 |
| C - preforms (2 frags) | 5 |
| C - point preforms | 7 |
| O - point preform | 1 |
| C - utilized flakes | 4 |
| LL- utilized flake | 1 |
| O - utilized flake | 1 |
| Q1- utilized flake | 1 |
| Q - hammerstones | 2 |
| C - core | 1 |
| LL- cores | 14 |
| C - biface flakes | 18 |
| C - core flakes (7 cortex) | 49 |
| C - core shatter flakes (12 cortex) | 32 |
| C - u/i flakes (10 cortex) | 75 |
| LL- core flakes (14 cortex) | 20 |
| LL- core shatter flakes (6 cortex) | 12 |
| LL- u/i flakes (13 cortex) | 26 |
| SS- core flake (cortex) | 1 |
| SS- core shatter flake (cortex) | 1 |
| SS- u/i flake (cortex) | 1 |
| Q - core flakes (2 cortex) | 7 |
| Q - core shatter flakes (1 cortex) | 4 |
| C4- core flakes (3 cortex) | 3 |
| C4- u/i flake | 1 |
| C7- core flake | 1 |
| CQ- u/i flake (cortex) | 1 |
| O - biface flake | 1 |
| O - u/i flake | 1 |
| L - core flakes (2 cortex) | 2 |
| L - u/i flake (1 cortex) | 2 |
| *Sylvilagus* long bone | 1 |
| *Lepus californicus* long bone frag. | 1 |
| large mammal metatarsals (1 burned) | 2 |
| large mammal long bone frags. (1 burned) | 7 |
| large mammal u/i frag. | 1 |
| u/i frag. | 1 |
| Hearth 2 fill. | |
| North Creek Gray | 1 |
| North Creek Corr. | 9 |
| Mesquite B/G | 1 |
| u/i Virgin Ser. B/G | 1 |
| C2- blank frag. | 1 |
| C - biface flakes | 4 |
| C - core flakes | 4 |
| C - u/i flakes | 7 |
| LL- u/i flakes | 2 |
| SS- core flake (cortex) | 1 |
| small mammal long bone frag. | 1 |
| u/i frag. | 1 |
| Floor 4 contact. | |
| North Creek Gray | 2 |
| North Creek Corr. | 7 |
| Hearth 2 Floor 4 Fill 4. | |
| North Creek Gray | 2 |
| North Creek Corr. | 7 |
| Artiodactyl right metacarpal | 1 |
| large mammal long bone frags. | 2 |
| large mammal u/i frags. | 2 |
| u/i frag. | 1 |
| Hearth 3 fill. | |
| North Creek Gray | 6 |
| North Creek Corr. | 1 |
| Floor 5 contact. | |
| North Creek Corr. | 1 |
| Hildale B/G | 1 |
| Floor 5, Fill 4 and 5. | |
| North Creek Gray | 18 |
| North Creek Corr. | 30 |
| North Creek B/G | 1 |
| u/i Virgin Ser. B/G | 1 |
| Middleton B/R | 1 |

| | |
|---|---|
| **Floor 3 Fill 2, 3, and 4.** | |
| North Creek Gray | 13 |
| North Creek Corr. | 36 |
| Washington B/G | 1 |
| North Creek B/G | 2 |
| Hildale B/G | 2 |
| u/i Virgin Ser. B/G | 4 |
| Boulder Gray | 4 |
| Moapa Corr. | 1 |
| Shinarump Gray | 1 |
| Middleton B/R | 2 |
| C2- Rose Spring | 1 |
| C - core flakes (1 cortex) | 6 |
| C - core shatter flakes | 5 |
| C - u/i flakes (2 cortex) | 8 |
| LL- core flakes (1 cortex) | 3 |
| Q - core flake (cortex) | 1 |
| L - core flake (cortex) | 1 |
| O - u/i flake (cortex) | 1 |
| **Floor Area 3** | |
| **Ceramic** | |
| North Creek Gray | 111 |
| North Creek Corr. | 216 |
| Washington B/G | 1 |
| St.George B/G | 3 |
| North Creek B/G | 5 |
| Hildale B/G | 12 |
| Glendale B/G | 4 |
| u/i Virgin Ser. B/G | 28 |
| Hurricane B/G | 1 |
| Pipe Spring B/G | 1 |
| u/i Virgin Ser. B/G-Corr. | 4 |
| Boulder Gray | 1 |
| Parashant B/G | 1 |
| Middleton B/R | 3 |
| Dogoszhi B/W | 1 |
| **Lithics** | |
| Red ochre frag. | 1 |
| S - mano frags. | 2 |
| B - mano frag. | 1 |
| S - basin metate frag. | 1 |
| S - grinding stone frag. | 1 |
| S - ground stone frag. | 1 |
| Q - edge pounder | 1 |
| Q - edge grinder | 1 |
| C - edge grinder | 1 |
| Q - hammerstone | 1 |
| LL- utilized flake | 1 |
| Q - cores | 2 |
| LL- cores | 5 |
| SS- core | 1 |
| C - preform | 1 |
| C - blank | 2 |
| C7- point preform | 1 |
| C - biface flakes | 13 |
| C - core flakes (2 cortex) | 20 |
| C - core shatter flakes (4 cortex) | 10 |
| C - u/i flakes | 16 |
| LL- core shatter flake (cortex) | 1 |
| LL- u/i flakes (4 cortex) | 7 |
| Q - core shatter flake (cortex) | 2 |
| Q - u/i flakes | 1 |
| C4- biface flakes | 2 |
| C4- core flake | 1 |
| C4- core shatter flake (cortex) | 1 |
| C4- u/i flake | 1 |
| O - u/i flake (cortex) | 1 |
| **Hearth 2.** | |
| North Creek Corr. | 1 |
| St.George B/G | 1 |
| Glendale B/G | 1 |
| **Refuse Pit 2 use fill, Strata 2 and 3.** | |
| North Creek Gray | 22 |
| North Creek Corr. | 120 |
| St. George B/G | 2 |
| North Creek B/G | 1 |
| Hildale B/G | 10 |
| Glendale B/G | 2 |
| u/i Virgin Ser. B/G | 1 |
| u/i Virgin Ser. B/G-Corr. | 1 |
| Shinarump Gray | 1 |
| Middleton B/R | 1 |
| unidentified | 1 |
| C - Point preform | 1 |
| LL- core | 1 |
| C - biface flakes | 2 |
| C - core flakes | 3 |
| C - core shatter flakes (2 cortex) | 4 |
| C - u/i flakes | 7 |
| LL- core flakes (2 cortex) | 3 |
| C4- core flakes (1 cortex) | 2 |
| **Refuse Pit 3 Stratum 3.** | |
| North Creek Gray | 4 |
| North Creek Corr. | 2 |
| Middleton B/R | 1 |
| LL- edge pounder | 1 |
| C - u/i flake | 1 |
| LL- core flake | 1 |
| LL- u/i flake (cortex) | 1 |
| C4- u/i flake | 1 |
| **Burial Pit Fill** | |
| North Creek Gray | 1 |
| North Creek Corr. | 7 |
| u/i Virgin Ser. B/G | 1 |
| C - biface blank | 1 |
| Q - edge pounder | 1 |
| C - biface flakes | 2 |
| C - core flakes (1 cortex) | 2 |
| C - u/i flakes | 5 |
| LL- core flake | 1 |
| LL- core shatter flake | 1 |
| **Burial Offerings.** | |
| North Creek Corr. jars | 2 |
| Kanab B/R jar | 1 |
| Hildale b/g bowl | 1 |
| Abalone shell pendeants | 2 |
| Turquoise beads | 67 |
| *Felus rufus* (bobcat) mandible | 1 |

The main period of occupation came during the middle and late Pueblo II period. Ceramic support for this assessment is strong. Particularly notable was the numerical prominence of North Creek Corrugated though most of the assemblage. Painted designs ran heavily to St. George Black-on-gray, North Creek Black-on-gray, and some Glendale Black-on-gray. Floor 3 of the pithouse appeared to represent a middle Pueblo II presence while Rooms 2 and 3 were built on the pithouse fill some decades later. Of the remaining 13 structural features, seven originated in Stratum 3 and four were found to originate in the upper portions of Stratum 2. Most of these were found in the southwestern part of the site where both of these strata were fairly thin. The stratigraphic position of these structures did, however, suggest that most of them were of middle to late Pueblo II origin.

Carbon dates of A.D. 1110 from Structure 2 and A.D. 1220 from the hearth found in Isolated Floor 2 also support the idea of the late occupation. If, as some evidence suggested, Isolated Floor 2 was associated with Rooms 1, 2, and 3, these features may well represent the terminal occupation of the site. The date from Structure 2, meanwhile, should doubtless be seen as indicative of activity earlier in late Pueblo II. Similarly, Burial 1 clearly represents a middle to late Pueblo II occupation.

The portions of the site excavated indicate that storage units outnumber habitation structures 10 to 1. This is derived from the fact that the pithouse and Isolated Floor 2 with its firepit represent the only habitation elements to be identified. Its distinct floor levels indicate that the pithouse was occupied on at least three different occasions and the depression above the fill covering Floor 3 was used as a limited activity area before Rooms 2 and 3 were built over it.

The storage features represented both surface and semisubterranean structures which were part of what may have been several distinct settlement patterns. These could not be ascertained because time permitted only random sampling in the backhoe trenches. It can be suggested, however, that the habitation elements were centered on the highest parts of the site along the north and northeastern edges. Storage structures and activity areas were largely spread over the rest of the site.

Intrusive ceramics accounted for only 4 percent of the total collected but this was second only to 42Ws390 in abundance. These sherds were divided about equally between the Moapa, Shinarump, Tusayan, and San Juan Red series. A single sherd of the Fremont Snake Valley Gray was the only sherd of that type found in the entire project area. Although not particularly abundant, the intrusives do provide evidence of some interaction with other societies well removed from the St. George Basin and are perhaps indicative of some kinds of trade.

Similarly, the frequency of projectile points, dominated by Parowan Basal-notched and Rose Spring types, attest the continued importance of hunting at a level not common in sites within the St. George Basin. Other lithic materials suggest that a full range of core processing and flaked stone tool production activities were significant at the site. Finally, of course, the numerous ground stone tools and tool fragments attest the importance of food processing.

## 42Ws395

### Introduction

Located on an old terrace remnant some 10 m. above the west bank of the Virgin River, this site proved to be of moderate size but of surprising complexity. With an elevation of 2800 ft., the site measured 50 m. in diameter. It was located at the point where a sloping talus below the anticlinal bedrock met the remnant of an old river terrace( Figs. 2,152). The vegetation of the site area was characteristic of the area and included creosote bush, bursage, prickly pear, Mormon tea, mesquite, and range ratany.

Visible surface evidence of cultural activity which identified the site included an assemblage of sherds, flakes, and ground stone fragments along with evident structural stone rubble and three small rock shelters. Further evidence resulted from the fact that a farm access road had been cut across the site many years ago. On the upslope side of the road a significant depth of midden was also visible. Finally, a large stone outcrop that marked the southwestern edge of the site displayed over 200 abstract, anthropomorphic and zoomorphic petroglyphs. The surface collection of ceramics indicated a late Pueblo II occupation although the excavation later produced some rather ill defined evidence of an earlier use of the area as well.

As a methodological convenience, the site was excavated in terms of the upslope portion above the road and the terrace area just below it. At no time were these divisions meant to imply that the area was anything but a single site. The discussion will follow a similar division, with the upslope portion to be treated first.

### Excavations on the Slope

The slope area (Fig. 152) measured 35 m. southeast to northwest while it dropped steeply to the southwest. The entire northern edge of the area was circumscribed by large boulders and the bedrock of the anticline. The upper edge of the area was free of vegetation.

Along the northeastern edge of the area, surface indications were found of the remains of a number of cists. The evidence consisted of articulated upright slabs and boulders. Ultimately, four cists were excavated in the area while another small cist was exposed on the edge of the road cut. Additionally, all three of the rockshelters were excavated with two of them producing good cultural evidence.

A total of 10 trenches, each subdivided into 1 by 2 m. units were used to explore the slope. Cultural material recovered from the trenches outside of cultural features have been tabulated in Table 31.

Units G and H of Trench 1 provided a good exposure of site stratigraphy that would be maintained fairly well over this portion of the site. <u>Stratum 1</u>, the lowest level exposed, was composed of a red to tan sandy soil with a mixture of small cobbles and other stone. Eroding sandstone bedrock appeared at a depth of 40 to 60 cm. The portions of Stratum 1 exposed lower down the slope tended to contain more rock than did the portions of the stratum near the upper edge of the site area.

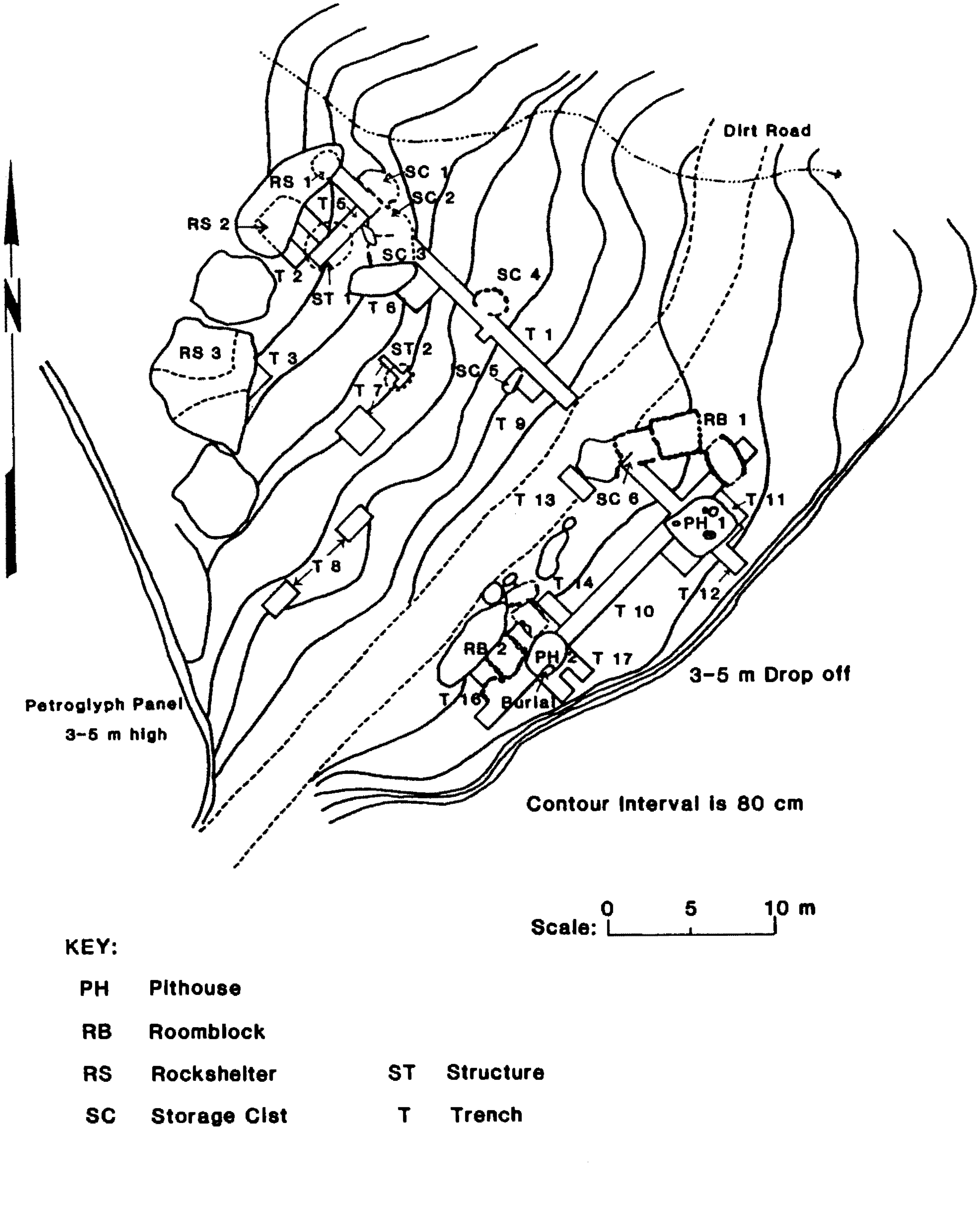



Figure 152. Site plan and excavation map, 42Ws395.

The present surface formed the top of Stratum 2. This proved to be made up of loose, tan to gray sand,sometimes flecked with charcoal. The layer also included eroded sandstone from the exposed bedrock above the site. Stratum 2 was the layer containing the cultural materials recovered from the site.

Rockshelters.

Three rockshelters (Fig. 152) were found under the large boulders along the northwestern edge of the upper terrace. The shelters varied greatly in size and each appeared to have served a different purpose.

Rockshelter 1. This sheltered area (Fig. 153) was located on the northern side of the most northwesterly boulder which also formed Rockshelter 2. Rockshelter 1 was a small 2 by 2 m. overhang formed by a thin, projecting sandstone ledge. The average height of the sheltered area varied from 80 to 125 cm. while it dropped to a height of 35 cm. on the western side where a sandstone protrusion reduced the shelter height. The southern end of the shelter was open but was marked by a stone alignment which swung to the north though leaving an opening on the northeast which may have served as an entrance.

Excavation began with a test pit 1 m.$^2$ near the southeast corner of the shelter and then moved to the interior as part of an effort to define the occupation area and, as it developed, to follow the floor. The shelter fill was composed of a moderately compacted, clay-impregnated sand with occasional charcoal flecks. The layer varied in depth from 20 to 35 cm. The floor of the shelter was a highly compacted, gray, sandy clay that appeared most likely to have been prepared rather than use-compacted. A fragment of a sandstone grinding slab was found on the northwestern area of the floor, one of the few areas with height sufficient to allow for much movement. In this same area, sterile Stratum 1 also appeared through the clay floor.

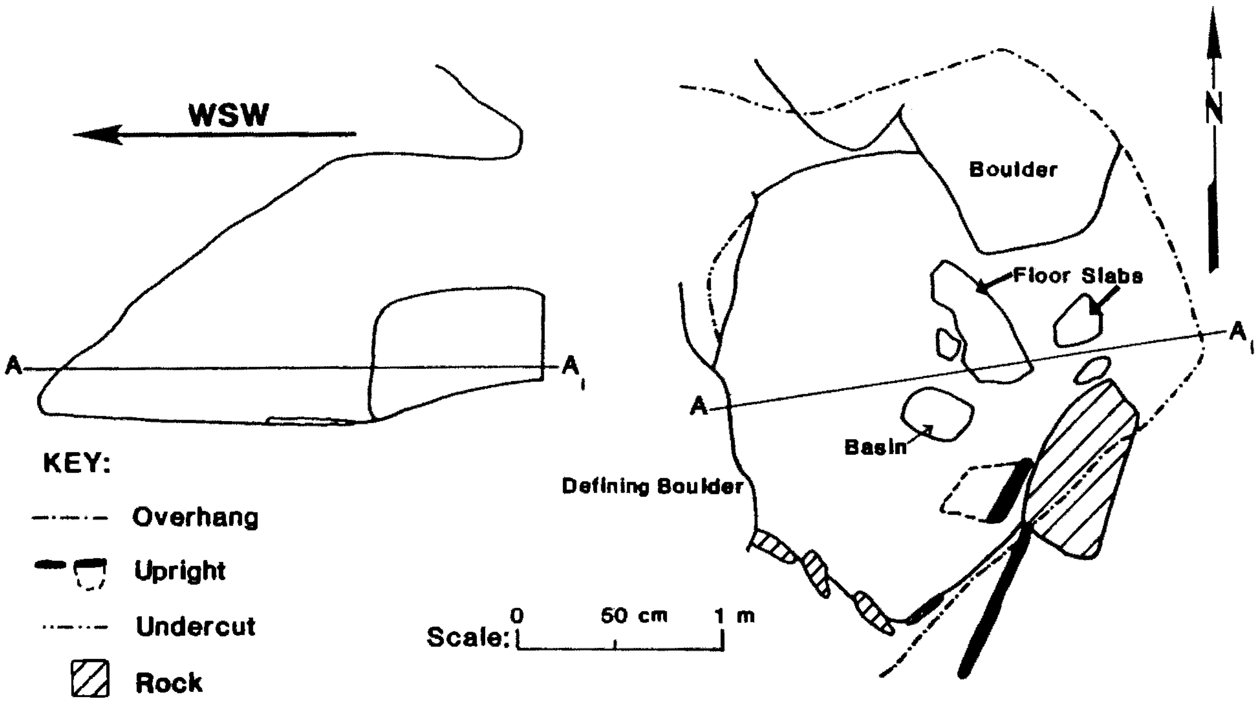



Figure 153. Plan map and cross-section drawing of Rockshelter 1, 42Ws395

A basin-shaped depression 10 cm. deep and measuring 30 by 20 cm. was exposed near the center of the floor (Fig. 153). While it contained a light charcoal deposit, there was no evidence that it had been altered by heat nor was the interior prepared in any manner. Three contiguous sandstone slabs were laid on the floor at the point of the southeastern break in the stone alignment, apparently providing an entryway into the shelter.

From the material objects recovered, it is evident that the shelter served as a limited activity area (Table 31). Some food processing was done in the shelter while, perhaps at other seasons, some lithic production also took place. The dominance of late ceramics indicates use during middle and late Pueblo II.

Rockshelter 2. Located under the southeastern face of the same boulder that contained Rockshelter 1, this shelter was formed by a natural concavity in the boulder (Figs. 154,155). A deposit of sand, stone, and pack rat midden filled the shelter to within 5 to 10 cm. of the roof. From the outside, therefore, the mouth of the shelter appeared to be almost totally obscured by fill. The presence of surface cultural material near the opening and an obvious potential for depth made exploration of the feature essential. As first seen, the mouth of the shelter was no more than 10 to 20 cm. high; although, once excavated, it would be found to have a height as great as 52 cm.

Work was begun by sinking a trench just outside the entrance to a depth of 1.5 m. into Stratum 1. A slight hump in the strata was found just outside the drip line of the shelter. In some areas the hump had been capped by small stones which rose to the roof, thus providing an enclosed area.

Within the shelter itself, two layers of fill were defined (Fig. 155). The lowest, Fill 1, was a 15 to 30 cm. thick layer of tan sand which contained cultural material and evidence of prehistoric use and storage. Fill 2 made up the upper 80 to 100 cm. of the deposit. This proved to have been naturally deposited and it was made up of loose, tan sand intermixed with decomposing sandstone roof spall. The upper portions of the layer contained organic remains such as sticks, twigs, grass, and pack rat droppings. Some cultural material also came from the upper fill which revealed occasional charcoal bits. As the upper Fill 1 was removed, numerous bands of gravel-filled sand interspersed with thin laminae of clay testified to the natural, water-borne deposition of much of the material.

Near the rear of the shelter some larger stone and slabs were found in the fill. These appear to have come from a crevice noted in the rear.

Constraints of time precluded a complete excavation of Rockshelter 2, but an area measuring 2.2 by 2.4 m. was exposed. Within this area, a layer of use-compacted gray clay and sand was identified and designated Stratum 1a. On the southwestern portion of the naturally deposited stratum, five basin-shaped hearths had been dug through the Use Surface (Floor 1). Adjacent to the hearth area (Fig. 155) there was a break in the rock alignment on top of Stratum 1 which appears to have served as a vent.

Hearth 1 (Fig. 155) was found close to the ridge of Stratum 1 that marked the outer edge of the shelter area. The hearth was only 7 cm. deep while it measured 35 by 37 cm. The interior walls of the hearth were reddened with heat and the basin contained a concentration of white ash and some charcoal, both overlain by sand.

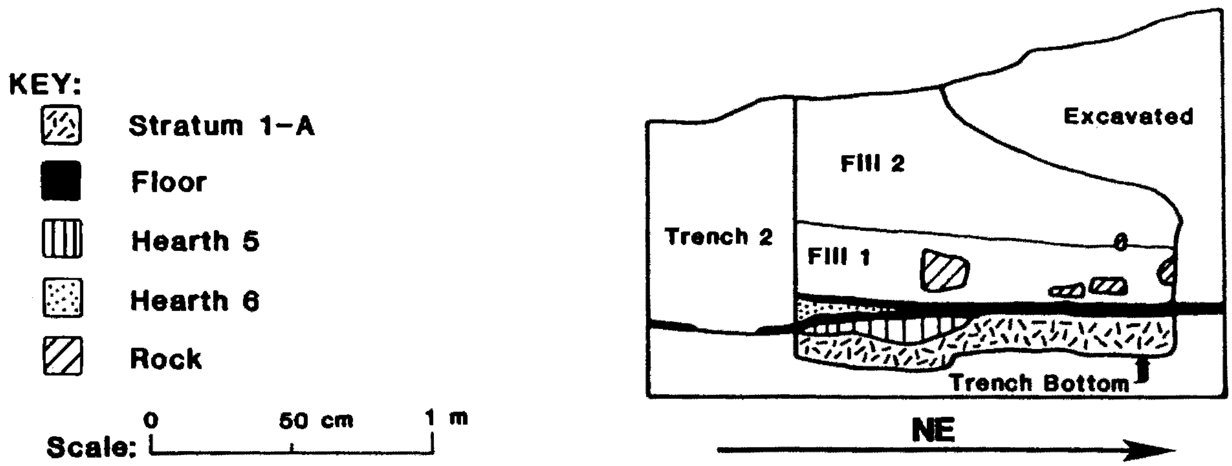



Figure 154. Rockshelter 2 profile, 42Ws395.

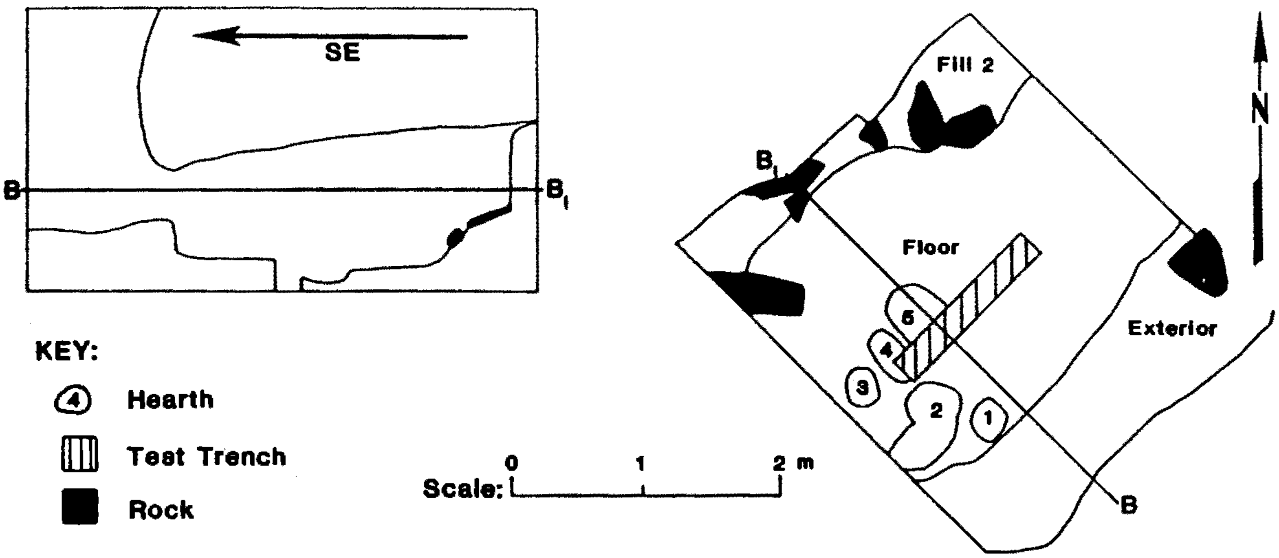



Figure 155. Plan map and cross-section drawing of Rockshelter 2, 42Ws395.

Hearth 2 lay just west of Hearth 1. In this instance the feature was a well-defined circular pit with a somewhat larger depression touching it and extending to the southwest. A portion of the hearth had been cut away by the depression. The remnant hearth was approximately 39 cm. in diameter with a depth of 6 cm. Its walls showed evidence of fire while the fill was gray ash. The intruding basin exhibited smooth sidewalls but its bottom was badly disturbed. This feature measured 48 by 33 cm.

Hearth 3 was the first of three hearths located along a one meter line running from southwest to northeast within the shelter (Fig. 155). This first hearth was circular and basin-shaped with a 28 cm. diameter and a depth of only 2 cm. It contained loose, gray, ashy fill. The sides were smooth and fire-reddened, but there was some disturbance of the bottom.

Hearth 4 was lozenge shaped, measuring 42 by 22 cm., while it was again only 2 cm. deep. The characteristic red that results from fire could be seen throughout the interior although the actual fill was sand which showed no trace of fire.

Hearth 5 was 8 cm. deep while measuring 44 by 35 cm. Its interior walls were smooth, and stained red with fire, but covered with the gray of ash. A limited layer of fill was composed of gray ash flecked with charcoal, with increasing amounts of aeolian sand near the top.

All hearths with the exception of number 4 were sampled for pollen and flotation analyses. All seemed to have served as hearths for varying periods of time. The more shallow features, notably Hearth 4, may, in fact, have had only brief periods of use.

Fill 1 reached a thickness of 35 cm. and appeared to have accumulated during the period of prehistoric use of the shelter. Since the shelter had a height of only 0.69 to 1.07 m. when the Floor was exposed, further deposits of as much as 20 cm. would have made access and movement within the shelter quite difficult. At 10 cm. above Hearths 4 and 5, Hearth 6 was identified in the northwestern profile. Hearth 6 was composed of a 15 cm. thick lens of gray to white ash 40 cm. wide. The lens lay on a layer of 1 to 2 cm. of fire-reddened sand. The hearth appeared to represent one of the final occupational uses of the shelter; although it may have served for storage at a later period.

Three complete trough metates, a grinding slab and a number of manos were recovered from Fill 1 in the northeastern half of the shelter. Two of the metates were inverted and the level from which they were recovered, some 16 to 30 cm. above the floor, would have made their use within the shelter a difficult matter.

A carbon sample was taken from a charcoal lens found just above Hearth 6 in Fill 1. This specimen yielded a date of 780$\pm$50 years: A.D. 1170 (Beta 8055). The level from which the sample was taken seems likely to represent the final use of the shelter for habitation. The date, however, is unusually late in that it appears to represent Pueblo III times. There has, however, been some evidence that clusters of Pueblo II diagnostic attributes persist at least until the end of the twelfth century.

Rockshelter 2 appeared to have been used as an occupation or activity area for some time. The presence of a Parowan Basal-notched point and three North Creek Corrugated sherds found on Floor 1 support the view that the shelter use was contemporaneous with the major occupation of the site. After the shelter had seemingly filled too much for human activity, it may have been used as a storage area for heavy grinding implements such as the metates that were found. The metates and manos may have been stored sometime just prior to the abandonment of the site and were simply left behind because they were too heavy to carry. Sometime near the end of the occupation, or perhaps even after it, the shelter was apparently used as a trash dump. The assumption is supported by the quantity of refuse from the upper levels even though it would seem unusual to move uphill to deposit refuse. Such must have been the case, however, since no other evidence of occupation or activity could be found above the shelter.

Rockshelter 3. This locality (Figs. 156,157) was found southwest of Shelters 1 and 2. The final shelter was formed by the juxtaposition of several large talus boulders that had fragmented from an escarpment along the back of the anticline. The shelter involved an overhang facing southeast. This was associated with a narrow passageway which ran to the west until it opened out on the upper slope. The initial examination of the area resulted in the identification of prehistoric cultural materials in the passageway and evidence of either late prehistoric or historic use in the overhang.

The overhang was formed in a large talus boulder and was bounded by a second boulder on the north. The average height of the shelter was 1.25 m. but it dropped steeply to 1.0 m. near the entrance to the passage on the west. Two small alcoves in the eastern wall of the shelter failed to yield cultural materials. Two smaller stones at the northern end helped to form a level sandy area within the shelter.

An apparently modern or late prehistoric hearth and a stone wall (Fig. 157) were found next to the northern boulder. The rock wall, composed of horizontally laid sandstone, ran across the top of the two smaller boulders, thus providing some protection from winds at this end of the shelter. The hearth was partially stone-lined, but its southern half had been badly eroded and all that remained was a disturbed mixture of sand and charcoal. The hearth was set well within the protected corner between the northern boulder and the rock wall.

The interior surface of the southern half of the overhang was sandy and nearly level, with a slight slope towards the southeastern open face of the shelter. Near the drip line there appeared to be a partially limiting but indistinct alignment of stone rubble which ended on the eastern side, allowing for access from the slope below. The passageway originated in the southwestern corner of the shelter and moved up towards the west.

Excavation was begun with a 2-m.-square unit placed in the southern portion of the shelter in an attempt to identify a prehistoric use surface. The digging produced a fill of tan, loosely compacted sand which overlay the sterile Stratum 1. The fill proved to be 15 cm. thick in the northwest area and 70 cm. thick towards the opening in the southeast. Two small areas of

Figure 156. View northwest of Rockshelter 3, 42Ws395.

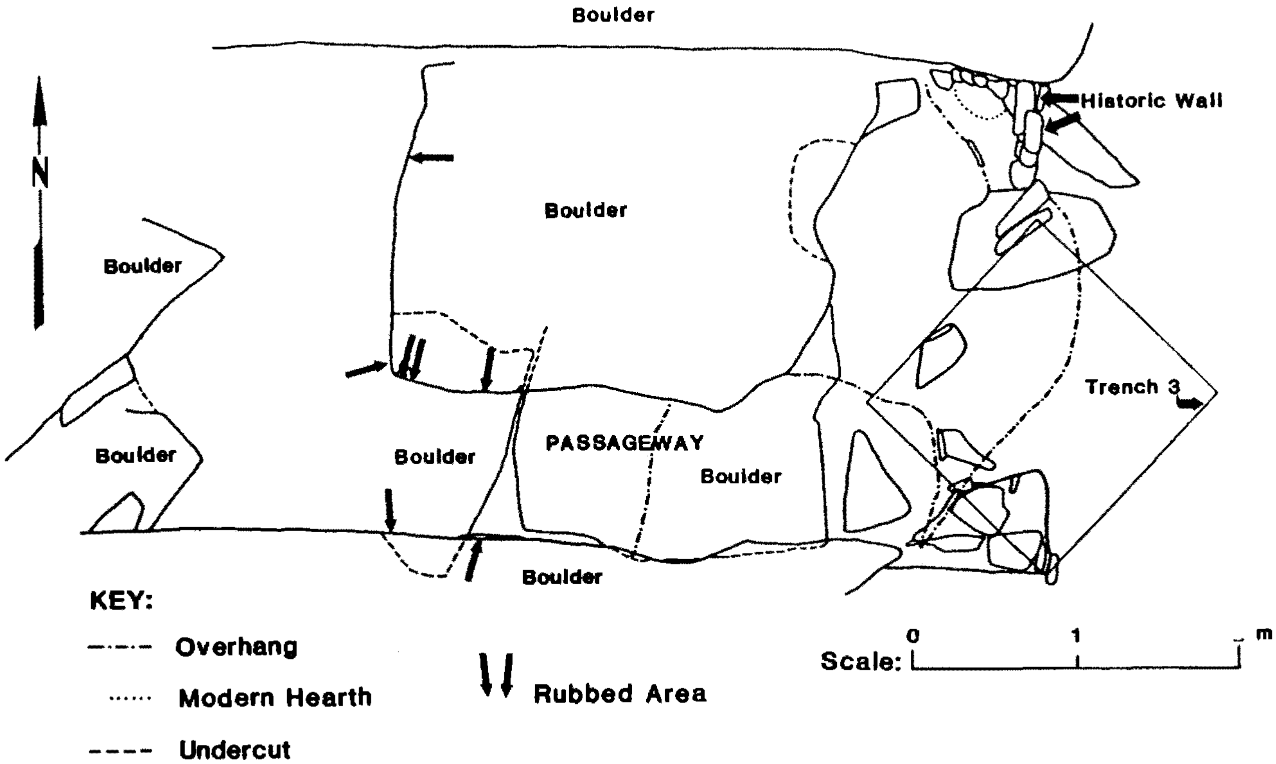



Figure 157. Plan map of Rockshelter 3, 42Ws395.

charcoal, each some 10 cm. below the surface, were noted against the vague rubble alignment. Both were about 15 cm. in diameter and only 2 cm. thick. Neither yielded carbon sufficient for dating and their small size suggests limited or even one-time use. The excavation failed, meanwhile, to identify a use surface.

Excavation then turned towards the passageway (Fig. 157) that could be seen running up in a westerly direction. The passage was filled with from 70 to 100 cm. of loose, tan sand that contained a large quantity of sandstone rubble and small boulders. Prior to excavation, it had proved impossible to crawl through the passage. Following complete removal of the fill, however, the passage proved to be 3.5 m. long and from 140 to to 70 cm. wide. At the eastern end, the passage was 1.14 m. high, but the ceiling was found to be 2.27 m. midway through the passage.

At its western end, the passage opened into another shelter named by the workers the "back room." The back room measured 8 m. long by 1.5 m. wide and 1.89 m. high. A number of surrounding boulders gave the impression of a room while an opening on the west gave access to the upslope of the anticline. The back room proved to be so filled with stone rubble and so lacking in evidence of cultural use that only partial clearing proved feasible.

The interior floor of the back room proved to be of bedrock which sloped so steeply as to make the area impractical for sustained use. The slope also continued down the passageway, with a series of natural steps, into Rockshelter 3. Within the passage evidence of use was noted in two areas where the stone had been rubbed to the point of becoming shiny. One area was found along the upper edge of the boulder which marked the northeastern side of the back room. There were also some small worn areas along the southern wall of the passage, all of them at about head level. These smoothed areas were invariably located at points providing convenient handholds for anyone moving through the the passage. Handholds could have been mandatory since the floor of the passage sloped up at a 35° angle.

It was interesting to note that the greater part of the cultural materials recovered came from the passageway. Two partial ceramic vessels were found in small niches. Other items are summarized in Table 31. Diagnostic materials, notable ceramics, indicated a late Pueblo II use.

In some respects, it almost appears as though the primary function of Rockshelter 3 was access to the passage thence to the back room and finally to the slope of the anticline. Shelter 3 and the eastern end of the passage may have functioned as a storage area, but Shelter 3 itself did not appear to have been an area of intensive prehistoric use. In part this may be due to the fact that Rockshelter 2 provided better protection from the weather. It is also possible that recent use of the overhang obliterated more evidence of prehistoric use.

Cists.

Five slab-lined cists were excavated on the slope of the upper terrace (Fig. 152). Four were found along the northeastern edge of the site (Fig. 158) where it dropped off into a small gulley. These were arranged in a northwest to southeast alignment. The fifth cist was found near the bottom of the slope where it had been cut by road construction, probably in the late nineteenth century.

Cist 1. Excavation here revealed two fill levels. However, much of the fill had previously eroded into the adjacent gulley on the northeast edge of the site (Figs. 158,159). The lower Fill 1 consisted of 1 to 14 cm. of highly compacted, tan and red clay containing intermittent lenses of ash-stained clay and charcoal. This fill overlay a indifferently constructed slab and clay floor and appeared to represent a collapsed roof. Above it lay a 5 cm. thick layer of tan Stratum 2 sand mixed with small lumps of clay which contained charcoal flecks and was termed Fill 2.

The upright sandstone slabs of the walls appeared to have been placed prior to the construction of the floor. The slabs of the northwestern and southwestern sides remained completely intact and both had been backed by small to medium sized stone. A thick layer of clay had been placed around the edges of the bottom of the pit to form a base for the slabs, and then additional clay was laid along the base of the stone after it had been placed.

Along the southeastern arc of the cist, the slabs were supported by a combination of horizontal stone outside the slabs as well as by the clay along the interior base. The northeastern edge, meanwhile, proved difficult to define since neither the floor nor wall slabs remained. A single vertical slab was found to abut a boulder which apparently served as part of the northwestern wall.

The flagstone floor was found intact only in the southwestern end of the cist where it was encountered at a depth of 45 cm. The stone had been packed in a layer of previously laid, compact clay. In other parts of the floor, a layer of well-compacted clay had been laid directly over Stratum 1. Apparently it was at this time that the clay along the base of the slabs was also laid.

Cist 1 was roughly oval in shape, measuring 1 by 2 m. at the top. The initial step in construction had involved removal of Stratum 2 sand to expose Stratum 1 gravel and rock. Since Stratum 2 proved to be so shallow, the vertical slabs were set against boulders on the uphill side of the cist. On the downhill side, meanwhile, stone backing was used to hold the slabs in place. The slabs themselves were also set a short distance into Stratum 1. The slab and clay floor was then laid. No direct evidence of the superstructure could be found, but the material of Fill 1 suggested that clay was used in both the walls and the roof.

Cist 2. This cist (Figs. 158,159,161) was first seen as a semicircular alignment of the tips of upright slabs just protruding above the surface. Two of these were more fully exposed during the excavation of Cist 1. The fill of the cist included three levels, each of which tapered down to the northeast as a part of the erosional process which carried so much material into the nearby gully.

The upper layer was Stratum 2 sand (Fill 3) which ranged from 2 to 8 cm. thick. Beneath it lay Fill 2, from 5 to 25 cm. thick and composed of tan Stratum 2 sand mixed with concentrations of hard, white clay. Broken slab

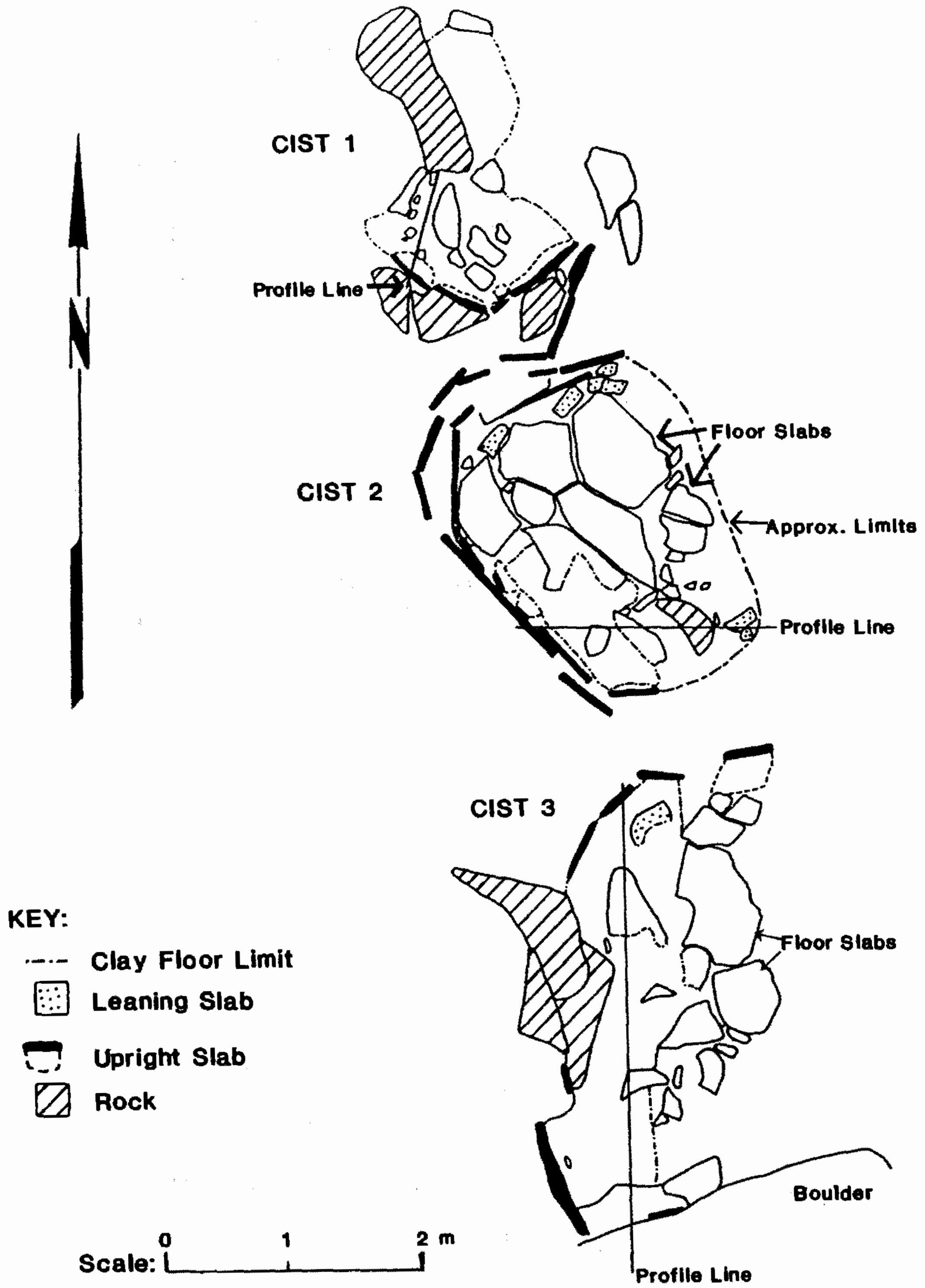



Figure 158. Plan map of Cists 1, 2, and 3, 42Ws395.

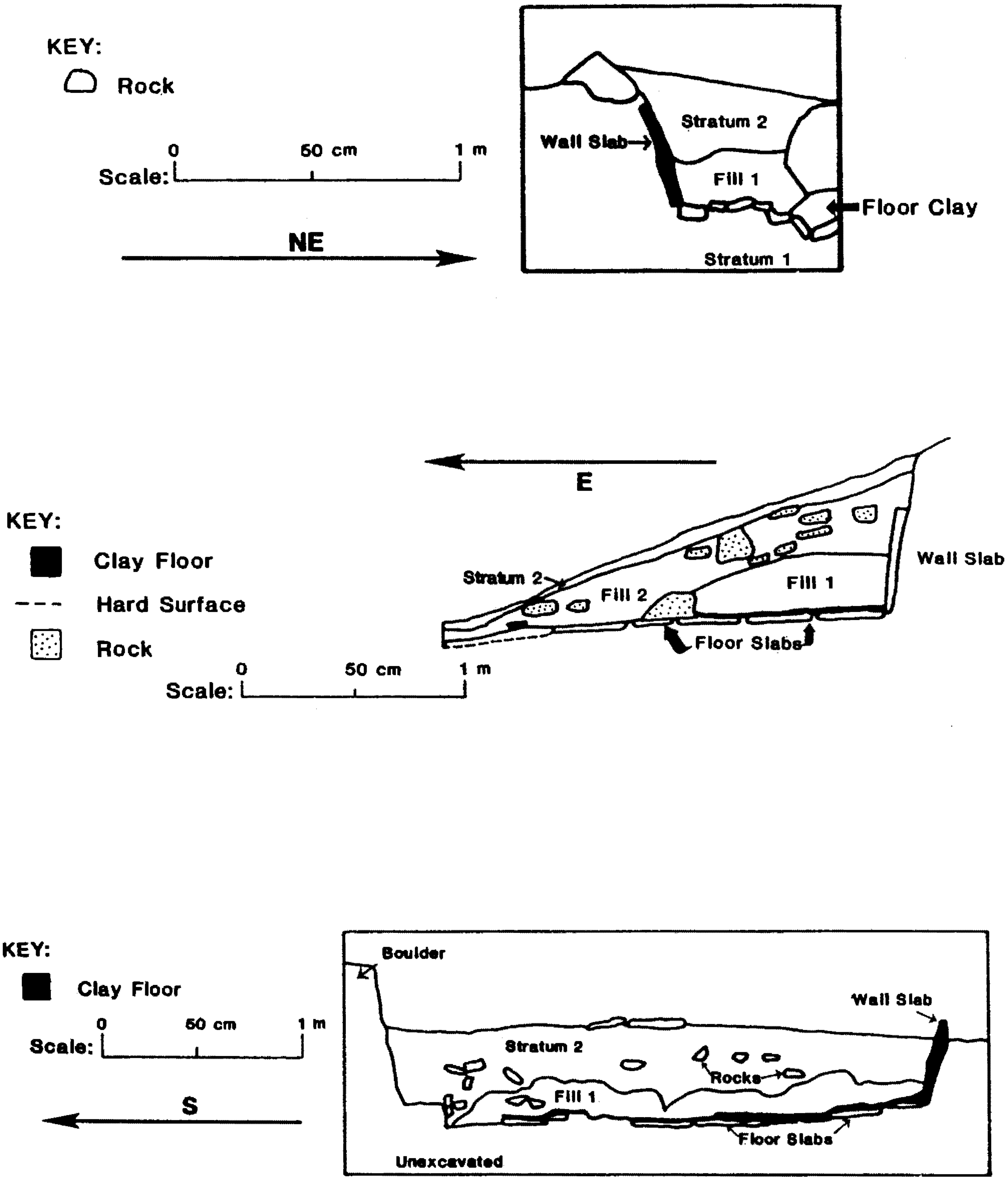



Figure 159. Profiles for Cists 1 (Top), 2 (Center), and 3 (Bottom), 42Ws395.

fragments and small rock were noted throughout the layer as was ash and flecks of charcoal. Fill 2 was found to be in floor contact in the northeast end of the cist.

Fill 1 was composed of layers of gravel and sand alternating with highly compacted, red and white clay. This level proved to be unexpectedly free of stone, ash, or charcoal.

Although the northeastern portion of the cist had been destroyed by post-occupation erosion (Fig. 159), the southwestern side was in good condition. On the northwestern or upslope side, the original pit had been dug into Stratum 2 to a total depth of 70 cm. The walls of the cists, based on extant evidence, were lined with upright slabs sloping slightly outward. Above these slabs, however, was a row of more nearly vertical slabs. On the portion available for study, the upper slabs were set back from the tops of the lower elements as much as 10 to 12 cm., thus forming a shelf of sorts. As the alignments neared the southwestern end, however, the upper slabs moved closer to the upper until; at the end of the alignment, they actually touched the tops of the lower slabs.

The flagstone floor of the cist was laid after the walls were in place. The stone floor covered all of the cist still in existence. The slabs were laid directly on Stratum 1 at depths that now seemed to range from 20 to 70 cm. A 1 to 3 cm. layer of compact, gravelly, white to tan clay was then laid over the slabs. The clay proved to be highly friable and was stained with ash and charcoal. The clay floor was only intact in the southern corner where it sloped up to the base of the wall slabs. Similar clay was noted as being packed against the lower slabs in the northern corner. It appeared to be quite possible that the interior of the cist may, at one time, have been plastered with clay, although none could be identified in situ during the excavation.

Cist 2 proved to be the best preserved of the five cists found on the slope (Fig. 162). Its shape was oval, measuring 1.7 by 1.1 m, the latter measurement being, of course, an estimate. Fill 1 appeared to result from the wash of the clay walls and perhaps the roof as it interfaced with Stratum 2 sand. Fill 2 appeared to be the product of some interior collapse of the upper walls, some clay plaster or mortar, and much of the roof. A portion of a North Creek Gray jar came from the upper portion of Fill 2.

The general construction methods in the cists, notably the slab-lined walls, the oval shape of the cists, and their close proximity to each other suggest a Pueblo I phase to the site. The painted designs failed to shed light on the subject, but the absence of corrugated sherds from the lower fill levels supports the idea of an earlier occupation. Also to be considered is the fact that Cists 1 and 2 were contiguous while Cists 2 and 3 were only 30 cm. apart. The upper row of slabs forms an unusual construction for the period, but it may prove to be of minor significance.

Cist 3. This cist (Figs. 158-169) was first noted as an alignment of the tips of three upright slabs 30 cm. southeast of Cist 2. The feature has been cut into the slope of the terrace at a point where the ground rose at a 40° angle. The fill involved two distinct levels. The highest was Stratum 2 which simply became Fill 2 while beneath it, Fill 1 overlay the clay and slab floor. Fill 2 averaged 30 cm. thick although it thinned out in the northeast portion of the structure where Stratum 2 was the only level visible above Stratum 1.

Figure 160. View north of Cist 3, 42Ws395, showing use of boulders in construction. Interior clay plaster is visible at the far end.

Fill 1 was composed of tan sand with concentrations of hard, white clay along with charcoal fragments and flecks. Thin lenses of powdery red clay were noted in the lower 10 cm. of the layer. This material proved to be similar to that of the floor. Fill 1 averaged 2 cm. thick.

Construction of the cist on the steep slope required that the builders excavate well into the slope to obtain support for the western and northern portions of the structure. Where boulders were found at the southern and western end (Fig. 160), they were incorporated into the structure. Sandstone slabs were affixed to the interior faces of the boulders, although only a few of these slabs were intact at the time of excavation. At the point of one boulder at the southern end, a pack of sand and clay was found between the slab and the rock. The finished result was the typical slab-lined cist even though the nature of its structure required modification to adjust to the terrain. Almost predictably, the eastern wall of the cist had been completely lost to erosion.

The cist floor was first leveled by spreading a thin layer of loose, dark sand mixed with red and white clay over Stratum 1. The usual flagstones were laid on this surface and then covered with a prepared red clay from .5 to 1 cm. thick. The floor clay tapered to nothing on the eroded eastern side.

At the base of the slab wall, small slabs were tilted against the larger elements, apparently to form a base upon which the clay floor could slope up the walls. This may indicate the interior walls were fully plastered, although plastered walls have been exposed where the tilted slabs were not used. The average depth of the floor was 45 to 49 cm.

Ceramic evidence suggests a late Pueblo II use, but this may have been the time during which the cist was filled with refuse. As suggested in the case of Cist 2, at least some of the structural characteristics argue for a Pueblo I time of active use.

Cist 4. This was found as an isolated feature 6 m. down the slope below Cist 3 (Figs. 152,162). The fill that remained within the cist could be divided into two levels. The upper Fill 2 was essentially the same as Stratum 2. The level was some 12 cm. thick and it contained both slab and rock rubble, most notably on the uphill or western side.

Fill 1 lay on top of the slab and clay floor in a layer that varied from 8 to 61 cm. thick. It was formed of a compact, tan sand mixed with areas of white and red clay. Thin lenses of powdery red clay could also be seen. The effect was to give Fill 1 a mottled appearance. The material contained sandstone slab fragments along with fragments of azurite and malachite, the latter two minerals always being found in association with patches of white clay.

The cist had been built on the main terrace slope with the pit being dug to a depth of 45 cm. on the northwestern or uphill side. A large boulder formed the southeastern limit of the feature, with the rock having been pecked to bring its surface into a more symmetrical relationship to the remainder of the wall. The walls were formed of slabs that leaned slightly out at the top in a characteristic fashion. Some of the slabs penetrated Stratum 1, while others did not; but the bases of all slabs were embedded in white clay. A small gap in the slabs in the eastern corner appears to represent nothing more than rodent or erosional activity.

On the northwestern or uphill side of the cist, the wall slabs were backed by horizontally laid, blocky sandstone slabs set some 5 to 10 cm. below the tops of the upright slabs. While they may have been intended for soil retention, the stones were typical of the base of the masonry wall commonly found around Pueblo I cists.

The flagstone floor could have been laid prior to the construction of the walls, since the stones of the floor did not touch those of the wall. This would be somewhat at variance with normal practice, however. At the same time, small tabular fragments of stone were tilted up from the edge of the floor to the wall slabs to form a base for the layer of clay spread over the stone. In this case, the floor was exceptionally thin, measuring a mere .25 to .50 cm. thick. The clay was red-orange in color and it proved soft and powdery. Patches of white clay were found on portions of the surface. The white clay may have come from the plastered walls because after the red clay of the floor turned up over the small slabs, the clay became a white material that could have completely coated the interior.

Figure 161. View of Cist 2, 42Ws395, showing the double height of wall slabs and the flagstone floor. View to the northwest.

Figure 162. View north of the fully cleared Cist 4, 42Ws395.

Cist 4 was quite similar to the three cists found further up the hill. It also contained similar layers of fill that suggested structural collapse through natural processes. Concentrated evidence of roof construction was absence, but the residual deposits leave no doubt that it existed. This cist differed in that it was nearly circular except in the area of the boulder on the southeast. Although it had been pecked to some extent, the reworking had not been enough to obtain complete symmetry for the cist. Ceramic evidence could be construed as indicating a middle Pueblo II occupation, but the caution must be raised that the cultural materials were recovered from post-occupation fill.

Cist 5. Exposed in the road cut-bank (Fig. 152) at the southeastern edge of the upper terrace slope, this cist was associated with an extensive area of stained midden containing abundant cultural materials. Poor preservation, partly the result of construction damage, made even the remnant walls and floor very difficult to define.

The remaining fill of the cist was a single level of brown sand of medium compaction and stained with ash and charcoal flecks. Some stone rubble was also mixed into the fill. The area lacked, however, any evidence of floor.

The only remaining walls of the cist were on the southeastern arc where two uprights had been stabilized by compact, brown clay. The southwestern and northwestern edges of the structure could be determined only by the presence of fill and some evidence derived from the limits of the clay floor. There also appeared to be a some horizontally laid cobbles at the bottom of the cist, although root activity in the area disturbed these stones to such a degree that their role could not be determined. The northeastern portion of the cist was apparently destroyed by erosion.

Flagstones were completely absent, but the bottom of the cist had been covered with a fairly thick layer of gray to maroon clay from 2.5 to 5 cm. thick. Where ever the edge of the floor could be found, it was seen that the floor clay sloped up to the walls of the structure in the case of the two remaining slabs, as much as 14 cm. They clay had been spread directly on soft, clean sand which had probably been deliberately laid.

Although it seemed certain that the cist had been dug into Stratum 1, it proved impossible to determine the surface of origin. The pit averaged an apparent 55 cm. deep and was nearly circular, with calculated measurements fixing it at 65 by 80 cm. in diameter. The remaining fill provided no clues concerning the superstructure, a not-unexpected result of the road-building damage in the area. Although this cist was much smaller than the previous four, it still retained suggestions of Pueblo I construction methods.

Structures.

Structure 1. This was first noted as a small semicircle of fairly thick sandstone rocks on the northwestern edge of the terrace slope, almost in front of Rockshelter 2. This centered on a fairly level area just southwest of Cist 3. Only a small portion of the structure was excavated but the evidence thus obtained indicated the existence of at least two use surfaces. The entire feature was covered by 2 to 3 cm. of Stratum 2 blowsand (Fill 2), which, in turn, overlay Fill 1, a charcoal-stained, clay-impregnated sand containing concentrations of white and red clay as well as scattered charcoal fragments. Fill 1 was found at a depth of from 2 to 5 cm. and proved to be from 10 to 22 cm. thick. No distinction could be made in the fill above and below Floor 2 although the deposition had to have taken place at two different points in time.

Found at a depth of 10 cm., Floor 2 was only partially visible in profile but it seems certain that it was a use surface. It was formed by a basal layer of compact, white-tan clay 1.5 cm. thick which was overlain by a .25 to .50 cm. layer of powdery red clay. The section most visible in the profile was 50 cm. long and the northeastern end abutted against a fair-sized stone which formed an edge of the room. The white clay layer seemed to have been laid directly on Fill 1 to stabilize the surface. The powdered red layer could represent a simple heat-alteration of the red clay since a layer of charcoal and charcoal-stained sand lay directly above it.

Floor 1 was found at a depth of from 20 to 25 cm.. The surface was composed of a thin layer of powdery red clay less than 1 cm. thick and laid directly on Stratum 1. The already thin clay surface thinned still more as it reached the edges of the structure where it curved up slightly to conform to the basin-shaped form of the original excavation into Stratum 1.

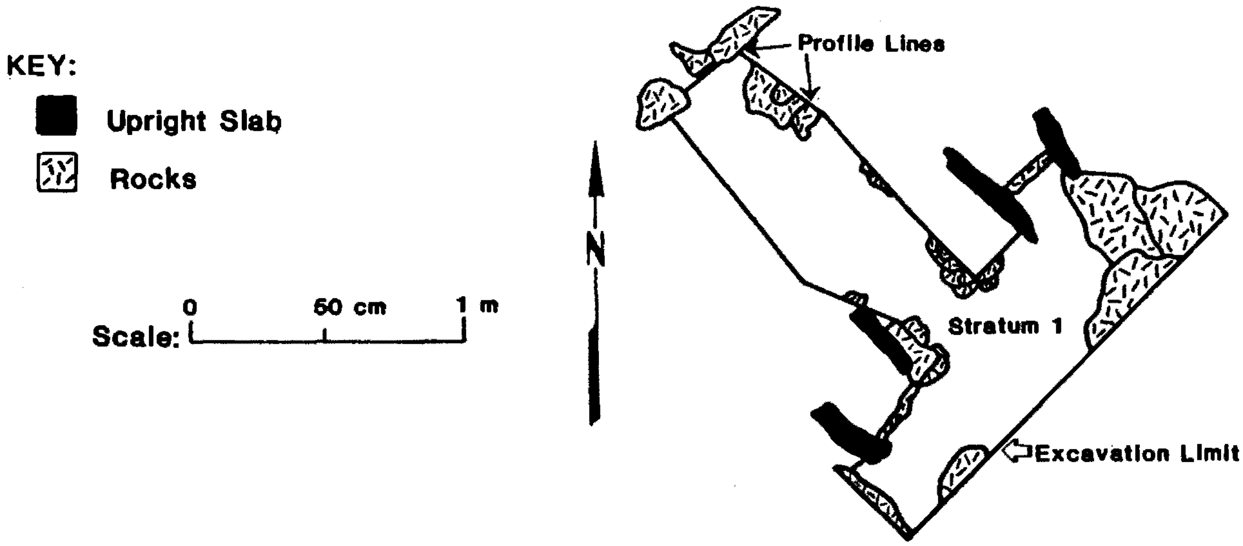
The rocks that rimmed the room demonstrated that it had a diameter of 2.2 m., while it was open to the north or upslope side. There was some indication that the size of the room may have been limited by boulders encountered during the excavation of the original structure area. While there was no direct evidence of the surface of origin, circumstantially it appeared to have been either near the top of Stratum 1 or low in Stratum 2.

The identification of two floors within the structure was reminiscent of some of the very small pithouses exposed in the northern part of the project area. Neither floor appeared to have been used for any great length of time, and there was only a limited amount of clay found in the fill to suggest the nature of the superstructure. While a limited use of clay to form an ephemeral superstructure might be postulated, it is equally possible that the covering used was material common to the site, particularly Stratum 1, which would not show well in the post-occupation fill.

Since the ceramics recovered included North Creek Corrugated, a middle or late Pueblo II occupation is indicated, although it should be remembered that the ceramics came from the post-occupation fill. There is little to suggest structural function, although the absence of a hearth would seem to limit possibilities.

Structure 2. The second structure (Fig. 163) was visible on the surface as an alignment of four upright slabs extending from northwest to southeast near the center of the slope. The evidence for the structure was so tenuous that it was tempting to think of it as an area rather than as a structure. It did appear, however, that the feature was a structural remnant.

Excavation revealed a total of six strategraphic levels. From the lowest point reached, these were Stratum 1, Pit 1, Floor 1, Fill 1, Pit 2, Stratum 2, and Fill 2. Fill 2 was apparently a post-occupation instrusion.



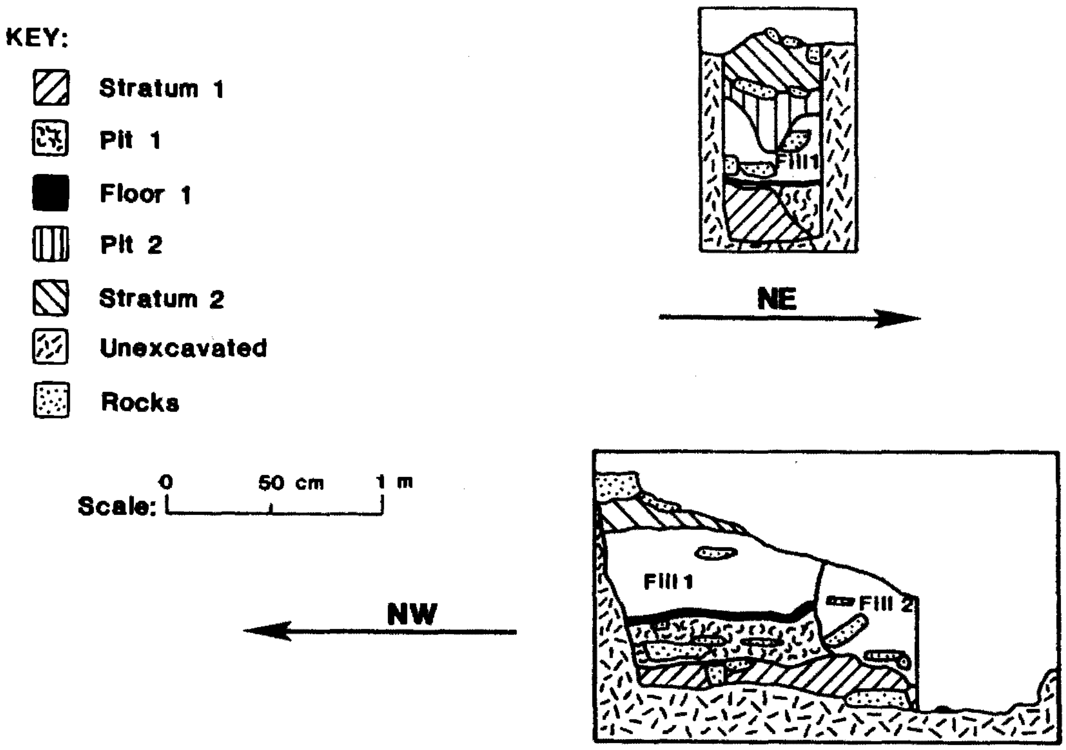




Figure 163. Plan map (top) and profiles (bottom) of Structure 2 42Ws395.

Stratum 1, the sterile layer, formed the surface of origin for Floor 1 and Pit 1. Floor 1 lay at a depth of 65 cm. and was composed of a layer of compact, tan-red clay laid directly on Stratum 1. The floor proved to be no more than 1 cm. thick, but it was surprisingly level when the slope of the area is taken into account. The floor retained approximately the same level as the base of the upright slabs; although the two did not come into direct contact.

Pit 1 had been dug before Floor 1 had been laid. The pit was filled with loose gravel and sand which was flecked with charcoal. The top of the pit was overlain by Floor 1.

Fill 1, ranging from a depth of 65 cm to its upper level at 25 cm., overlay Floor 1. The fill was made of sand and gravel, stained with charcoal. Also included in the fill were concentrations of hard red or gray-tan clay which, in the northwestern area, became almost solid clay.

Pit 2 originated at the top of Level 1. It proved to be 30 cm. deep with a diameter of 15 cm. The fill included charcoal-stained gravel and sand, along with burned sandstone slab fragments, and pieces of burned wood and charcoal. The pit was covered with a 4 to 24 cm. thick layer of Stratum 2 sand, the thinner portion being found in the downslope area in the southeast. Fill 2 was clearly associated with the vertical sandstone slabs. Measuring 40 cm. deep, it penetrated through Fill 1, Floor 1, and Pit 1 to actually run beneath the sandstone slabs. The fill was ash-stained, clay-impregnated sand containing sandstone slab fragments.

The stratigraphy of the feature was complex, and due to time limits, only a small part could be exposed. Pit 1 appeared to have been dug prehistorically into Stratum 1. The circumstances in which it accumulated fill was not evident but the fill provided a level surface for Floor 1. Floor 1 seemed clearly to have been part of a structure, but the four vertical slabs were not a part of it. Fill 1 contained clay that appeared to come from some kind of a superstructure over Floor 1, but it was never identified.

Fill 2, or more properly Pit 2, does seem to relate to the four slabs, but the association was most likely a post-occupation matter. The cultural debris of the area seemed to indicate that the remnant structure and/or activity area was once a refuse dump and thus the contents of the fill are not diagnostic of the period of primary use.

### Excavations on the Lower Terrace

The northwestern side of the lower portion of the site was defined by an old graded road, while the southeastern edge was limited by a 15 m. drop to the Virgin River (Fig. 152). On the west the site was limited by an escarpment formed of fractured anticline bedrock which ran from northeast to southwest. It seems likely that at about the point where the escarpment intersects the drop to the Virgin, more recent river cutting has destroyed a portion of the site.

The terrace area of the site measured 22 m. northeast to southwest and 12 m. wide. The presence of a site in this area was evident to the survey team on the basis of a moderately dense scatter of cultural debris, both lithic and ceramic, as well as concentrations of what appeared to be, and later were demonstrated to be, structural rubble. The excavation of the lower terrace area exposed a block of three contiguous rooms with an associated activity area, a room superimposed over a slab-lined cist, a subrectangular pit house, a second and less-well-made pithouse with an associated burial, an alignment of three cists, an isolated room, nine exterior hearths and ash pits, and a second activity area.

A total of eight trenches, numbers 10 through 17, were used during the course of the exploration of the terrace (Fig. 152). With one exception, the trenches were 1 m. wide and were generally subdivided into units 2 m. long. A summary of the cultural materials recovered from the trenches in proveniences not related to cultural features is included in Table 31.

Two levels of natural stratigraphy were identified and found to correspond with similar layers of the upper slope. The lowest, Stratum 1, was composed of a layer of terrace gravels and cobbles overlain by a highly compacted mixture of sand and caliche. Stratum 1 was totally lacking in cultural material.

Stratum 2 was formed of loose, tan to brown sand intermittently flecked with charcoal. Much of the rock inclusion seemed to be structural rubble. Stratum 3 was a highly compacted layer of gray to white clay 3 to 5 cm. thick. Since it was found only in the area of the room block, it was presumed to be of cultural origin. THis was found within Stratum 2.

Room Block 1

Room Block 1 was located on the northern edge of the terrace portion of the site. It had been heavily damaged by erosion which, in its turn, appears to have been accelerated by the grading of the road which also inflicted direct damage on the structure. The unit was composed of three rooms (Fig. 164-166). Associated with the block was a prepared clay surface found at the western end (Fig. 164) which could be the remains of a ramada or a well-prepared outdoor activity area.

The structural block was L-shaped with the angle open to the south and with Room 1 forming the "foot" of the L at the eastern end (Fig. 164). Room 3 would be found to have been built over Cist 6. Slim evidence, including the superposition over the cist, suggests that Room Block 1 was a product of the later occupation of the site.

Room 1. This room (Fig. 164) measured 2.06 m. northwest to southeast while it was 1.5 m. wide. The floor lay at a depth of 15 cm., a position somewhat lower than Rooms 2 and 3. Construction apparently began by leveling the area to provide an even base for the floor and walls. The basal wall components were formed of sandstone cobbles and fragments set in a base of white clay. The remains of the wall base stood from 10 to 40 cm. above the floor. The walls were missing on the southeast and northwest ends of the room so that these areas could only be defined in terms of the floor.

The floor itself was laid directly on Stratum 2 after the construction of at least the base of the walls. Medium-sized sandstone flagstones were set in place and then covered with a layer of sandy, red clay. The floor clay also sloped up over the base of the walls to give the lower part of the room

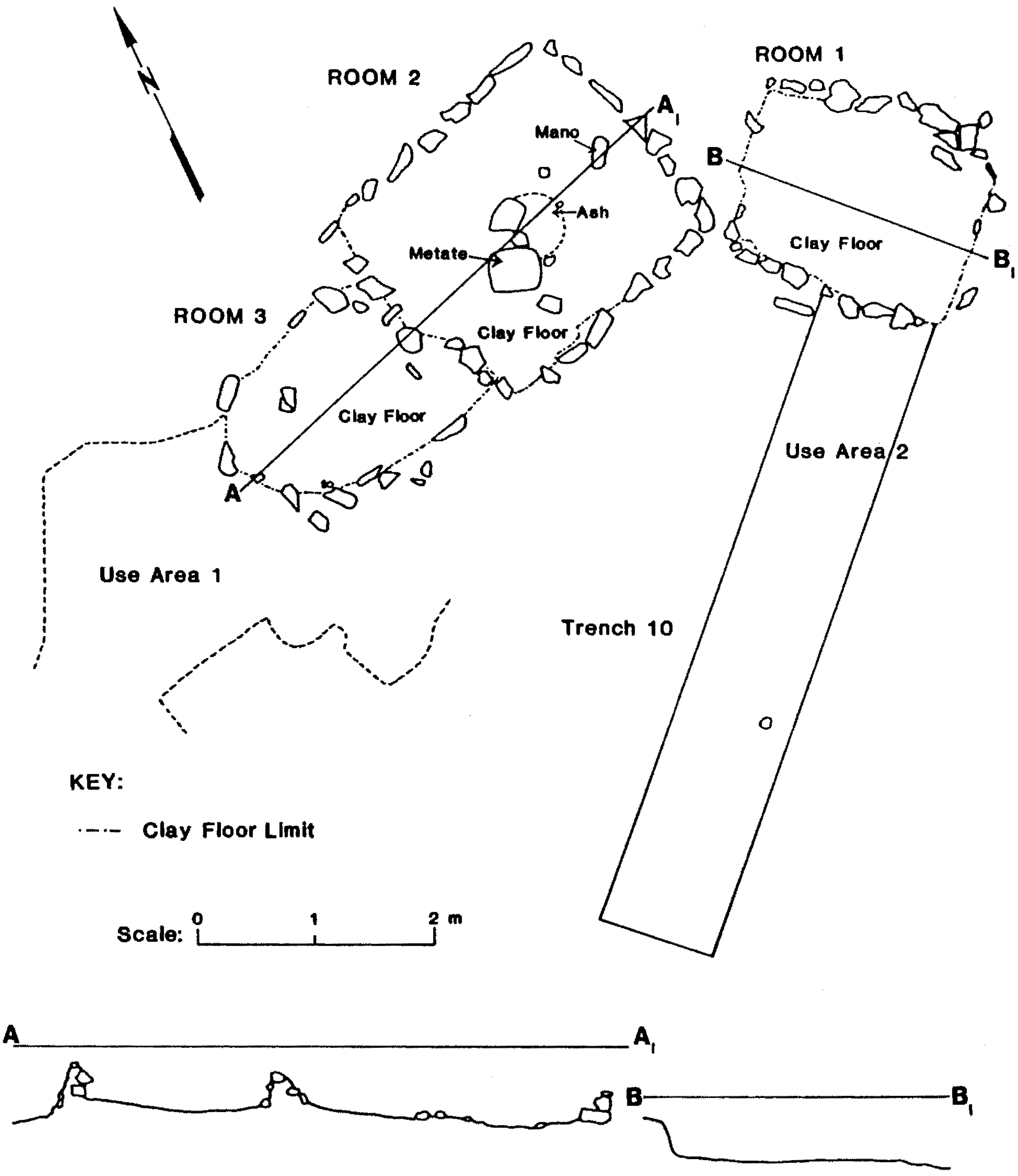



Figure 164. Plan map and cross-section drawings of Room Block 1, 42Ws395.

something of a basin appearance. The substantial quantity of stone rubble in the area supported the common-sense assumption that the completed walls were considerably higher than the remnants exposed. It is also possible that the grading of the road across the site contributed to the destruction, both by direct damage and by accelerating erosion.

The composition of Fill 1 indicates that the walls and the roof of the room included substantial amounts of white clay. A good part of the fill may have come from the deterioration of the walls even though the room area was free of stone. Charcoal within the fill also suggested that fire may have contributed to the destruction of the room. A carbon sample from the room produced a date of 920±50 years: A.D. 1030 (Beta 8051). This would indicate the room was built near the end of the early Pueblo II period.

Room 2. This room (Figs. 164,165) proved to be the largest of the three in the block. Exploration of the space between Rooms 1 and 2 produced no direct structural evidence, although some may have been previously destroyed. Room 2 originated within Stratum 2 20 to 40 cm. below the modern surface. The floor dropped slightly to the east, somewhat in conformity with the slope. As in the case of Room 1, the basal stones of the walls were set in white clay. The remaining walls stood from one to two courses high, or some 20 to 30 cm. above the floor.

Floor construction began by laying sandstone slabs and small cobbles. This base which was then covered with a highly compacted, red, sandy clay which also covered the base of the walls. In most respects, Room 2 followed the same form as Room 1. Room 2, however, proved to be 2.7 m. long by 2.08 m. wide.

Near the center of the room an ashy deposit lay directly on the floor and was partially covered by a metate (Fig. 165). The deposit, nearly circular in form, was 25 cm. in diameter and was composed of light gray ash with some charcoal. The deposit did not appear to have resulted from an in situ fire since the floor beneath it showed no signs of heat-alteration. Apparently both the ash and the metate had been dumped into the room following its abandonment. The location of the refuse also suggested that access to the room was through the roof.

As in the previous room, Fill 1 was dominated by white clay, apparently from the superstructure, and again it contained sizable charcoal fragments. A sample from the ash on the floor and another from Fill 1 were subject to radiocarbon assay. The sample from the ash produced a date of 680±80 years: A.D. 1270 (Beta 8053) while the specimen from Fill 1 yielded a figure of 780±60 years: A.D. 1170 (Beta 8054). The former date is too late to be readily acceptable, although not impossible, while the A.D. 1170 date more nearly approaches expectations.

Cist 6. This cist was found beneath Room 3 of the room block, and although it was not a part of that unit, its lack of association with any other features suggests that it is best described prior to the discussion of Room 3. The cist was observed in a profile of Trench Unit 12-A (Fig. 166) and it is on that data that most of the description is based.

Figure 165. View of cleared Room 2, Room Block 1, 42Ws395. Shows metate and ash on the floor.

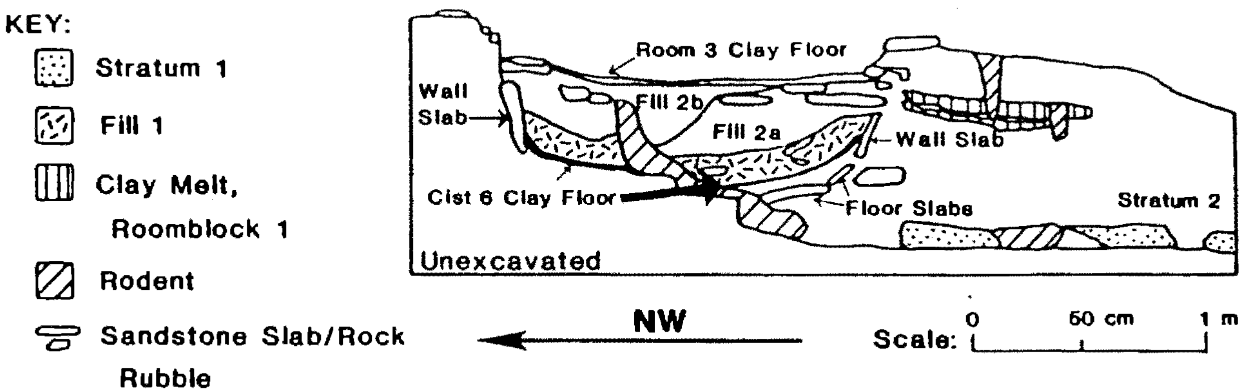



Figure 166. Profile of Cist 6 underlying Room Block 1, 42 Ws395.

The surface of origin for Cist 6 was in Stratum 2 at a depth of 60 cm. From this point, a basin-shaped pit was dug an additional 40 cm. into the upper part of Stratum 3. The pit was 1.4 m. wide at the bottom and 1.52 m. wide at the top. Slabs were used to line the walls of the cist, but stone covered only a part of the bottom. The stone and the sand of parts of the bottom were then covered with a layer of clay that varied in thickness from 2 to 7 cm. The clay also sloped up over the lower parts of the wall slabs, apparently both for support and to create a smooth transition from the floor to the walls. A coat of compact red clay 1 cm. thick was then spread over both the floor and the walls of the cist. It is likely that the clay lined the entire interior, but it was defined only along the northeastern side of the cist.

The unit profile clearly showed two strata within the cist, Fill 1 and then Fill 2a and 2b (Fig. 166). Fill 1 was a compact clay stratum ranging from 10 to 15 cm. thick which included charcoal flecks along with some gravel. Fill 1 began at the floor and it sloped against the walls as well. The nature of the fill suggested that it represented the collapsed clay of some form of cist superstructure. The prior collapse of the superstructure would appear to suggest that it had been abandoned for some time prior to the construction of Room 3.

Fill 2 involved two components. Fill 2a was found on the southeast side of the Cist and was identified as a well-compacted, brown, sandy clay. It came at a depth of from 20 to 50 cm. and averaged 20 to 25 cm. thick. The deposit also included a few sandstone slab fragments which appear to have fallen from the superstructure of the cist.

Fill 2b was a dark brown sand of medium compaction containing charcoal flecks but otherwise similar to Stratum 2. A few sandstone slabs were found in the upper portion of the level, which varied from 5 to 25 cm. thick at a depth of 20 to 55 cm. The level not only overlay Fill 1, it was also found above a small part of Fill 2a.

The superposition of Room 3 on Cist 6 made it impossible to determine the exact nature of the cist superstructure. The recovery of sandstone slabs from Fills 2a and 2b constituted fair evidence of coursed masonry walls, while the clay content of the fills suggests mortar in the masonry, as well as clay covering the roof.

Room 3. The smallest element in the room block, this room (Fig. 164) was contiguous with the western wall of Room 2, extending from it in a southwesterly direction to measure 1.75 by 1.5 m. Excavation of the eastern half of Room 3 exposed two distinct fills similar in composition to those found in Rooms 1 and 2. Fill 1 was a layer of compact white clay which appeared to represent material from the walls and roof of the structure. It lay directly on the floor of the room, while it was overlain by 5 to 10 cm. of Fill 2 which was essentially Stratum 2 sand.

Prior to the construction of Room 3 it appears that at least some of Fill 2b was deposited in Cist 6 and then leveled in order to provide a surface for the room. Flagstones and sandstone cobbles were laid to form the floor, while the walls of the room were set in a base of white clay, which was also used as a mortar in the coursed masonry of the walls. A layer of white clay, 2 to 4 cm. thick, was then laid over the flagstones and exposed areas of Fill 2b, and then up the masonry walls as much as 20 to 25 cm. above the floor. Curiously, Room 3 was the only room of the block which did not use red clay on the floor and interior walls.

Use Area 1. This feature (Fig. 164) appeared in the profile of an exploratory unit that had been excavated to expose Cist 6 and Room 3. The feature was manifest as a white-gray clay surface found at a depth of 15 to 20 cm. Expanded excavation exposed this as a clay surface which was designated Use Area 1. The edges of the surface could not be defined with certainty but the clay was definitely a cultural feature. The lack of definition appeared to result from erosion, but part may also have been lost during the grading of the road.

Stratigraphically, it was found that a discontinuous layer of chunky, white clay containing small charcoal fragments overlay Stratum 1. This layer was from 2 to 5 cm. thick and was taken as evidence of earlier activity in the area, perhaps related to the users of Cist 6. Above the clay, at a depth ranging from 26 to 80 cm, lay an ash-stained layer of Stratum 2 sand and rubble.

The clay surface of Use Area 1 was from 1 to 3 cm. thick, laid on the slightly leveled top of the Stratum 2 sand. There was what seemed to be a cobble alignment along the northern edge of the clay surface, but the absence of clay in the area made the feature problematical. Immediately above the clay floor was Fill 1, a layer of red and yellow sand 1 to 3 cm. thick. This level contained charcoal flecks as did the 20 cm. thick layer of Stratum 2 sand that extended from Fill 1 to the surface.

The position of the Use Area 1 clay surface appeared to indicate that it related to Room 3 as a center of outdoor activities. Although no evidence could be found in the damaged feature, it is possible that it served as a ramada. Such areas have been fairly common in Pueblo II sites.

Use Area 2. Exposed during the course of further excavation southwest of Room 1, and found at a depth of 19 cm., this proved to be a well-compacted sandy clay surface. Structural rubble, perhaps from the collapse of Room 1, lay on and intruded through the surface which also overlay Pithouse 1. Towards the south the use surface became increasingly sandy until it eventually became impossible to distinguish it from the Stratum 2 sand of its origin. A small, shallow basin measuring 20 cm. in diameter and 10 cm. deep appeared to originate in the area. It was lined with sandy clay some 1.1 cm. thick. It was not a hearth, but its function could not be determined.

Discussion. Room Block 1 appeared to have been a three-room storage unit built on the surface with coursed masonry during the middle or late Pueblo II period. The surface of origin was in the upper portion of Stratum 2 and its stratigraphic position indicated that it was built following the abandonment of Pithouse 1 and Cist 6. The pithouse and the cist seem to have been the product of a late Pueblo I or early Pueblo II occupation. Features found in Room Block 1 which are characteristic of a later period included: a more extensive use of clay in wall construction, coursed masonry in surface rooms, and a fairly indiscriminant selection of stone used in the walls.

All three rooms of the unit appeared to have been built at the same time,as was evidenced in the similarity of construction techniques. The slight detachment of Room 1 from the other two rooms (Fig. 164) seemed a bit unusual, but it may indicate nothing more than a short-term accretional growth. Since only the basal elements of the walls remained in situ at the time of excavation, it proved impossible to estimate the original height of the walls or to ascertain the mode of entry. The complete absence of hearths in any of the rooms was probably the best statement of their storage function.

A substantial collection of cultural material (Table 31) was recovered in the area, but it should be warned that a fair part of them may be the result of secondary deposition resulting from the grading of the road. Ceramics strongly favor the view of a middle to late Pueblo II occupation, particularly in the high count of North Creek Corrugated sherds. Many of the painted types support the same view, although some Washington Black-on-gray, a Pueblo I diagnostic, was found. In general, the early material was found in upper portions of Stratum 2, suggesting secondary deposition, while floor contact sherds proved to be of later types.

Few diagnostic points were found and they also tended to come from the upper parts of Stratum 2. The Elko series is generally ascribed to the Late Archaic, but its occurrence in a wide range of later sites left little room for surprise at its recovery at this site. Other points recovered from the fill of Use Area 1 and Room 1 are all considered Pueblo II diagnostics.

Room Block 2

Room Block 2 was first noted as a concentration of stone rubble scattered in an around an outcrop of boulders at the southwestern end of the lower terrace. Excavation would show that the feature was composed of four elements (Fig. 167). From north to south, these would include Cists 7 and 8, Room 4, and Cist 9. The cists and the room would be found to form a continuous alignment.

Cist 7. This was a small, oval, slab-lined feature (Figs. 168,169) set among large boulders which constricted its area somewhat. The cist was a semisubterranean pit feature dug into the slope of the terrace. The sterile Stratum 1 was found at a depth of 75 cm. just below the floor. The apparent surface of origin was 50 cm. deep in a layer of Stratum 2 which sloped down to the southeast, following the surface of Stratum 1. The pit was thus dug some 50 cm. deep and, as noted, was limited by boulders on its southeastern and northern edges.

The pit was lined with sandstone slabs set in a nearly vertical position against its earthen edges. The northern and southwestern slabs were set both against the terrace slope and the boulders, while the southeastern wall appeared to have been part of Cist 8. On the northwestern and northeastern sides, slabs were also placed above the lower slabs and leaned against the higher, uphill terrace slope.

With the wall slabs in place, flagstones were laid on Stratum 1 with the spaces between them packed with clay. The floor was then covered with compact clay from 1 to 5 cm. thick. The clay surface lay at a depth of 75 cm. near the center of the cist and at 60 cm. around its edges.

Fill 1 directly overlay the clay floor (Fig. 168), its upper limit being found at a depth of 55 cm. This was a 10 to 12 cm. thick layer of consolidated brown sand which appeared to have been of natural deposition. The compaction of Fill 1 could have been the result of the Fill 2 material which was a 5 to 10 cm. thick layer of white clay at a depth of from 45 to 55 cm. The Fill 2 material appeared to represent the collapsed superstructure material of the cist. The remainder of the material covering Cist 7 was a 35 to 55 cm. layer of Stratum 2 sand containing stone rubble and charcoal flecks.

No upper walls were found during the excavation, but possible structural stone occurred in the rubble of Stratum 2. The superstructure may well have included coursed stone, or a combination of stone and wattle-and-daub walls. It is highly likely that the white clay of Fill 2 represented a portion of the collapsed superstructure.

Cist 8. This cist was identified just southwest of Cist 7. Its southeastern wall paralleled the northwestern wall of Room 4 (Figs. 167-169). The cist was rectangular, measuring 1.6 m. northwest to southeast, while it was 1 m. wide. The dimensions were based on the floor area since only one wall slab remained in situ.

The northwestern part of Cist 8 was built in a pit dug into Stratum 1, while the southeastern portion was built in the fill over the edge of Pithouse 2. Although Cist 8 appeared to have been built at the same time as Cist 7, the floor of the former was lower than the latter by 30 cm. This no doubt as an adjustment to the downslope surface. It appeared as though the walls were built with upright sandstone slabs, although only one slab remained in situ at the time of excavation. At the northwestern end, the slabs were evidently set firmly in Stratum 1. The missing slabs may have been lost to their use for later construction, although it may be just as likely that they were carried away be erosion which was heavy in the area.

Flagstones were laid for the floor of the cist directly on Stratum 1 or over the fill of Pithouse 2 (Fig. 168). The stone surface was then covered with a 1 to 2 cm. thick layer of tan-pink clay which was found at a depth of from 75 to 80 cm. The clay floor sloped up only some 2 cm. at the surviving slab, but it is likely the practice was followed throughout the construction.

As was the case with Cist 7, no upper wall elements remained, although a large quantity of slab and rock rubble found in Fill 2 seems likely to be the result of the collapse of masonry walls. While most of the cist had been destroyed, the similarity of construction methods still identifiable suggests that the superstructure may have been similar to that hypothesized for Cist 7 (Fig. 169).

Two units were found to fill the cist. The lowest, Fill 1, lay directly on the floor and was composed of a 5 cm. thick layer of highly compacted clay which appeared to have come from structural collapse. Above this, Fill 2 proved to be composed of Stratum 2 sand containing a heavy concentration of sandstone rubble. The level was encountered at a depth of 50 cm. and extended to the top of Fill 1 at 75 cm. A very ashy layer of Stratum 2 sand overlay Fill 2.

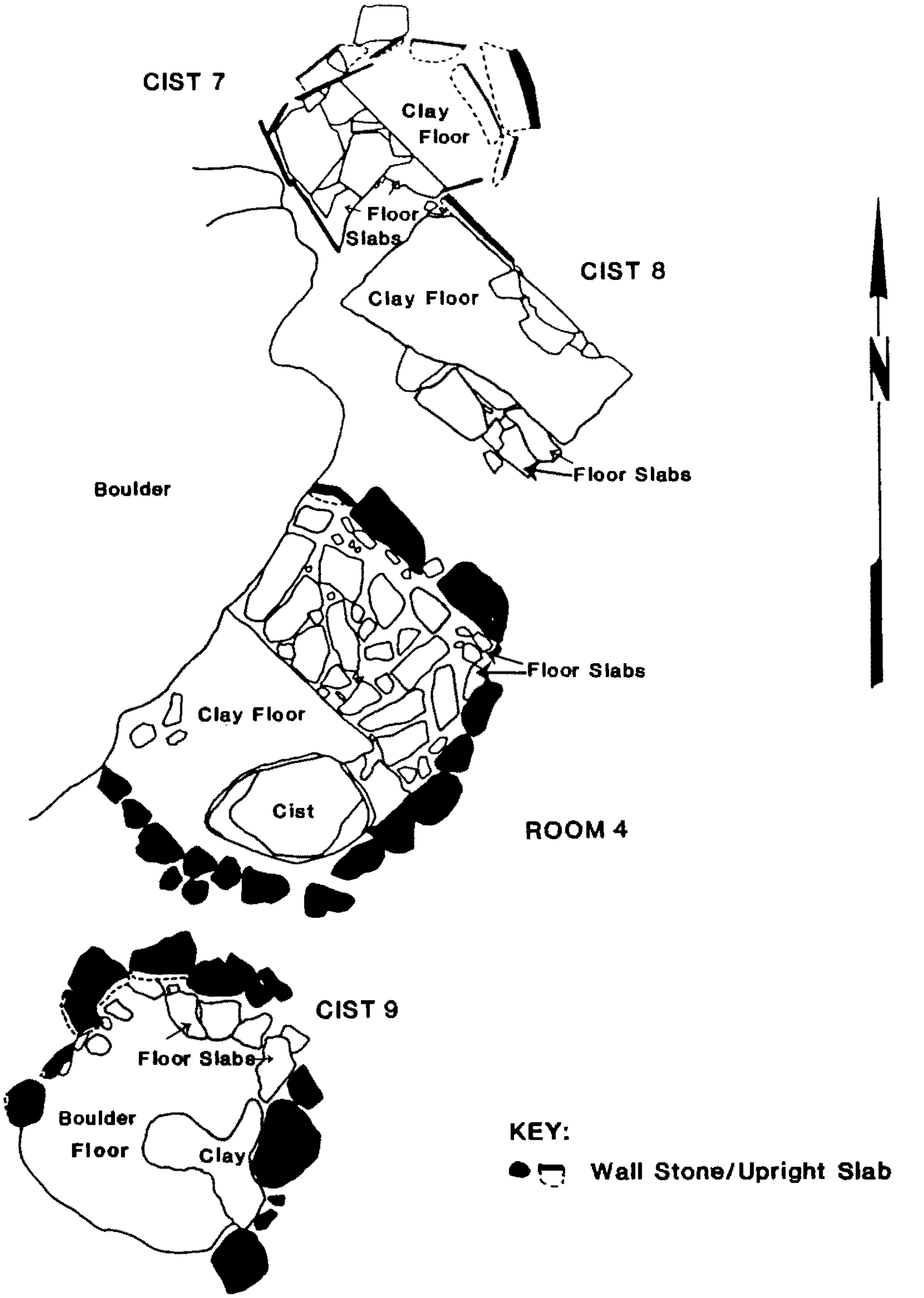
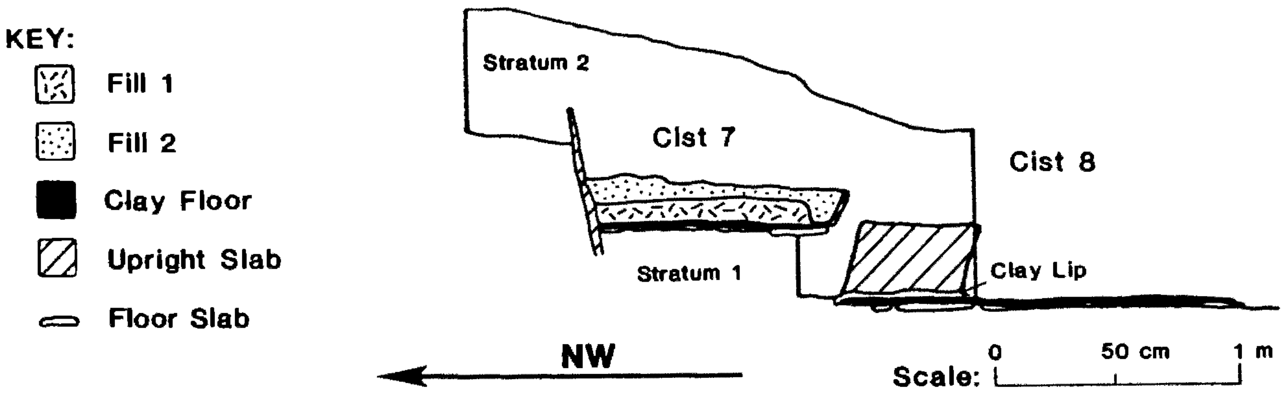



Figure 167. Plan map of Room Block 2, 42Ws395.



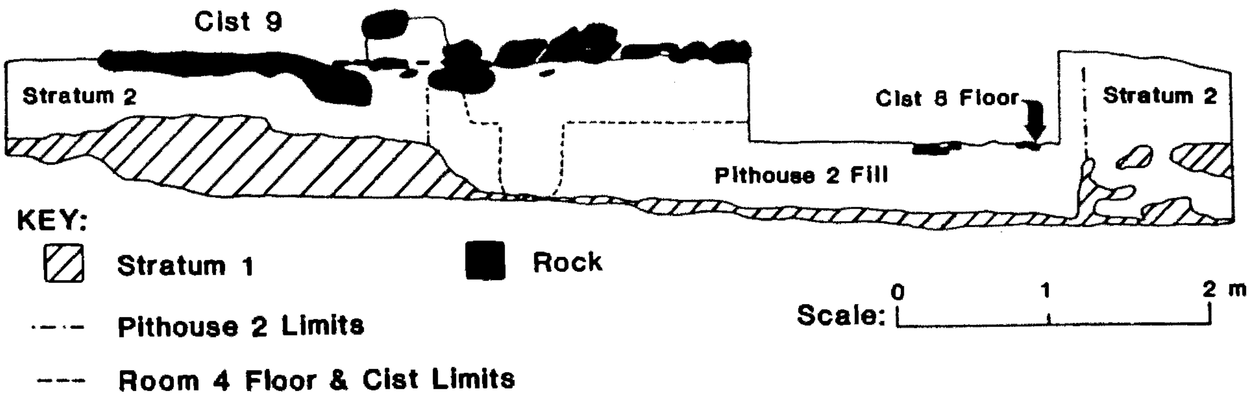




Figure 168. Profiles of various features and relationships, Room Block 2, 42Ws395. Top, Cists 2 and 8; bottom, Cists 8 and 9 and Room 4 (and Pithouse 2).

Figure 169. View of Cist 8 exposed in the foreground and Cist 7 partially exposed in the background, Room Block 2, 42Ws395.

Figure 170. View of Room 4 and interior cist, Room Block 2, 42Ws395. Part of clay floor removed.

Room 4. This room (Figs. 167,168,170) was rectangular, measuring 2.4 m. southwest to northeast, while it was 1.7 m. wide. The northeastern wall of the room paralleled the edge of Cist 8, while Cist 9 lay only some 15 cm. south of the southern corner of the room. Fill 1 was the only stratum identified in the structure. The fill began at the surface and continued to a depth of 40 cm. It was composed of ash-stained Stratum 2 sand while it contained slab and stone rubble, possibly from the collapse of the structure.

Three sides of the Room 4 walls were built of coursed sandstone slabs and some cobbles. The northwestern wall, however, was a large boulder. The walls built by human agency were set prior to the laying of the floor composed of sandstone slabs laid directly on Stratum 1. The Stratum 1 base for the floor indicates that there was some excavation prior to construction. The stone floor (Fig. 170) was covered with a 2 to 3 cm. layer of highly complaced, mottled orange clay, which sloped up over the basal course of the walls. While no more than one to two courses of the walls were intact, this proved sufficient to determine some of the building methods.

After the room had been built, a cist was constructed by cutting through the floor to a depth of 50 cm. The cist was in the southern corner of the room. Measuring 1 by 0.65 m., the walls of the cist were smooth while the floor was composed of a single slab (Fig. 170).

Room 4 was the only element in Room Block 2 which retained intact wall elements. The construction differed somewhat from the walls thought to have been associated with Cists 7 and 8, although the room walls were similar to those in Cist 9. The floor of Room 4 walls also from 10 to 60 cm. above the bottoms of Cists 7 and 8. The relationship suggested that Room 4 and Cist 9 were built sometime after the construction of Cists 7 and 8, with the time lapse allowing for some change in building techniques.

Cist 9. This lay only 10 to 20 cm. south of Room 4. It proved to be a circular feature with a diameter of 1.4 m., the perimeter outlined by coursed sandstone walls intact only on the norther side (Figs. 167,171). Although only one or two courses remained in the segment, these were sufficient to determine that the walls had been built prior to the placement of the floor. Most of the floor was covered with a single slab, or possibly bedrock (Fig. 171), although along the northern edge where this rock dips down, a few additional small flagstones had been added to provide a level surface. The floor was then covered with a 1 to 3 cm. layer of compact clay which was only partially intact at the time of excavation. The floor of the cist was only a few centimeters lower than the floor of Room 4.

Excavation of the cist revealed two separate fill units above the floor. Fill 1 was a layer of gray to white clay which appeared to have been produced by collapse of the structure. The top of Fill 1 was found at a depth of 33 cm. Above it, and extending to the surface, was a layer of loose Stratum 2 sand containing some structural rubble.

Discussion. Room Block 2 was a four-unit storage structure which was most likely built during early and middle Pueblo II. The surface of origin of the different elements varied because of the southeasterly slope upon which they were built. All of the features were, however, dug from 10 to 40 cm. into Stratum 1. The peripheral placement of the room block on the western margin of the site and its placement over part of Pithouse 2 suggests that it was a later phenomenon.

Figure 171. View of Cist 9 with coursed wall remnant at the left and showing partial clay floor on the large slab or rock.

Room Block 2 appeared to have been built in two phases at different times during early and middle Pueblo II, as was indicated by the different building styles. Cists 7 and 8 appeared to have represented the first step in this construction. These were also the only truly contiguous units. Both were slab-lined with the bases of the slabs set well into Stratum 1. Neither produced evidence of the superstructure beyond the clay and stone rubble found in the fill. It seems likely, however, that both had coursed walls and a pole-and-brush roof covered with clay.

Room 4 and Cist 9 were apparently built later, although some of their architectural distinctiveness may result from the necessity of building in a boulder-strewn area. Both had coursed masonry walls, and both were more nearly surface structures. The surface of origin for the two features was slightly higher than that of Cists 7 and 8, suggesting a time lapse and fill accumulation.

The cultural material recovered from Room Block 2 (Table 31) must remain suspect as temporal indicators because of the heavy erosion that followed the grading of the road just above the feature. A redeposition of Stratum 2 sand appears to have been heavy, while accelerated erosion also followed. Ceramics, for example, indicate a temporal range from Pueblo I through late Pueblo II. Cists 7 and 8 could actually have been built in late Pueblo I, although the fact they were built over Pithouse 2 tends to minimize that possibility. It was unfortunate that no carbon samples, particularly from floor contact proveniences, were recovered.

## Pithouse 1

The surface of origin for Pithouse 1 appeared to have been the top of Stratum 1, which was found at a depth of 48 cm. on the northwest side of the structure and at 50 cm. on the southeast (Fig. 172). There may have been a thin, overlying level of Stratum 2 sand on the prehistoric surface, but no stratigraphic distinction could be made in the profile.

Construction of the pithouse began with the excavation of a subrectangular pit to a depth of from 20 to 50 cm. into Stratum 1. In the absence of a bench, the earthen walls served as the exterior walls of the pit. They were lined with a highly compact clay ranging from 10 to 23 cm. thick. This was applied both to the interior walls and to their tops, the clay on the top apparently meant to serve as the base for a jacal wall. A 1.35 m. long segment of jacal was found along the central part of the southwest wall.

A few upright slabs as well as cobbles were incorporated into a small part of the wall along the southeast (Fig. 172). Where present, the slabs were bonded to the wall with clay, while some of the cobbles appeared to have been placed at the base of an eroded section of jacal wall. An apparent gap in the wall in the area of the vertical slabs suggested that this may have been an opening for a ventilator shaft entering from the southeast, although excavators failed to identify the shaft outside the pithouse.

Prior to the completion of the floor, a hearth and three additional floor pits (Figs. 172,173) were excavated into the sterile Stratum 1.

The hearth was a basin-shaped feature 45 cm. in diameter. The pit penetrated 20 cm. below the floor and was lined with clay, although a few small sandstone slabs were incorporated as well. The hearth was clay-lined and had a raised rim some 8 cm. high and 10 to 15 cm. wide. The hearth was located slightly off center in the room, the offset being in the direction of the possible vent shaft opening. The hearth fill was a dark, black-brown sand speckled with charcoal as well as pockets of soft gray ash. Both pollen and flotation samples were taken from the hearth.

<u>Pit 1</u> (Fig. 173) was found in the western corner of the room. It was oval in shape, measuring 50 by 30 cm. while it was 10 cm. deep. The pit was fully lined with reddish clay and then filled with clean, orange sand which contained a single triangular piece of sandstone near the bottom of the fill. The pit was then capped with a layer of compact clay, apparently after the floor had been prepared.

<u>Pit 2</u> was grouped with Pit 3 in the northern corner of the room. Pit 2 was oval in shape, measuring 48 by 33 cm. and 20 cm. deep. It was found to have been lined with a gray-white clay, while the fill was clean, orange sand. The top of the pit was capped with 3 to 5 cm. of compact clay which left a slight depression in the floor.

<u>Pit 3</u>, the largest of the three, measured 64 by 46 cm. but it was only 12 cm. deep. It was partially lined with reddish clay, and Stratum 1 was visible in the bottom. Three distinct fill levels were identified along with another small piece of sandstone. At the bottom, <u>Fill 1</u> was a 1 to 3 cm. thick layer of clean orange sand. Above this was a layer of charcoal and blackened sand

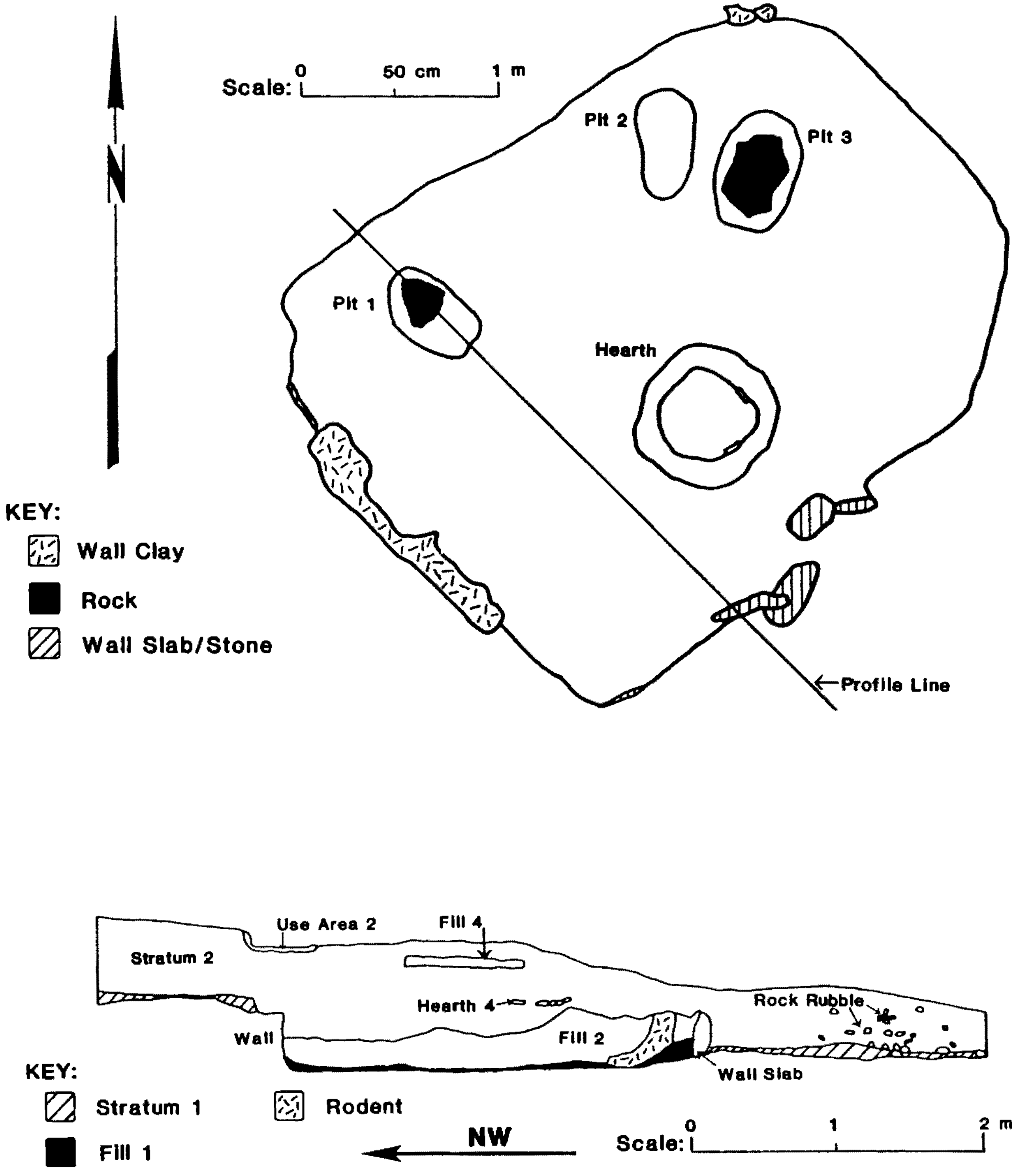



Figure 172. Pithouse 1 plan map (top) and profile (bottom), 42Ws395.

(Fill 3) only 0.5 cm. thick. At the top was a 2 cm. thick layer of clay-impregnated sand, Fill 3. The pit was capped by a 3 cm. thick layer of compact clay. In the case of Pit 3, however, the strata indicated that after some of the clean sand had been deposited, a small fire had been set and was then smothered with the stone and the remaining fill. This proved to be the only one of these engimatic floor pits found in the project area that showed any evidence of activity of any kind during the filling of the pit. Similar floor pits at 42Ws288 and 42Ws388 were found to contain only clean orange sand, such as was found in Pits 1 and 2 in this structure.

Figure 173. View south of Pithouse 1, 42Ws395. Shows Pit 1 partially excavated on the right and ash stain on the floor.

The final construction step involved the laying of a prepared clay floor over Stratum 1. The floor was found at a depth of 90 cm. near the center and at 69 cm. around the edges. In profile, the floor was saucer-shaped. A carbon sample obtained in floor contact yielded a date of 1050±60 years: A.D. 900 (Beta 8052).

The fill of Pithouse 1 was varied and somewhat complex. Fill 1 was a loose brown sand which intermittently overlayed the clay floor and ranged from 2 to 10 cm. in thickness. Fill 2 was the apparent remnant of the collapsed and burned roof of the structure, although no pieces of a wooden framework which must have existed could be found. Fill 3 was a layer of darkly stained Stratum 2 sand that seemed to have been deposited naturally following the collapse of the roof. During the period in which this strata was accumulating, the area appeared to have been used as an activity area. Fill 3 ranged from 10 to 15 cm. thick. Fill 4 was a thin layer of highly compact, white clay that appeared to have been intermittantly deposited during the collapse of Room Block 1. It averaged 7 cm. thick. Fill 4 was then covered by an additional 10 to 15 cm. of Stratum 2 sand.

Discussion. In its final form, Pithouse 1 was a subrectangular structure measuring 3.4 m. northeast to southwest by 2.2 m. (Figs. 172,173). The pit walls stood 35 to 50 cm. high, but there was minimal evidence of the character of the upper walls. The clay at the top of the pit walls and the lack of stone rubble in the pithouse fill argue that the superstructure was built of jacal. Jacal walls were found at 42Ws388 in Pithouse 2, but the debris in this instance produced no wood that may have been used in construction. The fill definitely indicated that clay was used in the superstructure, but there was no evidence of the support system.

Pithouse 1 was an unusual structure in that it was subrectangular rather than circular. The circular form was found in the project area at 42Ws268, 288, 388, and 392 as well as throughout the general Western Anasazi area.

Ceramics found in the lower fills of the pithouse were composed largely of North Creek Gray with a limited number of middle to late Pueblo II painted types mixed in (Table 31). Corrugated pottery, diagnostic of middle and late Pueblo II steadily increased in the upper fill levels to the point where it became the dominant element in the ceramic collection. The increase was probably produced by activities associated with exterior hearths found in Fill 3. Also significant was the limited representation of earlier painted types. A single Mesquite Black-on-gray, one Washington Black-on-gray, and only two St.George Black-on-gray were recovered from the pithouse fill levels.

Projectile points recovered from the pithouse floor,hearth, and Fill 1 included a Parowan Basal-notched, Rose Spring, and a Basketmaker II dart point. The latter point was doubtless a curated point while the Parowan Basal-notched form is considered a Pueblo II diagnostic. In some areas the Rose Spring point is considered a Pueblo I form, but it is so commonly found in Pueblo II Western Anasazi contexts as well as in a comparable temporal position in the nearby Parowan Fremont, that it can just as well be regarded as a Pueblo II marker.

The carbon date of ca. A.D. 900 straddles the transition from Pueblo I to Pueblo II and, as such, it is perhaps quite indicative of the temporal position of Pithouse 1. The ceramics do not support the position, but later activity in the area as well as erosion from above readily account for the anomaly.

Pithouse 1 could be associated with Cists 1 through 6 since it was southeast of those storage structures and, generously viewed, may be seen as fitting a Pueblo I pattern. If, on the other hand, the structure is to be considered a manifestation of an early Pueblo II occupation, it may be seen as associated with Room Block 2.

Pithouse 2

The walls of this structure (Fig. 174) could be identified by little more than the presence or absence of Stratum 1 caliche and gravel and, even in this respect, some difficulty remained because of substantial rodent disturbance in the area. Profiles suggested that the surface of origin was some 30 cm. below the upper edge of Stratum 2. Such an origin was, however, depositionally impossible and it is likely that the pit originated at the top of the stratum. The only other possibility would be that the profile (Fig. 174) failed to show a bench and it seemed certain that none existed.

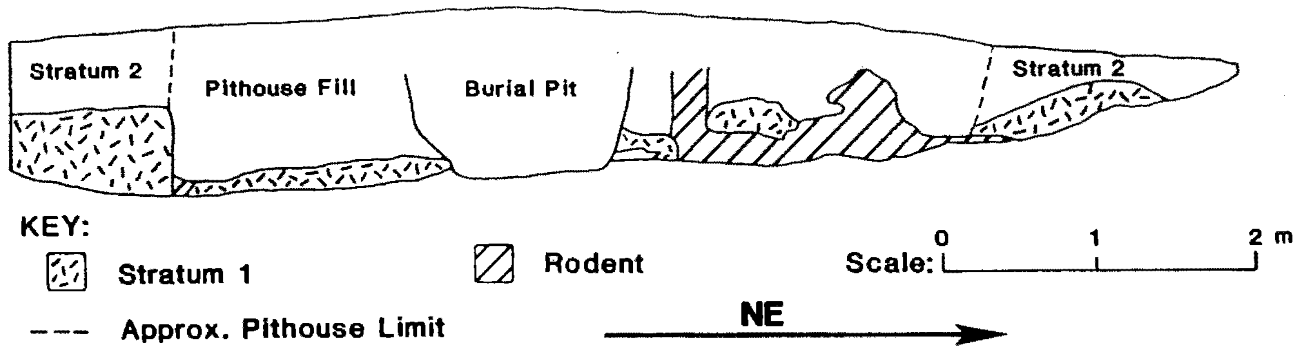



Figure 174. Pithouse 2 profile.

Although there was a slight suggestion of a prepared clay floor just northeast of the burial pit which seemed associated with two upright slabs, this was the only evidence of interior finish within the structure. All exploration of the pithouse argues that either the structure was only roughly finished, or that it was prehistorically quarried by later occupants for building material.

The northeastern end of the structure was 1.8 m. wide. Difficulty in defining the southwestern edge of the structure made a determination of the length tenuous, but it seems that the structure was between 3.0 and 3.5 m. long. Pithouse 2 was similar to pithouses noted at 42Ws390 and 42Ws387, particularly the latter. Both of those structures also appeared to be unfinished. No floor features, not even a hearth, could be identified. Although the issue of the use of Pithouse 2 cannot be settled, the fact that Room Block 2 was built and the burial was interred after the abandonment of Pithouse 2, it can be seen as an early construction effort.

Only a single fill was identified in the structure. This was a tan sand containing small to medium sized pebbles, pockets of ash, sandstone slabs, a few small boulders, and chunks of white and gray clay. These Fill 1 sands were so similar to those of Stratum 2, that it proved almost impossible to find a line of demarcation between the two units.

Cultural material recovered from the fill of Pithouse 2 apparently indicated that the heaviest use of the area came during the Pueblo II period, most likely the middle and late segments. In this instance, the data cannot be taken to infer that the pithouse was constructed or used during that time. It appeared much more likely that it was a trash area, and perhaps and activity area, during later times. The extension of part of Room Block 2, which has been attributed to early Pueblo II, argues that this structure was an abortive attempt made during Pueblo I.

Exterior Hearths.

A total of nine exterior hearths were identified during the excavation of Pithouse 1 (Figs. 175,176). All were found within Fill 3 and Stratum 2 fill of that structure and they have been numerically designated according to their approximate stratigraphic placement, from the lowest to the highest.

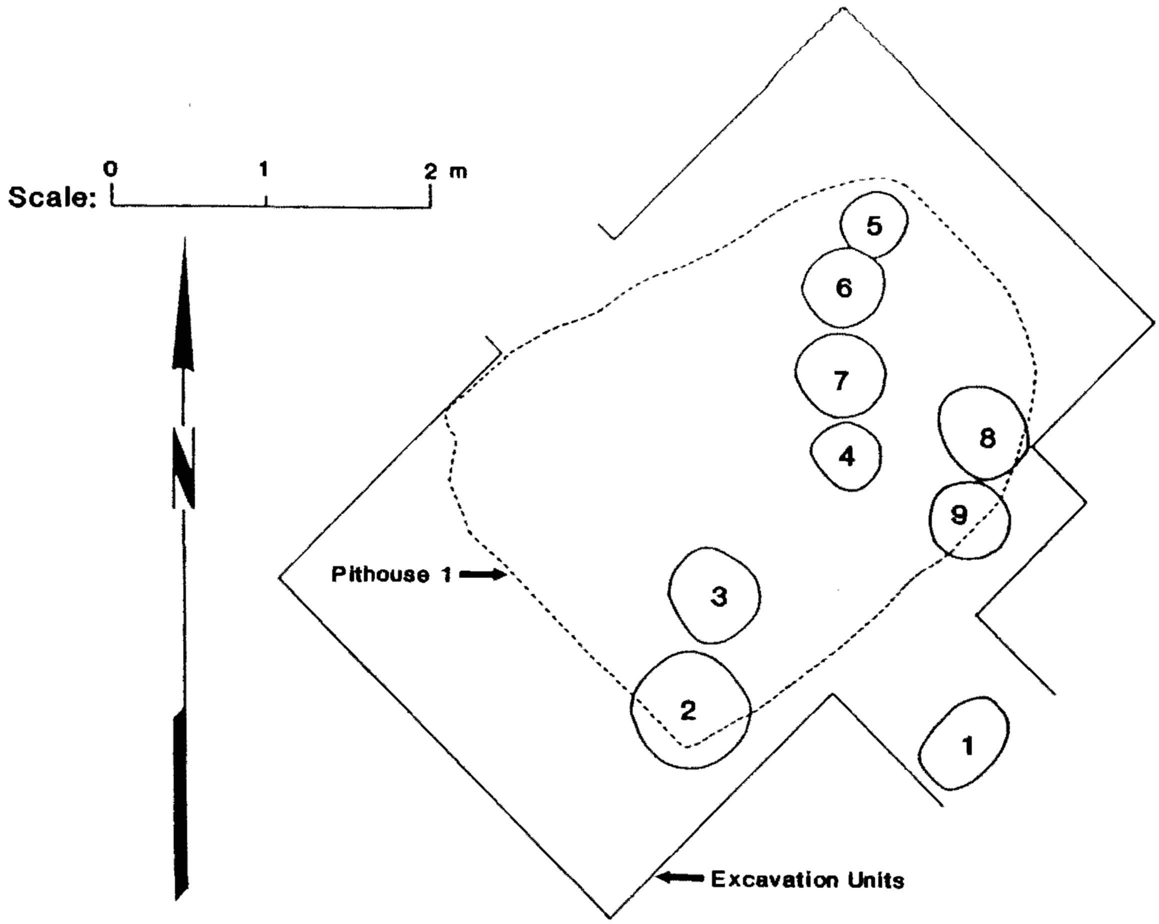



Figure 175. Plan map of the location of the exterior hearths in relation to the Pithouse 1 outline, 42Ws395.

Figure 176. Detail view of cleared Exterior Hearth 4, 42Ws395.

Hearth 1. Found at a depth of 18 cm., this was a rectangular feature measuring 60 by 40 cm. It was outlined by ash and charcoal-stained slabs and contained a thin deposit of gray ash and darkly stained sand. The feature appeared to have been partially disturbed by subsequent prehistoric activity in the area.

Hearth 2. This assumed a circular form some 70 cm. in diameter. It was found at a depth of 43 cm. and lay over the southwestern corner of Pithouse 1. It had been roughly lined with slabs and stone, while additional stone was found within the fill. The hearth originated well within Fill 3 of Pithouse 1.

Hearth 3. This was a basin-shaped feature roughly outlined even though its edges were marked by leaning slabs. It was found at a depth of 39 cm. The basin itself was only 4 cm. deep. Its contents were limited to a thin layer of gray, ashy fill.

Hearth 4. This hearth (Fig. 176) was located in the southeastern area of the Pithouse 1 depression at a depth of 24 cm. This basin-shaped feature was lined with sandstone slabs and basalt cobbles. It showed an average depth of 8 to 10 cm. and a diameter of 60 cm. No fill was found but the stone lining was fire-blackened. The hearth was confined to Stratum 2 sand.

Hearth 5. This was an ill-defined feature dug into Stratum 2 sand and found at 23 cm. It was 40 cm. in diameter with a depth of 10 cm. A single small sandstone slab fragment may have been a part of the lining which was, for the most part, marked only by fire-hardened and reddend sand.

Hearth 6. This was found adjacent to Hearth 5, but at a depth of 21 cm. in Stratum 2 sand. It was bowl-shaped, measuring 50 cm. in diameter, while it was 17 cm. deep. The interior was lined with discontinuously laid sandstone slab fragments and fire-hardened sand.

Hearth 7. This was located on the northeastern side of the Pithouse 1 depression (as were hearths 8 and 9). Hearth 7 was reached at 23 cm. in Stratum 2 sand. With a diameter of 50 cm. and a depth of 10 cm., the bowl-shaped feature was marked along its upper margins by small, upright slabs, while the lower portions were lined with fire-hardened sand.

Hearth 8. First encountered at a depth of 23 cm., this hearth was a fairly well-defined oval measuring 75 cm. east to west and 55 cm. wide. It had a maximum depth of 15 cm. The bottom of the basin was lined with small sandstone slabs, while the upper walls were traced by fire-hardened and reddened sands. The fill was gray-brown ashy sand flecked with charcoal.

Hearth 9. This hearth nearly touched the southern edge of Hearth 8 and it also was found at 23 cm. It was lined with small sandstone slab fragments and other stone. The hearth diameter was 50 cm. and the maximum depth was 10 cm.

Discussion. Hearths 1, 2, and 3 originated at the same level within Fill 3 of Pithouse 1 and they occurred at depths between 41 and 46 cm. They also tended to cluster on the southern side of the pithouse depression. Hearths 4 through 9, on the other hand, were located in the northeastern portion of the fill. These later features also tended to cluster at similar levels of origin, being found at depths of 21 to 24 cm. in Stratum 2. Hearths 1 through 4 seemed to have been built with greater care than the other hearths, although no reason for the difference could be suggested. Not all of the hearths contained traditional hearth fill, but all showed evidence of direct fire use in the form of stained stone and fire-hardened and reddened sand.

Most of the cultural material recovered from the hearths (Table 31) came in the form of ceramics, most of which was identified as North Creek Gray and North Creek Corrugated. The small collection of painted sherds included a single Hildale Black-on-gray sherd as well as one Pipe Spring Black-on-gray. The evidence thus suggests that the hearths were part of a late Pueblo II occupation, perhaps associated with the use of Room Block 1.

Ceramics from exploratory trenches in the area were also dominated by late Pueblo II ceramics, notably North Creek Corrugated, North Creek Black-on-gray, Hildale Black-on-gray, and Glendale Black-on-gray. Other cultural materials from these trenches suggested that lithic reduction and tool production were important activities in the area.

Burial

The burial had intruded just above the southern arc of Pithouse 2 from a surface of origin that could not be determined because of long-term erosion in the area (Fig. 174). Trenching in the area in an effort to define the feature made it possible only to estimate the dimensions of the burial pit; these were calculated at 135 cm. northeast to southwest by 60 cm. The depth of the pit could not be ascertained because of the erosion, but it was believed to have been at least 1 m. in depth. The floor of the pit was fairly level with rounded corners, while the bottom was covered with a 1 cm. thick layer of very fine, tan sand.

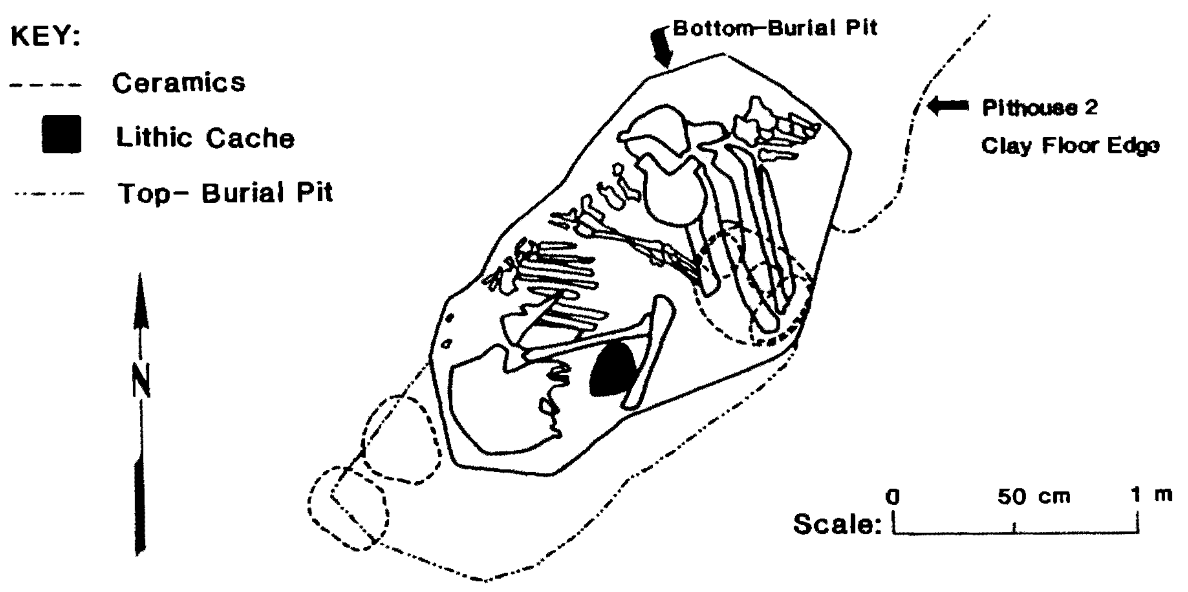



Figure 177. Plan map of the burial at 42Ws395 showing the position and orientation of the body, and placement of the grave goods.

Figure 178. General view northwest of the exposed skeleton, 42Ws395 burial.

Figure 179. Detail of the cache of material in the crook of the skeleton's arm, 42Ws395 burial.

All of the bone was extremely fragile and required delicate manipulation. The fill was removed with dental picks, small brushes, and a squeeze bulb. Exposure was further hindered by the adhesion of the moist soil to the bone. The recovery could thus be accomplished only be removing some fill, then allowing time for an additional portion to dry before its removal. Before the exposure of the burial was complete, it had become obvious that it would be impossible to remove the bone for laboratory study.

The description of the burial should make it evident that this was a secondary interment and that the deceased had been exposed to the elements for an undetermined length of time. The point will be discussed in the conclusion.

The body had been placed on the fine sand in a flexed position lying on its right side with the head to the southwest (Fig. 177,178). The right arm was placed so that the humerus lay just behind and parallel to the spine, while the radius and ulna angled forward below the rib cage. The right hand was disarticulated and lay partly beneath the right femur.

The left humerus angled downward towards the flexed knees and its distal end appeared to have been disarticulated from the radius and the ulna, which angled upwards. No trace of the left hand was found. In spite of the poor condition of the remains, it seems unlikely that the left hand could have preferentially decayed. It is more likely, therefore, that the left hand became detached during exposure and prior to burial.

The legs were tightly flexed with the femora angling slightly upward while parallel to each other. The left foot lay almost on top of the right. Both knee articulations were severely deteriorated and lacked patellae.

The cranium appeared to have been subjected to occipital flattening, but the cranium had also been deformed by soil settling and thus the exact extent of the flattening could not be determined. It should be noted that, with the exception of the occipital deformation, the general characteristics of the burial, particularly in terms of its orientation and position, were quite similar to Burial 1 at 42Ws392. Both burials also exhibited disarticulations and missing body parts.

A large and varied assortment of mortuary offerings accompanied the burial (Fig. 177). These included eight ceramic vessels, turquoise, hematite, limonite, calcite, malachite, a quartz crystal, hematite beads, projectile points, and lithic debitage. All of the offerings appeared to have been placed after the deceased had been interred with the exception of the hematite beads which formed a bracelet found on the left wrist.

Four ceramic vessels were placed southwest of the head. These included two unbroken jars, one North Creek Gray and the other North Creek Corrugated, which were placed upright and quite close together. Both contained the tan sandy clay of the burial pit fill and both were sampled for pollen and floation. Over each jar a North Creek Black-on-gray bowl had been inverted. The bowls had been broken by the pressure of the overburden. It was, in fact, the discovery of this cluster of four vessels that led to the identification of the burial.

A second cluster of four ceramic vessels had been placed above the knees of the deceased. A large North Creek Corrugated jar was first placed above the knees and may have been intentionally broken to make room for the remaining vessels. In the fill above the corrugated jar, meanwhile, excavators found two calcite disks, each 0.5 cm. thick and 4 cm. in diameter. They proved highly friable and removal damaged them badly.

A small, poorly made North Creek Gray vessel,intermediate between a bowl and a jar and unbroken was found in an inverted position above the calcite disks. Close by, a small unbroken North Creek Corrugated jar with a rim handle, was placed near the existing cluster of sherds. This jar contained numerous cultural offerings such as three pieces of hematite clay paste, a friable mass of limonite, four pieces of low grade turquoise, two Parowan Basal-notched pints and two pieces of lithic debitage. Pollen and flotation samples were taken from the small corrugated jar. Finally, a large panel of a North Creek Gray jar was laid above the existing ceramic cluster.

A third cluster of offerings had been placed in the crook of the right arm directly on the bottom of the pit (Fig. 177,179). The entire cache of lithics and minerals measured 14 by 11 cm. and included twelve pieces of malachite, fourteen fragments of white ochre, two sherds each of North Creek Gray and North Creek Corrugated, and twenty-eight pieces of lithic debitage. The malachite, the ochre, and the debitage had been segregated into distinct clusters

A final offering was a multiple strand of tiny hematite beads which had been on the left wrist of the deceased when the body was interred. Some of the beads were scattered around the feet and pelvic area, but the major concentration was at the wrist. Careful exposure of the proximal ends of the carpals and the distal ends of the ulna and radius revealed numerous short alignments of beads which remained in situ even though the cord on which they had been strung had long since decayed. The location and orientation of the strands indicated that the bracelet had consisted of multiple parallel strands of beads. A total of 380 beads and 22 bead fragments were recovered.

Because of the advanced rate of decomposition, osteological analysis of the skeletal material was sharply limited. None of the bones remained sufficiently intact, for example, to allow detailed measurements. Measurements of the remains of the left femur (ca. 35.8 cm.) and the left tibia (ca. 36.5 cm.) were taken in an effort to calculate approximate stature. Using a relationship derived empirically from a sample of modern Mexican people (Genoves, 1967), these measurements indicated a stature of at least 144.8±3.4 cm. (4' 9") based on the femur length of 162.7±2.8 cm. (5' 4") based in the tibia length. Genoves stated that the estimate based on tibia length is usually more accurate. Genoves also noted that work by Bennett on Indian groups in New Mexico and Arizona demonstrated that the stature formula also worked well for the Native American populations (1967:74). The stature for the individual buried at 42Ws395 was, therefore, at least 5'4".

While no evidence of disease was found on the skeleton, it should be remembered that bone preservation was so poor that only a very serious manifestation would have been apparent. The few surviving articulations (right phalanges and a few of the thoracic vertebrae) were examined for arthritic lipping, but none was found. The teeth lacked evidence of carries, but one tooth, a lower left second premolar, was lost prior to death.

The deceased was determined to have been a male on the basis of the large mastoid process and large obturator foramen. The sciatic notch was quite wide, however, compromising the determination of sex. Other factors, such as the projectile point offerings, would appear to confirm that the deceased was a male. Age could not be established with precision, but the epiphyses of the surviving phalanges were all fused, indicating an age of at least 21 years. The extremely heavy wear on the teeth would imply much greater age. The molars and the premolars were worn to the extent that the primary dentine was exposed, leaving only a ring of enamel.

Discussion. The burial was that of an elderly male who was interred in a flexed position with substantial mortuary offerings. The decedent was aligned along a northeast to southwest axis with the head to the southwest. This orientation was identical with that of Burial 1 at 42Ws392. The numerous ceramic offerings included two North Creek Black-on-gray bowls, a North Creek Gray bowl, three North Creek Corrugated jars, and two North Creek Gray vessels with sharply everted rims. The ceramic assemblage indicates a late Pueblo II affiliation for the burial. The presence of the two Parowan Basal-notched points tend to confirm the temporal designation.

The contents of the small corrugated jar were of particular interest because of the presence of the obsidian Silver Lake dart point and the quartz crystal. The point had been reworked extensively by its original maker, but its undisturbed patina indicated that the specimen had not been used or reworked by its later owner. The point had probably been collected as a curiosity and kept with the other contents of the vessel as a part of what may have been a "medicine bundle." The presence of the quartz crystal supports the hypothesis since there is known to be a widespread association of quartz crystals with other shamanistic paraphernalia (Horner, 1980:109).

The man interred at 42Ws395 was somewhat more than 163 cm. (5' 4") tall, but due to the deterioration of the femur and tibia, a more exact stature estimate could not be made. No evidence of disease was found but a lower premolar was missing and the remaining teeth exhibited extensive abrasive attrition.

The body of the decedent was apparently exposed to the elements to a point of partial decay before interment. This judgment was based on a number of peculiarities in the orientation, or in the absence of certain body parts. The left hand, for example, was entirely missing while the right hand was disarticulated, scattered, and missing numerous bones. The left elbow was also disarticulated and the lower left arm, lacking its hand, was placed in the burial on top of both the distal end of the left humerus and the cache of debitage and related offerings. The manubrium and body were disarticulated and the manubrium had been replaced with the lower rib cage, while the sternum was not found. Several other displaced bones were found within the rib cage, including the twelfth thoracic vertebra. The left twelfth rib was completely reversed in position. Not only was the lowest thoracic vertebra removed, but the spinal column above this vertebra is not aligned with the lumbar vertebrae, as if the spinal column had been severed and the body interred one half at a time. The final skeletal peculiarity was the coccyx, which was disarticulated and found lying near the obturator foramen of the right inominate.

## TABLE 31

## COLLECTION SUMMARY, 42WS395

**Trench 1, Stratum 2**
**Units C, E, G, H.**

| Ceramics. | |
|---|---|
| North Creek Gray | 64 |
| North Creek Corr. | 60 |
| Washington B/G | 3 |
| St.George B/G | 2 |
| North Creek B/G | 6 |
| Hildale B/G | 2 |
| Glendale B/G | 1 |
| u/i Virgin Ser. B/G | 14 |
| Boulder Gray | 2 |
| Middleton Red | 2 |
| Middleton B/R | 1 |

| Lithics | |
|---|---|
| C - point (unfinished) | 1 |
| C - point preforms | 2 |
| C - preform | 1 |
| C - scraper | 1 |
| C - utilized flake | 1 |
| C - biface flakes | 6 |
| LL- cores | 2 |
| C - core flakes (2 cortex) | 17 |
| C - u/i flakes (1 cortex) | 29 |
| C - core shatter flakes (3 cortex) | 15 |
| LL- cores | 2 |
| LL- u/i flake | 1 |
| LL- core flake (1 cortex) | 2 |
| LL- core shatter flake (cortex) | 1 |
| Q - core flake (cortex) | 1 |
| Q - u/i flake (cortex) | 1 |
| SS- core flake | 1 |
| C4- core flakes (1 cortex) | 2 |
| C4- u/i flake (cortex) | 1 |
| S - mano | 1 |
| LL- hammerstone | 1 |

**Trench 6, Stratum 2**

| Ceramics | |
|---|---|
| North Creek Gray | 35 |
| North Creek Corr. | 41 |
| North Creek B/G | 4 |
| u/i Virgin Ser. B/G | 3 |
| u/i Virgin Ser. B/G-corr. | 1 |
| Boulder Gray | 9 |
| Moapa Corr. | 1 |

| Lithics | |
|---|---|
| S - metate frag. | 1 |
| C2- knife frag. | 1 |
| C - point preform | 1 |
| C - biface flakes | 3 |
| C - core flakes (2 cortex) | 5 |
| C - core shatter flakes (3 cortex) | 8 |
| C - u/i flakes (2 cortex) | 22 |
| LL- core flakes (6 cortex) | 8 |
| LL- core shatter flakes (1 cortex) | 3 |
| LL- u/i flakes (1 cortex) | 4 |
| Q - core flakes (2 cortex) | 2 |
| C4- biface flakes | 3 |

| Faunal | |
|---|---|
| *Lepus* humerus | 1 |
| *Sylvilagus* humerus | 1 |
| Rodentia ulna | 1 |
| small mammal humerus | 1 |
| small mammal long bone | 2 |
| small mammal u/i | 1 |
| large mammal u/i | 3 |
| thin-walled long bone | 2 |
| large mammal long bone (4 burned) | 4 |

**Unit 7-E. Stratum 2.**

| Ceramics | |
|---|---|
| North Creek Gray | 109 |
| North Creek Corr. | 22 |
| Washington B/G | 5 |
| North Creek B/G | 1 |
| u/i Virgin Ser. B/G | 10 |
| Parashant B/G | 1 |
| Boulder Gray | 5 |

| Lithics | |
|---|---|
| S - mano frag. | 1 |
| C - point tips | 2 |
| C - Cottonwood Triangular | 1 |
| C - drill | 1 |
| C - point preforms (2 frag.) | 3 |
| C - cores | 2 |
| LL- core | 1 |
| C - biface flakes | 3 |
| C - core flakes (6 cortex) | 27 |
| C - core shatter flakes (4 cortex) | 11 |
| C - u/i flakes (3 cortex) | 36 |
| LL- core flakes (2 cortex) | 2 |
| LL- core shatter flake | 1 |
| LL- u/i flakes (2 cortex) | 3 |
| SS- core flake | 1 |
| Q - core flake (cortex) | 1 |
| Q - core shatter flake | 1 |
| C4- core flakes (1 cortex) | 2 |

**Trench 8, Stratum 2**
**Units G, J.**

| Ceramics | |
|---|---|
| North Creek Gray | 20 |
| North Creek Corr. | 19 |
| North Creek B/G | 3 |
| Hurricane B/G | 2 |
| Boulder Gray | 1 |

| Lithics | |
|---|---|
| S - mano frag. | 1 |
| S - edge pounder | 1 |
| Q - edge grinder | 1 |
| C - Parowan Basal-notched preform | 1 |
| C - utilized flake | 1 |
| C - preforms (1 frag) | 2 |
| LL- cores | 3 |
| C - biface flake | 1 |
| C - core flakes | 6 |
| C - core shatter flakes (3 cortex) | 9 |

# TABLE 31 (continued)

| | |
|---|---|
| C - u/i flakes (3 cortex) | 14 |
| LL- core flakes (5 cortex) | 7 |
| LL- core shatter flakes (2 cortex) | 2 |
| LL- u/i flakes (1 cortex) | 2 |
| **Trench 9 Upper Terrace Surface** | |
| *Ceramics* | |
| North Creek Gray | 56 |
| North Creek Corr. | 53 |
| u/i Virgin Ser. B/G | 7 |
| Boulder Gray | 5 |
| Middleton Red | 1 |
| *Lithics* | |
| S - grinding slab frag. | 1 |
| Q - edge pounder | 1 |
| Q - edge grinder | 1 |
| Q - Parowan Basal-notched point | 1 |
| C - Cottonwood Triangular | 1 |
| C - preform | 1 |
| C - point preform | 1 |
| C - cores | 2 |
| LL- core | 1 |
| Q - core | 1 |
| C - biface flakes | 7 |
| C - core flakes (8 cortex) | 35 |
| C - core shatter flakes (2 cortex) | 14 |
| C - u/i flakes (7 cortex) | 52 |
| LL- core flakes (8 cortex) | 12 |
| LL- core shatter flakes (8 cortex) | 11 |
| LL- u/i flakes (6 cortex) | 13 |
| SS- u/i flake | 1 |
| Q - core flakes (1 cortex) | 2 |
| C4- core flake | 1 |
| C4- u/i flake | 1 |
| C5- biface flake | 1 |
| *Faunal* | |
| Large mammal rib (burned) | 1 |
| **Rockshelter 1 Fill** | |
| *Ceramics* | |
| North Creek Gray | 6 |
| North Creek Corr. | 4 |
| Washington B/G | 2 |
| Middleton Red (worked) | 1 |
| Middleton B/R (scoop) | 1 |
| *Lithics* | |
| S - mano frag. | 1 |
| S - grinding slab frag. | 1 |
| C - core flakes (1 cortex) | 6 |
| C - core shatter flake | 1 |
| C - u/i flakes (1 cortex) | 12 |
| LL- core flake | 1 |
| *Faunal* | |
| large mammal ulna | 1 |
| small mammal long bones | 7 |
| **Rockshelter 2, Stratum 2** | |
| **Trench 2, SW Unit** | |
| *Ceramics* | |
| North Creek Gray | 3 |
| North Creek Corr. | 3 |
| u/i Virgin Ser. B/G | 1 |
| *Lithics* | |
| Q - mano frag. | 1 |
| C - point preform | 1 |
| C - core flake | 1 |
| O - u/i flake | 1 |
| **Trench 2 SE Unit** | |
| *Ceramics* | |
| North Creek Gray | 6 |
| North Creek Corr. | 3 |
| *Lithics* | |
| C - blank frag. | 1 |
| C - core flakes | 4 |
| **Fill 1 and 2** | |
| *Ceramics* | |
| North Creek Gray | 24 |
| North Creek Corr. | 47 |
| North Creek B/G | 1 |
| Hildale B/G | 4 |
| Glendale B/G | 1 |
| u/i Virgin Ser. B/G | 5 |
| u/i Virgin Ser. B/G-Corr. | 2 |
| Boulder Gray | 2 |
| Middleton Red | 2 |
| *Lithics* | |
| S - manos | 3 |
| S - mano frags | 5 |
| B - manos | 2 |
| Q - mano frag. | 1 |
| B - ground stone frag. | 1 |
| S - trough metates | 3 |
| B - grinding slab | 1 |
| S - grinding slab frag. | 1 |
| S - polishing stone | 1 |
| Q - edge grinder | 1 |
| LL- edge grinder | 1 |
| Q - edge grinder | 1 |
| S - edge grinder | 1 |
| LL- hammerstone | 1 |
| Q - hammerstones | 2 |
| -- turquoise frag. | 1 |
| C - scraper | 1 |
| C - utilized flake | 1 |
| C - preforms | 2 |
| Q - preform | 1 |
| C - point preform frag. | 1 |
| Q - point preform | 1 |
| C - blank | 1 |
| C - core | 1 |
| LL- cores | 2 |
| L - core | 1 |
| C - biface flakes | 7 |
| C - core flakes (2 cortex) | 11 |
| C - core shatter flakes (1 cortex) | 7 |

TABLE 31 (continued)

| | |
|---|---|
| C - u/i flakes (1 cortex) | 26 |
| LL- core flakes (4 cortex) | 8 |
| LL- core shatter flake (cortex) | 1 |
| LL- u/i flakes (3 cortex) | 13 |

Faunal

| | |
|---|---|
| Artiodactyl rib,cut marks(worked) | 1 |
| *Ovis canadensis* scapula (polished) | 1 |
| Artiodactyl left tibia (burned) | 1 |
| *Odocoileus hemionus* phalange | 1 |
| *Equus* astragalus | 1 |
| Lagomorph left lower mandible | 1 |
| Lagomorph teeth | 3 |
| *Sylvilagus nuttali* left tibia | 1 |
| *Sylvilagus* vertebra | 1 |
| *Sylvilagus* left pelvis | 1 |
| *Sylvilagus* right pelvis | 1 |
| *Sylvilagus* left humerus | 1 |
| *Sylvilagus* left lower mandible | 1 |
| Rodentia right humerus | 1 |
| large mammal rib | 2 |
| large mammal vertebra | 1 |
| large mammal long bone (3 burned) | 6 |
| small mammal ribs | 3 |
| small mammal tibia/fibia | 1 |
| small mammal ulna | 1 |
| small mammal humerus | 1 |
| small mammal scapula | 1 |
| small mammal metatarsals | 2 |
| small mammal femur | 1 |
| small mammal long bones | 3 |
| small mammal u/i | 7 |
| thin walled u/i | 3 |

Rockshelter 2 Floor

Ceramics

| | |
|---|---|
| North Creek Gray | 4 |
| North Creek Corr. | 3 |
| Hurricane B/G | 5 |

Lithics

| | |
|---|---|
| S - grinding slab frag. | 1 |
| S - ground stone frags. | 4 |
| C2- Parowan Basal-notched | 1 |
| C - core shatter flake | 1 |
| C2- core flake (cortex) | 1 |

Faunal

| | |
|---|---|
| Rodentia left mandible | 1 |
| large mammal ribs | 2 |
| small mammal u/i | 9 |

Hearth 1

| | |
|---|---|
| North Creek Corr. | 1 |

Hearth 2

| | |
|---|---|
| North Creek Gray | 1 |

Hearth 5

| | |
|---|---|
| North Creek Corr. | 2 |
| C - biface flake | 1 |

Rockshelter 3 Fill
Trench 3

Ceramics

| | |
|---|---|
| North Creek Gray | 14 |
| North Creek Corr. | 13 |
| North Creek B/G | 1 |
| u/i Virgin Ser. B/G | 1 |
| Pipe Spring B/G | 1 |
| Middleton Red | 1 |

Lithics

| | |
|---|---|
| B - ground stone frag. | 1 |
| Q - edge grinder | 1 |
| C2- utilized flake | 1 |
| LL- core | 1 |
| C - biface flake | 1 |
| C - core flakes (1 cortex) | 5 |
| C - core shatter flakes (2 cortex) | 2 |
| C - u/i flakes (1 cortex) | 5 |
| LL- core flakes (1 cortex) | 2 |
| LL- core shatter flake (cortex) | 1 |
| LL- u/i flake (cortex) | 1 |

Overhang Fill

| | |
|---|---|
| North Creek Gray | 2 |
| C2- utilized flake | 1 |
| C - preform frag. | 1 |
| C - core flakes | 4 |
| C - u/i flakes | 2 |
| LL- core flakes (1 cortex) | 2 |

Western Passageway Fill

Ceramics

| | |
|---|---|
| North Creek Gray (2 fr) | 33 |
| North Creek Corr. | 10 |
| u/i Virgin Ser. B/G | 3 |

Lithics

| | |
|---|---|
| S- mano frag. | 1 |
| Q - edge grinder | 1 |
| LL- edge grinder | 1 |
| Q - edge pounder | 1 |
| C - blank | 2 |
| C - core | 1 |
| LL- cores | 3 |
| C - core flakes (3 cortex) | 6 |
| C - core shatter flakes (2 cortex) | 2 |
| LL- core flakes (5 cortex) | 6 |
| LL- core shatter flakes (4 cortex) | 5 |
| LL- u/i flakes (5 cortex) | 6 |
| Q - core flake (cortex) | 1 |
| C4- u/i flake | 1 |

Faunal

| | |
|---|---|
| Artiodactyl vertebra (burned) | 1 |
| Artiodactyl ribs | 2 |
| Artiodactyl metatarsal | 1 |
| *Equus* phalange | 1 |
| *Equus* astragalus | 1 |
| *Lepus* tibia/fibia | 1 |

TABLE 31 (continued)

| | |
|---|---|
| Lepus skull | 2 |
| Sylvilagus nuttallii rt.mandible w/teeth | 1 |
| large mammal tarsal | 1 |
| large mammal ulna | 1 |
| large mammal vertebrae | 9 |
| large mammal long bone | 11 |
| large mammal u/i | 1 |
| bird long bone | 1 |
| thin walled long bone | 1 |
| **Floral** | |
| corncob 12+ rows | 1 |
| corncob 12 rows | 1 |
| corncob 10+ rows | 1 |
| corncob 10 rows | 2 |
| corncob 8 rows | 1 |
| corncob frags. | 3 |
| **Northeastern "Room" Fill** | |
| North Creek Gray | 7 |
| u/i Virgin Ser. B/G | 2 |
| C - Elko Eared | 1 |
| C - core shatter flake (cortex) | 1 |
| **Cist 1 Surface** | |
| North Creek Gray | 1 |
| North Creek Corr. | 2 |
| Boulder Gray | 2 |
| LL- Core Flake (cortex) | 1 |
| **Cist 1 Fill 1** | |
| **Ceramics** | |
| North Creek Gray | 2 |
| North Creek Corr. | 1 |
| u/i Virgin Ser. B/G | 1 |
| **Lithics** | |
| C - core shatter flake | 1 |
| C - u/i flakes (1 cortex) | 2 |
| LL- core flake | 1 |
| LL- core shatter flake (cortex) | 1 |
| Q1- core flake | 1 |
| **Trench 4 Stratum 1** | |
| North Creek Gray | 4 |
| **Cist 2 Surface** | |
| North Creek Corr. | 2 |
| C - biface flakes | 2 |
| C - core flake | 1 |
| **Cist 2 Floor and Level 1** | |
| North Creek Gray | 5 |
| u/i Virgin Ser. B/G | 1 |
| malachite and azurite pebbles | 8 |
| C - core flake | 1 |
| **Cist 2 Level 2** | |
| **Ceramics** | |
| North Creek Gray | 84 |
| North Creek Corr. | 2 |
| Washington B/G | 1 |
| St. George B/G | 1 |
| u/i Virgin Ser. B/G | 1 |
| **Lithics** | |
| C - Elko Corner-notched | 1 |
| C - point tip | 1 |
| LL- core | 1 |
| C - core flakes (1 cortex) | 4 |
| C - core shatter flakes | 2 |
| C - u/i flakes (1 cortex) | 4 |
| LL- core flake (cortex) | 1 |
| **Cist 3 Floor Contact** | |
| North Creek Gray | 8 |
| North Creek Corr. | 2 |
| Mesquite B/G | 1 |
| Washington B/G | 1 |
| St. George B/G | 1 |
| **Cist 3 Fill 1 and 2** | |
| **Ceramics** | |
| North Creek Gray | 58 |
| North Creek Corr. | 27 |
| North Creek B/G | 6 |
| u/i Virgin Ser. B/G | 4 |
| Hurricane B/G | 1 |
| Boulder B/G | 2 |
| Middleton B/R | 1 |
| **Lithics** | |
| O - stemmed point frag. | 1 |
| C - point tip | 1 |
| PW- Cottonwood Triangular | 1 |
| C - blank | 1 |
| C - preforms (3 frags.) | 5 |
| azurite and malachite pebbles | 15 |
| hematite frags. | 2 |
| C8- preform | 1 |
| C - point preforms | 5 |
| C2- point preform | 1 |
| LL- edge grinder | 1 |
| LL- core | 1 |
| C - biface flakes | 5 |
| C - core flakes (8 cortex) | 46 |
| C - core shatter flakes (3 cortex) | 13 |
| C - u/i flakes (2 cortex) | 40 |
| LL- core flakes (3 cortex) | 4 |
| LL- u/i flakes (1 cortex) | 3 |
| Q - core flake (cortex) | 1 |
| Q - u/i flake | 1 |
| C4- u/i flake | 1 |
| **Faunal** | |
| Sylvilagus scapula | 1 |
| large mammal long bone | 1 |
| small mammal long bone | 2 |
| **Cist 4 Surface** | |
| **Ceramics** | |
| North Creek Gray | 11 |
| North Creek Corr. | 8 |
| u/i Virgin Ser. B/G | 3 |
| Boulder Gray | 2 |
| **Lithics** | |
| LL- edge pounder | 1 |
| C - core flake (cortex) | 1 |

TABLE 31 (continued)

| | |
|---|---|
| C - core shatter flake | 1 |
| C - u/i flakes (1 cortex) | 4 |
| LL- core flake | 1 |
| **Cist 4 Floor** | |
| North Creek Gray (4 fr.) | 10 |
| B - hammerstone | 1 |
| **Cist 4 Fill 1 and 2** | |
| **Ceramics** | |
| North Creek Gray | 85 |
| North Creek Corr. | 67 |
| Washington B/G | 2 |
| North Creek B/G | 4 |
| u/i Virgin Ser. B/G | 11 |
| Boulder Gray | 3 |
| u/i Moapa Ser. B/G | 1 |
| Pipe Spring B/G | 2 |
| Middleton B/R | 1 |
| **Lithics** | |
| Q - mano frag. | 1 |
| S - mano frag. | 1 |
| S - grinding slab frag. | 1 |
| B - axe | 1 |
| Q - edge grinders | 2 |
| hematite frag. | 1 |
| turquoise frag. | 1 |
| C - Elko Corner-notched | 1 |
| C - point tip | 1 |
| C - knife or dart point frag. | 1 |
| C - utilized flake | 1 |
| C - preform | 1 |
| LL- blank | 1 |
| C - point preform | 1 |
| LL- core | 1 |
| C - biface flakes | 6 |
| C - core flakes (5 cortex) | 21 |
| C - core shatter flakes (3 cortex) | 9 |
| C - u/i flakes (4 cortex) | 54 |
| LL- core flakes (6 cortex) | 7 |
| LL- u/i flakes (1 cortex) | 4 |
| SS- core flake (cortex) | 1 |
| Q - core flakes (1 cortex) | 2 |
| Q - u/i flakes (4 cortex) | 4 |
| O - core flake | 1 |
| B - core flake (cortex) | 1 |
| C4- core flake | 1 |
| B - core Flake (cortex) | 1 |
| B - u/i flake (cortex) | 1 |
| **Faunal** | |
| large mammal long bone | 3 |
| large mammal u/i | 3 |
| small mammal u/i | 2 |
| bird long bone | 1 |
| u/i | 1 |
| **Cist 5 Surface** | |
| LL- edge pounder | 1 |
| C - point frag. | 1 |
| C6- preform | 1 |
| C - point preform | 1 |
| C - core flakes (2 cortex) | 5 |
| C - core shatter flakes (1 cortex) | 2 |
| C - u/i flakes (1 cortex) | 15 |
| LL- core flakes (2 cortex) | 3 |
| LL- core shatter flake (cortex) | 1 |
| LL- u/i flakes (1 cortex) | 4 |
| L- u/i flake (cortex) | 1 |
| **Cist 5 Fill 1** | |
| **Ceramics** | |
| North Creek Gray | 48 |
| North Creek Corr. | 75 |
| Washington B/G | 2 |
| Hurricane B/G | 1 |
| u/i Virgin Ser. B/G | 1 |
| u/i Virgin Ser. B/G-Corr. | 3 |
| Boulder Gray | 2 |
| Moapa Corr. | 4 |
| Middleton Red | 1 |
| Middleton B/R | 1 |
| **Lithics** | |
| S - mano | 1 |
| Q - edge grinder | 1 |
| C - Parowan Basal-notched | 1 |
| C - point tip | 1 |
| C - utilized flake | 1 |
| C - point preform | 1 |
| C5- point preform frag. | 1 |
| C - core flakes (1 cortex) | 3 |
| C - core shatter flakes (1 cortex) | 1 |
| C - u/i flakes (3 cortex) | 16 |
| LL- core flakes (5 cortex) | 5 |
| LL- core shatter flakes (1 cortex) | 2 |
| Q - core flake (cortex) | 1 |
| Q - u/i flake | 1 |
| C5- u/i flake | 1 |
| **Faunal** | |
| large mammal long bone frags | 11 |
| large mammal u/i frags. | 10 |
| **Structure 1 Fill 1** | |
| North Creek Gray | 2 |
| North Creek Corr. | 2 |
| O - Rose Spring | 1 |
| C - blank frag. | 1 |
| C - biface flake | 1 |
| C - core flakes | 1 |
| C - u/i flakes | 4 |
| LL- u/i flake (cortex) | 1 |
| **Unit 5-B Surface** | |
| B - Polishing stone | 1 |
| Q - edge grinder | 1 |
| LL- cores | 2 |
| LL- core flakes (2 cortex) | 3 |
| LL- core shatter flake | 1 |
| LL- u/i flake (cortex) | 1 |
| **Unit 5-B Stratum 2** | |
| North Creek Gray | 6 |
| North Creek Corr. | 13 |
| u/i Virgin Ser. B/G | 1 |
| LL- core | 1 |
| C - biface flake | 1 |

# TABLE 31 (continued)

| | |
|---|---|
| C - core flake | 1 |
| C - core shatter flakes (1 cortex) | 2 |
| C - u/i flakes | 2 |

Unit 7-C Stratum 2

| | |
|---|---|
| North Creek Gray | 20 |
| North Creek Corr. | 10 |
| u/i Virgin Ser. B/G | 1 |
| u/i Virgin Ser. B/G-Corr. | 1 |
| Boulder Gray | 2 |
| S - manos | 2 |
| malachite pebble | 1 |
| C - Eastgate | 1 |
| C - core flakes | 2 |
| C - core shatter flakes | 2 |
| C - u/i flakes (2 cortex) | 3 |
| LL- core flakes (cortex) | 2 |
| LL- core shatter flake (cortex) | 1 |
| LL- u/i flake | 1 |

Structure 2 Surface

Ceramics

| | |
|---|---|
| North Creek Gray | 48 |
| North Creek Corr. | 45 |
| St.George B/G. | 1 |
| Hildale B/G | 1 |
| Glendale B/G | 2 |
| u/i Virgin Ser. B/G | 8 |
| Boulder Gray | 2 |

Lithics

| | |
|---|---|
| S - mano | 1 |
| Q - edge grinder | 1 |
| LL- scraper | 1 |
| C - biface flakes | 2 |
| C - core flakes | 4 |
| C - core shatter flake | 1 |
| C - u/i flakes | 2 |
| LL- core flake | 1 |
| Q - core flake | 1 |
| C4- core shatter flake | 1 |

Structure 2 All Levels

Ceramics

| | |
|---|---|
| North Creek Gray | 56 |
| North Creek Corr. | 18 |
| u/i Virgin Ser. B/G | 4 |
| Middleton B/R | 1 |

Lithics

| | |
|---|---|
| malachite pebble | 1 |
| C - Cottonwood Triangular | 1 |
| C - point preforms (2 frag.) | 3 |
| Q - edge grinder | 1 |
| C - biface flakes | 3 |
| C - core flakes (1 cortex) | 12 |
| C - core shatter flakes (2 cortex) | 5 |
| C - u/i flakes (3 cortex) | 15 |
| LL- core flakes (3 cortex) | 4 |
| LL- u/i flakes (2 cortex) | 2 |
| Q - core flake (cortex) | 1 |
| Q - core shatter flake (cortex) | 1 |
| C4- u/i flakes (1 cortex) | 2 |

Faunal

| | |
|---|---|
| *Sylvilagus nuttallii* right femur | 1 |
| *Sylvilagus nuttallii* left humerus | 1 |
| *Sylvilagus nuttallii* pelvis | 1 |
| large mammal long bone frags. (4 burned) | 8 |
| small mammal metatarsal | 1 |
| small mammal scapula | 1 |
| bird long bone frag | 1 |
| u/i frags (3 burned) | 3 |

Units 10-E and 10-G Stratum 2

Ceramics

| | |
|---|---|
| North Creek Gray | 56 |
| North Creek Corr. | 58 |
| St.George B/G | 1 |
| u/i Virgin Ser. B/G | 3 |
| Boulder Gray | 1 |
| Moapa Corr. | 1 |
| Middleton Red | 1 |
| Middleton B/R | 1 |
| Nankoweap Poly. | 1 |

Lithics

| | |
|---|---|
| B - edge grinder | 1 |
| SS- edge grinder | 1 |
| S - polishing stone | 1 |
| malachite pebble | 1 |
| hematite nodule | 1 |
| LL- utilized flake | 1 |
| C - preform frag. | 1 |
| LL- core | 1 |
| SS- core | 1 |
| C - biface flake | 1 |
| C - core flakes (1 cortex) | 9 |
| C - core shatter flakes | 6 |
| C - u/i flakes (2 cortex) | 12 |
| LL- core flakes (2 cortex) | 5 |
| LL- core shatter flakes (2 cortex) | 2 |
| LL- u/i flakes (2 cortex) | 5 |
| Q - core flake (cortex) | 1 |
| L - core flakes (3 cortex) | 3 |
| B - core flake (cortex) | 1 |
| L - u/i flake | 1 |

Units 10-F and 10-J Surface

| | |
|---|---|
| North Creek Gray | 3 |
| North Creek B/G | 1 |
| C - u/i flake | 1 |
| LL- core flake | 1 |

Units 12-A,12-B, and 12-D Stratum 2

Ceramics

| | |
|---|---|
| North Creek Gray | 64 |
| North Creek Corr. | 66 |
| Washington B/G | 5 |
| North Creek B/G | 6 |
| Hildale B/G | 1 |
| u/i Virgin Ser. B/G | 9 |
| Hurricane B/G | 1 |
| Moapa Corr. | 3 |

TABLE 31 (continued)

Lithics

| | |
|---|---|
| hematite - notched disk frag. | 1 |
| C - point | 1 |
| C - Cottonwood Triangular | 1 |
| C - blanks (1 frag.) | 2 |
| C - preform frags. | 2 |
| C - point preforms | 3 |
| Q - edge grinder | 1 |
| PW- hammerstone | 1 |
| LL- core | 1 |
| C - biface flakes | 5 |
| C - core flakes (2 cortex) | 20 |
| C - core shatter flake (2 cortex) | 6 |
| C - u/i flakes (2 cortex) | 27 |
| LL- core flakes (5 cortex) | 6 |
| LL- core shatter flake (1 cortex) | 6 |
| LL- u/i flakes (1 cortex) | 5 |
| Q - core flakes (1 cortex) | 2 |
| Q - core shatter flake (cortex) | 1 |
| C4- core flakes (1 cortex) | 2 |
| C4- u/i flake (1 cortex) | 1 |
| L- core flakes (3 cortex) | 3 |

Trench 14 Surface

Ceramics

| | |
|---|---|
| North Creek Gray | 37 |
| North Creek Corr. | 58 |
| Washington B/G | 1 |
| Hildale B/G | 2 |
| u/i Virgin Ser. B/G | 5 |
| u/i Virgin Ser. B/G-Corr. | 2 |

Lithics

| | |
|---|---|
| S - mano | 1 |
| malachite frag. | 1 |
| azurite frag. | 1 |
| hematite disk frag. | 1 |
| C - Parowan Basal-notched | 1 |
| O - point tip | 1 |
| L - hammerstone | 1 |
| C - biface flakes | 2 |
| C - core flakes | 3 |
| C - core shatter flake | 1 |
| C - u/i flakes | 8 |
| LL- core flake (cortex) | 1 |
| LL- core shatter flake (cortex) | 1 |
| Q - core flakes (2 cortex) | 2 |
| Q - u/i flakes (1 cortex) | 2 |
| B - u/i flake (cortex) | 1 |
| C4- core flake (cortex) | 1 |
| C5- u/i flake (cortex) | 1 |

Faunal

| | |
|---|---|
| large mammal u/i frag. | 1 |
| *Glycymeris* shell frag. (bracelet?) | 1 |

Trench 14 Stratum 3

Ceramics

| | |
|---|---|
| North Creek Gray | 76 |
| North Creek Corr. | 81 |
| St.George B/G | 4 |
| North Creek B/G | 4 |
| u/i Virgin Ser. B/G | 9 |
| Hurricane B/G | 1 |

Lithics

| | |
|---|---|
| S - mano frag. | 1 |
| B - ground stone frag. | 1 |
| S - polishing stone | 1 |
| Q - polishing stone | 1 |
| C - Parowan Basal-notched | 1 |
| C - knife frag. | 1 |
| C - drills (1 frag.) | 2 |
| C - utilized flake | 1 |
| C - preforms (1 frag.,1 inc.) | 2 |
| C - point preform | 1 |
| C - biface flakes | 3 |
| C - core flakes (4 cortex) | 9 |
| C - core shatter flakes (8 cortex) | 14 |
| C - u/i flakes (1 cortex) | 12 |
| LL- core flakes (1 cortex) | 4 |
| LL- core shatter flakes (3 cortex) | 4 |
| LL- u/i flakes (2 cortex) | 3 |
| Q - u/i flake (cortex) | 1 |
| C5- u/i flake (cortex) | 1 |
| C7- core shatter flake | 1 |

Faunal

| | |
|---|---|
| Artiodactyl metatarsal (burned) | 1 |
| large mammal long bone frags | 9 |
| small mammal long bone frag | 1 |

Floral

| | |
|---|---|
| corncob frags. (burned) | 2 |

Room Block 1 Surface

Ceramics

| | |
|---|---|
| North Creek Gray | 78 |
| North Creek Corr. | 73 |
| North Creek B/G | 6 |
| Hildale B/G | 3 |
| u/i Virgin Ser. B/G | 1 |
| Hurricane B/G | 1 |
| Moapa Corr. | 3 |
| Middleton Red | 2 |
| Middleton B/R | 1 |

Lithics

| | |
|---|---|
| hematite frag. | 1 |
| D - mano | 1 |
| S - ground stone frag. | 1 |
| C - Parowan Basal-notched | 1 |
| C - Rose Spring | 1 |
| C - point tip | 1 |
| C - knife frag. | 1 |
| C - point preform | 1 |
| O- point preform | 1 |
| C4- scraper | 1 |
| drill/reamer (fossilized bone frag) | 1 |
| B - edge grinder | 1 |
| LL- cores | 2 |
| Q - core | 1 |
| C4- core | 1 |
| ST- core | 1 |
| C - biface flakes | 7 |
| C - core flakes (4 cortex) | 10 |
| C - core shatter flakes (5 cortex) | 12 |
| C - u/i flakes (4 cortex) | 36 |
| LL- core flakes (2 cortex) | 6 |
| LL- core shatter flakes (2 cortex) | 3 |
| LL- u/i flakes (2 cortex) | 3 |

| | |
|---|---|
| Q - core shatter flake (cortex) | 1 |
| C4- u/i flake (cortex) | 1 |
| O - core flake | 1 |
| O - u/i flake | 1 |
| **Room 1 Floor Contact** | |
| North Creek Gray | 2 |
| North Creek Corr. | 18 |
| Hildale B/G | 1 |
| Q - edge pounder | 1 |
| **Room 1 Fill 1** | |
| **Ceramics** | |
| North Creek Gray | 13 |
| North Creek Corr. | 15 |
| North Creek B/G | 6 |
| u/i Virgin Ser. B/G | 2 |
| **Lithics** | |
| S - mano | 1 |
| C - biface flake | 1 |
| C - core flakes | 8 |
| C - core shatter flakes | 2 |
| C - u/i flakes | 3 |
| LL- u/i flakes (2 cortex) | 3 |
| C4- biface flake | 1 |
| **Units 10-A and 10-B Stratum 2** | |
| **Ceramics** | |
| North Creek Gray | 32 |
| North Creek Corr. | 64 |
| North Creek B/G | 2 |
| u/i Virgin Ser. B/G | 1 |
| u/i Virgin Ser. B/G-Corr. | 1 |
| Pipe Spring B/G | 1 |
| Moapa Corr. | 2 |
| Middleton Red | 1 |
| Middleton B/R | 1 |
| **Lithics** | |
| S - grinding slab frags. | 2 |
| C - Parowan Basal-notched | 2 |
| C - Rose Spring | 1 |
| LL- utilized flake | 1 |
| LL- core | 1 |
| C - biface flakes | 5 |
| C - core flakes (5 cortex) | 10 |
| C - core shatter flakes (2 cortex) | 3 |
| C - u/i flakes (1 cortex) | 14 |
| LL- u/i flake | 1 |
| Q - u/i flake (cortex) | 1 |
| L - core flake (cortex) | 1 |
| C4- u/i flake | 1 |
| **Room 2 Floor Contact** | |
| **Ceramics** | |
| North Creek Gray | 5 |
| North Creek Corr. | 36 |
| u/i Virgin Ser. B/G | 2 |
| Moapa Corr. | 1 |
| Middleton Red | 2 |
| **Lithics** | |
| S - mano | 1 |
| S - metate | 1 |
| C - biface flake | 1 |
| C - core flakes | 3 |
| C - core shatter flake (cortex) | 1 |
| C - u/i flake | 1 |
| LL- core flakes (2 cortex) | 3 |
| LL- u/i flake (cortex) | 1 |
| SS- core flake (cortex) | 1 |
| L - core flake (cortex) | 1 |
| **Room 2 Fill 1 and 2** | |
| **Ceramics** | |
| North Creek Gray | 40 |
| North Creek Corr. | 62 |
| Washington B/G | 1 |
| u/ Virgin Ser. B/G | 3 |
| Hurricane B/G | 1 |
| u/i Virgin Ser. B/G-Corr. | 2 |
| Middleton Red | 3 |
| Nankoweap Poly. | 1 |
| **Lithics** | |
| S - mano | 1 |
| Q - mano frag. | 1 |
| Q - ground stone object | 1 |
| Q - edge grinders | 3 |
| C - blank frag. | 1 |
| C - preform frag. | 1 |
| C - point preform frags. | 2 |
| C4- point preform | 1 |
| C - biface flakes | 4 |
| C - core flakes (3 cortex) | 5 |
| C - core shatter flake (cortex) | 1 |
| LL- core flakes (3 cortex) | 4 |
| LL- u/i flake | 1 |
| Q - core flake (cortex) | 1 |
| C4- core flake (cortex) | 1 |
| **Faunal** | |
| Artiodactyl metatarsal (burned) | 1 |
| *Sylvilagus* right pelvic frag. | 1 |
| small mammal long bone frag. | 1 |
| **Cist 6 Fill 1 and 2** | |
| North Creek Gray | 6 |
| North Creek Corr. | 3 |
| u/i Virgin Ser. B/G | 1 |
| Moapa Corr. | 1 |
| **Room 3 Floor Contact** | |
| North Creek Gray | 1 |
| North Creek Corr. | 2 |
| C - u/i flake | 1 |
| **Room 3 Fill 3** | |
| **Ceramics** | |
| North Creek Gray | 18 |
| North Creek Corr. | 28 |
| Hildale B/G | 1 |
| u/i Virgin Ser. B/G | 1 |

TABLE 31 (continued)

| | |
|---|---|
| Lithics | |
| S - hatch cover frag. | 1 |
| B- polishing stone | 1 |
| C - blank | 1 |
| C - biface flakes | 3 |
| C - core flakes (1 cortex) | 5 |
| C - core shatter flake | 1 |
| C - u/i flakes | 6 |
| C4- core flake (cortex) | 1 |
| O - u/i flake | 1 |
| Faunal | |
| large mammal long bone (burned) | 1 |
| large mammal long bone frags. | 4 |
| large mammal rib frag. (burned) | 1 |
| large mammal vertebra frag. (burned) | 1 |
| large mammal u/i frags. (burned) | 2 |
| Mountain sheep teeth | 4 |
| large mammal long bone frags. | 20 |
| small mammal ulnas | 2 |
| small mammal metatarsals | 2 |
| small mammal u/i frag. | 1 |
| u/i frags. | 10 |
| Use Area 1 Fill 1 | |
| North Creek Gray | 5 |
| North Creek Corr. | 12 |
| C - biface flake | 1 |
| C - core flakes | 2 |
| C - u/i flakes | 6 |
| LL- core flake | 1 |
| LL- core shatter flake (cortex) | 1 |
| LL- u/i flake | 1 |
| O- u/i flake (cortex) | 1 |
| Use Area 1 Stratum 2 | |
| Ceramics | |
| North Creek Gray | 106 |
| North Creek Corr. | 157 |
| Washington B/G | 12 |
| St.George B/G | 1 |
| North Creek B/G | 2 |
| Hildale B/G | 2 |
| u/i Virgin Ser. B/G | 12 |
| Boulder Gray | 1 |
| Moapa Corr. | 7 |
| u/i San Juan Red | 3 |
| Lithics | |
| hematite nodule | 1 |
| C - Elko Side-notched | 1 |
| C2- Parowan Basal-notched | 1 |
| C - inc. point | 1 |
| C - point tips | 2 |
| C - preform | 1 |
| C - point preform | 1 |
| C - utilized flakes | 3 |
| Q - utilized flakes | 2 |
| SS- edge grinder | 1 |
| LL- edge pounder | 1 |
| Q - cores | 2 |
| LL- cores | 2 |
| SS- core | 1 |
| C - biface flakes | 24 |
| C - core shatter flakes (9 cortex) | 21 |
| C - u/i flakes (7 cortex) | 160 |
| LL- core flakes (11 cortex) | 21 |
| LL- core shatter flakes (3 cortex) | 4 |
| LL- u/i flakes (15 cortex) | 15 |
| SS- core flake (cortex) | 1 |
| Q - core flakes (5 cortex) | 6 |
| Q - core shatter flake (cortex) | 1 |
| Q - u/i flakes (2 cortex) | 6 |
| C4- biface flake | 1 |
| C4- core flakes (3 cortex) | 3 |
| C4- u/i flake | 1 |
| Use Area 1 Trench 13 Stratum 2 | |
| Ceramics | |
| North Creek Gray | 42 |
| North Creek Corr. | 52 |
| Washington B/G | 1 |
| North Creek B/G | 1 |
| Hildale B/G | 1 |
| Glendale B/G | 1 |
| u/i Virgin Ser. B/G | 5 |
| Lithics | |
| L - hammerstone | 1 |
| Q - polishing stone | 1 |
| L - core | 1 |
| C - point | 1 |
| C - point preforms (1 frag.) | 5 |
| C2- point preform frag. | 1 |
| C - utilized flake | 1 |
| C - core flakes (4 cortex) | 13 |
| C - core shatter flakes (5 cortex) | 6 |
| C - u/i flakes | 7 |
| LL- core flakes (7 cortex) | 7 |
| LL- core shatter flakes (4 cortex) | 6 |
| LL- u/i flakes (3 cortex) | 4 |
| Q - core flakes (1 cortex) | 2 |
| Q - u/i flakes (2 cortex) | 4 |
| L - core shatter flake (cortex) | 1 |
| C4- core flake (cortex) | 1 |
| C4- u/i flakes (1 cortex) | 2 |
| Use Area 2 Units 10-B,10-C Stratum 2 | |
| Ceramics | |
| North Creek Gray | 3 |
| North Creek Corr. | 4 |
| Lithics | |
| B - metate | 1 |
| C - biface flakes | 3 |
| C - core flakes | 5 |
| C - core shatter flakes | 2 |
| C - u/i flakes (1 cortex) | 7 |
| LL- core flake (cortex) | 1 |
| Q - core flakes (2 cortex) | 2 |
| C4- biface flake | 1 |
| C4- core flake (cortex) | 1 |
| C6- core flake | 1 |

## TABLE 31 (continued)

| | |
|---|---|
| **Faunal** | |
| small mammal metatarsal | 1 |
| **Cist 7 Fill 1** | |
| North Creek Gray | 1 |
| St. George B/G | 1 |
| Q - core | 1 |
| C - core flakes | 2 |
| C - u/i flake | 1 |
| **Cist 7 Fill 2 Stratum 2** | |
| **Ceramics** | |
| North Creek Gray | 76 |
| North Creek Corr. | 36 |
| Hildale B/G | 3 |
| u/i Virgin Ser. B/G | 6 |
| Boulder Gray | 1 |
| **Lithics** | |
| blue soft mineral frag | 1 |
| S - mano | 1 |
| D - mano frag. | 1 |
| B - axe | 1 |
| LL- edge pounder | 1 |
| Q - edge grinder | 1 |
| Ql- utilized flake | 1 |
| C - preforms (1 frag) | 3 |
| L - core | 1 |
| LL- core | 1 |
| C - core flakes (2 cortex) | 8 |
| C - core shatter flake | 1 |
| C - u/i flakes | 10 |
| LL- core flakes (8 cortex) | 9 |
| LL- core shatter flake (cortex) | 1 |
| LL- u/i flakes (1 cortex) | 2 |
| **Faunal** | |
| abalone - drilled disk frags. | 2 |
| Lagomorph tibula/fibula | 1 |
| large mammal long bone frags. | 3 |
| **Cist 8 Fill 1 and 2 Stratum 2** | |
| **Ceramics** | |
| North Creek Gray | 38 |
| North Creek Corr. | 18 |
| Washington B/G | 2 |
| u/i Virgin Ser. B/G | 5 |
| Moapa Corr. | 1 |
| **Lithic** | |
| malachite frags. | 8 |
| B - mano | 1 |
| C - u/i flake | 1 |
| **Floral** | |
| corncob frag 12 row (burned) | 1 |
| **Room 4 Fill 1 Stratum 2** | |
| **Ceramics** | |
| North Creek Gray | 57 |
| North Creek Corr. | 109 |
| Washington B/G | 2 |
| St. George B/G | 3 |
| North Creek B/G | 2 |
| Hildale B/G | 3 |
| u/i Virgin Ser. B/G | 11 |
| u/i Virgin Ser. B/G-Corr. | 2 |
| Orderville B/G | 1 |
| u/i Moapa Ser. B/G-Corr. | 2 |
| Middleton Red | 2 |
| Middleton B/R | 1 |
| Nankoweap Poly. | 3 |
| **Cist 9 Fill 1, Stratum 2** | |
| **Ceramics** | |
| North Creek Gray | 19 |
| North Creek Corr. | 85 |
| Washington B/G | 1 |
| Hildale B/G | 2 |
| Glendale B/G | 1 |
| u/i Virgin Ser. B/G | 6 |
| u/i Virgin Ser. B/G-Corr. | 1 |
| Moapa Corr. | 2 |
| Nankoweap Poly. | 1 |
| **Lithic** | |
| S - mano frags. | 2 |
| Q - hammerstone | 1 |
| Q - edge pounder | 1 |
| Q - edge grinder | 1 |
| C - utilized flake | 1 |
| C - core flakes | 5 |
| C - core shatter flake | 1 |
| C - u/i flakes (1 cortex) | 5 |
| LL- core flakes (4 cortex) | 4 |
| LL- core shatter flakes (1 cortex) | 2 |
| Q - core flakes (3 cortex) | 3 |
| C4- core flake (cortex) | 1 |
| **Faunal** | |
| large mammal long bones | 2 |
| large mammal u/i bone frag. (burned) | 1 |
| small mammal rib | 1 |
| u/i Virgin Ser. B/G | 1 |
| **Pithouse 1 Floor Contact** | |
| North Creek Gray | 5 |
| u/i Virgin Ser. B/G | 1 |
| C - Parowan Basal-notched | 1 |
| LL- core flake | 1 |
| **Pithouse 1 Hearth Fill** | |
| C - Rose Spring | 1 |
| C - u/i flake | 1 |
| **Pithouse 1 Fill 1,2, and 3. Stratum 2 and 3.** | |
| **Ceramics** | |
| North Creek Gray | 400 |
| North Creek Corr. | 370 |
| Mesquite B/G | 1 |
| Washington B/G | 1 |
| St.George B/G | 2 |
| North Creek B/G | 8 |
| Hildale B/G | 4 |
| Glendale B/G | 2 |
| u/i Virgin Ser. B/G | 39 |
| Hurricane B/G | 1 |
| u/i Virgin Ser. B/G | 1 |

TABLE 31 (continued)

| | |
|---|---|
| Boulder Gray | 2 |
| Moapa Corr. | 3 |
| Slide Mtn. B/G | 1 |
| u/i Moapa Ser. B/G | 1 |
| Middleton Red | 3 |
| **Lithics** | |
| hematite-frag.,drilled frag.,disk frag. | 3 |
| malachite frag. | 1 |
| S - mano | 1 |
| B - mano frags. | 2 |
| S - mortar frag | 1 |
| S - ground stone frags. | 2 |
| Q - polished stone | 1 |
| LL- edge pounder | 1 |
| Q - edge pounder | 1 |
| Q - edge grinder | 1 |
| LL- edge grinder | 1 |
| LL- utilized flakes | 2 |
| C - utilized flakes | 3 |
| C - u/i point | 1 |
| C6- Basketmaker II point | 1 |
| C - Parowan Basal-notched | 3 |
| C - Rose Spring | 2 |
| C - Cottonwood Triangular | 1 |
| C - point frags | 2 |
| C - knife frags. | 5 |
| C - preforms (2 frag.) | 4 |
| C - blank | 1 |
| C - point preforms (4 frag.) | 11 |
| C - core | 1 |
| LL- cores | 2 |
| C - biface flakes | 17 |
| C - core flakes (16 cortex) | 78 |
| C - core shatter flakes (13 cortex) | 48 |
| C - u/i flakes (13 cortex) | 125 |
| LL- core flakes (27 cortex) | 31 |
| LL- core shatter flakes (5 cortex) | 11 |
| LL- u/i flake (cortex) | 1 |
| SS- u/i flake (cortex) | 1 |
| Q - core flakes (2 cortex) | 3 |
| Q - core shatter flakes (2 cortex) | 2 |
| Q - u/i flakes (2 cortex) | 3 |
| L - u/i flake | 1 |
| C4 core flakes (3 cortex) | 6 |
| C4- u/i flakes (1 cortex) | 3 |
| C5- biface flake | 1 |
| O - core flake (cortex) | 1 |
| O - core shatter flake (cortex) | 1 |
| Q1- core shatter flake | 1 |
| **Faunal** | |
| *Sylvilagus* scapula | 1 |
| *Sylvilagus* humerus | 1 |
| *Sylvilagus* pelvis | 1 |
| *Sylvilagus* radii | 2 |
| *Lepus* calcaneus (1 right,1 left) | 3 |
| *Lepus* tibula-fibula | 1 |
| *Lepus* radii (1 right, 1 left) | 3 |
| Lagomorph right mandibles | 2 |
| Rodentia teeth (3 incisors) | 5 |
| large mammal long bone frags. (burned) | 38 |
| large mammal vertebra (burned) | 1 |
| large mammal u/i frags | 2 |
| small mammal long bone frags.(1 burned) | 16 |
| small mammal ribs | 3 |
| small mammal metatarsals | 3 |
| small mammal ulna | 1 |
| bird long bone frags. | 3 |
| bird u/i frags | 7 |
| u/i frags (2 burned) | 55 |

**Pithouse 1 Floor Contact**

| | |
|---|---|
| North Creek Gray | 5 |
| North Creek Corr. | 5 |
| u/i Virgin Ser. B/G | 1 |
| Middleton Red | 1 |

**Pithouse 2 Fill 1 Stratum 2**

| | |
|---|---|
| **Ceramics** | |
| North Creek Gray | 133 |
| North Creek Corr. | 209 |
| Washington B/G | 1 |
| North Creek B/G | 5 |
| Hildale B/G | 1 |
| Glendale B/G | 1 |
| u/i Virgin Ser. B/G | 25 |
| Boulder Gray | 5 |
| Moapa Corr. | 3 |
| u/i Moapa Ser. B/G | 1 |
| Middleton B/R | 1 |
| **Lithic** | |
| turquoise bead | 1 |
| turquoise frag. | 1 |
| malachite frag. | 1 |
| S - manos (1 frag) | 6 |
| I - manos | 3 |
| B - mano | 1 |
| S - metates (3 fragS.) | 4 |
| S - abrading stone | 1 |
| Q - polishing stones | 2 |
| Q - edge grinders | 3 |
| LL- edge grinder | 1 |
| Q - edge pounder | 1 |
| LL- edge pounder | 1 |
| C - Cottonwood Triangular | 1 |
| C - Parowan Basal-notched | 1 |
| C - knife frags | 2 |
| C - drill frag. | 1 |
| C - preform frag. | 1 |
| C2- blank | 1 |
| LL- cores | 3 |
| C3- core | 1 |
| C - biface flakes (1 cortex) | 13 |
| C - core flakes (9 cortex) | 37 |
| C - core shatter flakes (4 cortex) | 25 |
| C - u/i flakes (4 cortex) | 44 |
| LL- core flakes (1 cortex) | 20 |
| LL- core shatter flakes (3 cortex) | 3 |
| LL- u/i flakes (8 cortex) | 20 |
| SS- core flakes (2 cortex) | 3 |
| SS- u/i flake | 1 |
| Q - core flakes (2 cortex) | 3 |
| Q - u/i flake (cortex) | 1 |
| B - core flake (cortex) | 1 |
| B - u/i flake (2 cortex) | 2 |
| B - u/i flake (cortex) | 1 |

TABLE 31 (continued)

| | |
|---|---|
| C5- u/i flake | 1 |
| C6- u/i flake | 1 |
| **Faunal** | |
| Rodentia ulna | 1 |
| large mammal long bone frags. | 4 |
| small mammal long bone frags. | 2 |
| u/i frag. | 1 |
| **Hearth 2** | |
| North Creek Gray | 4 |
| North Creek Corr. | 8 |
| Pipe Spring B/G | 1 |
| C - biface flake | 1 |
| C - core flakes | 3 |
| C - core shatter flakes | 2 |
| LL- core flake | 1 |
| LL- u/i flake (cortex) | 1 |
| C4- u/i flake | 1 |
| **Hearth 3** | |
| North Creek Corr. | 1 |
| u/i Virgin Ser. B/G | 1 |
| **Hearth 4** | |
| North Creek Gray | 1 |
| North Creek Corr. | 1 |
| Hildale B/G | 1 |
| C - u/i flake | 1 |
| **Hearth 6** | |
| North Creek Gray | 1 |
| large mammal u/i frag. | 1 |
| u/i frag. | 1 |
| **Hearth 7** | |
| North Creek Gray | 4 |
| North Creek Corr. | 1 |
| L- core flake (cortex) | 1 |
| **Hearth 8** | |
| North Creek Gray | 1 |
| North Creek Corr. | 4 |
| C - core flakes | 2 |
| C - core shatter flake | 1 |
| C - u/i flakes | 3 |
| LL- core flake (cortex) | 1 |
| LL- u/i flakes (1 cortex) | 2 |
| C5- core flake | 1 |
| large mammal long bone frag. | 1 |
| **Hearth 9** | |
| North Creek Gray | 1 |
| North Creek Corr. | 8 |
| bird long bone frag. | 1 |
| **Outdoor Hearth Area** | |
| **Ceramics** | |
| North Creek Gray | 106 |
| North Creek Corr. | 133 |
| North Creek B/G | 2 |
| Hildale B/G | 1 |
| Glendale B/G | 3 |
| u/i Virgin Ser. B/G | 14 |
| Boulder Gray | 1 |
| Moapa Corr. | 2 |
| Middleton Red | 2 |
| Middleton B/R | 2 |
| **Lithic** | |
| hematite frags. | 3 |
| Q - heat-cracked cobble | 1 |
| S - mano frag | 1 |
| LL- utilized flake | 1 |
| C - blank frag. | 1 |
| O- preform frag. | 1 |
| C - cores | 2 |
| C - biface flakes | 10 |
| C - core flakes (7 cortex) | 24 |
| C - core shatter flakes (5 cortex) | 15 |
| C - u/i flakes (5 cortex) | 13 |
| LL- core flakes (3 cortex) | 6 |
| LL- core shatter flakes (4 cortex) | 7 |
| LL- u/i flakes (6 cortex) | 10 |
| Q - core flake | 1 |
| Q - core shatter flake (cortex) | 1 |
| C4- biface flakes | 2 |
| C4- core flake | 1 |
| C4- u/i flakes | 4 |
| **Faunal** | |
| large mammal long bone frags.(6 burned) | 17 |
| small mammal scapula frag. (burned) | 1 |
| small mammal ulnas | 2 |
| small mammal metatarsals | 2 |
| small mammal long bone frags. | 3 |
| small mammal u/i frag. | 1 |
| bird long bone frags. | 2 |
| u/i frags. | 10 |

It was impossible to determine the time of exposure between death and burial. Most of the disarticulations could well have been the result of prolonged exposure. The exposure would account for missing bones, particularly if the decedent was not protected from scavengers. The most likely explanation for the circumstances indicated, would be that the individual died at a time when he was separated from kin and friends and the body was not found for sometime after death.

## Discussion

The site was a large and complex habitation, storage, and camp locality which experienced its primary occupation during middle to late Pueblo II times. There was also an apparent occupation during late Pueblo I and/or early Pueblo II times, although this proved difficult to define with precision.

The earlier occupation was identified by the recovery of a small percentage of Washington Black-on-gray and St. George Black-on-gray sherds. Perhaps equally indicative of the early occupation was the architectural style of Cists 1 through 6, along with their tendency to form a linear arrangement, and the stratigraphic placement of Room Block 1 directly on top of Cist 6.

It was unfortunate that no habitation element could be definitely assigned to the early occupation. Pithouse 2 appeared to be either a very roughly built structure or an unfinished one. It is possible that it may have represented the early occupation, particularly since Room Block 2 was built slightly over it. The room yielded a carbon sample which produced a date of A.D. 900 which would be within the expected range. While the style of pithouse was more suggestive of Pueblo II than of Pueblo I, there is no precise information as to exactly when structure forms altered. Nevertheless, the placement of the pithouse in relation to the storage cists is suggestive of a Pueblo I pattern.

The middle to late Pueblo II occupation was supported by most of the carbon dates, the greater part of the ceramic assemblage and the architectural styles of the room blocks. The relevant dates are A.D. 1030, 1170, and 1270. The final date is, of course, a bit late. None of the dated materials were associated with Room Block 2, but its architectural style, a combination of slab-lined and coursed-stone walls, suggested that it was built before Room Block 1, a surface structure of coursed masonry walls. Room Block 1 appears to have been the last structure built at the site.

The ceramics, particularly those found with the burial, support the middle to late Pueblo II idea of occupation. One of the accompanying bowls, assigned to North Creek Black-on-gray, proved particularly unusual in that an almost identical bowl was recovered from a burial at 42Ws920, also a late site, located on Little Creek Mountain some 20 miles southeast and at an elevation 3,000 ft. higher than that at 42Ws395. The detailed manner in which the two bowls replicated each other is unusual in prehistoric ceramics. SInce the design is not an especially common one, it might be speculated that these pieces were intended as mortuary offerings.

The balance of the ceramic assemblage was dominated by the utility types North Creek Gray and North Creek Corrugated. Corrugated pottery appears in the region at about A.D. 1050 and marks the advent of Middle Pueblo II. The dominant painted design, North Creek Black-on-gray, is though to appear at sometime around A.D. 1075, and with its appearance, the late period of Pueblo II is thought to begin. Intrusive ceramics formed a very minor part of the collection and they were about equally divided between the Moapa Series and San Juan Red Ware, which appeared mainly as Middleton Red and Middleton Black-on-red.

The rockshelters also seem to have been used during the Pueblo II period, although it is difficult to determine exactly how they were used. As a fairly open area, Rockshelter 1 most likely served as an activity area used over a fairly extended period of time. The steep floor of Rockshelter 3 rendered it unsuitable for habitation or activity, but it seemingly did duty as a storage area for at least part of the occupation of the site. Rockshelter 2 was a more problematic matter. While it could have functioned as a camping area as well as an activity center, its final function appeared to have been one of storage, as attested by the recovery of a number of metates and other ground stone implements high in the fill.

The concentration of outdoor hearths in the fill of Pithouse 1 argued that this slightly depressed area was an activity center that may have been associated with either Room Block 1 or 2, or it could have served as a camp early in the site's post-occupation era. The location of the site above the Virgin River and near the mouth of Quail Creek may have made the abandoned area a favorable stopover spot for people traveling between some of the more heavily populated localities of the region.

Lithic debris demonstrated that both core reduction and tool manufacturing were frequent activities in many parts of the site. A fair collection of projectile points, dominated by the Parowan Basal-notched type, attested to the continued importance of hunting, while ground stone tools in abundance were strong evidence for the primary dietary importance of processed plant foods. The presence of a Glycymeris bracelet fragment along with a small amount of turquoise indicated that at least a small amount of trade did exist.

## 42Ws397

### Introduction and Excavation

A pair of storage cists resting on a terrace 15 to 20 m. above the east bank of the Virgin River constituted the focus of this site (Fig. 4.). The survey team defined the site in terms of an extensive scatter of cultural debris spread over an area 80 m. in diameter. No structural evidence existed at the surface and the entire area appeared to have been leveled for modern farming purposes. The site lay at an elevation of 2860 ft. and the dominant vegetation included creosote bush, prickly pear, and various grasses. A road crossed the northern edge of the site.

Four trenches were laid out across the site in a manner that would define the natural stategraphy and would expedite the search for subsurface features. An auger was also used in other areas of artifact concentrations, surface stains, and possible structural rubble. In the areas subject to augering, only the natural stratigraphy was identified.

Trench 1, 1 by 14 m., was aligned north to south and was divided into seven, 1 by 2 m. units. The trench position was chosen on the basis of a stained surface and a low, linear mound, the latter at the north end of the trench. Only three units, 1-B, 1-D, and 1-E were excavated to depths which ranged from 30 to 72 cm. Two natural strata were defined. Stratum 1 was an alluvial deposit of medium compaction and composed of dark red sand with

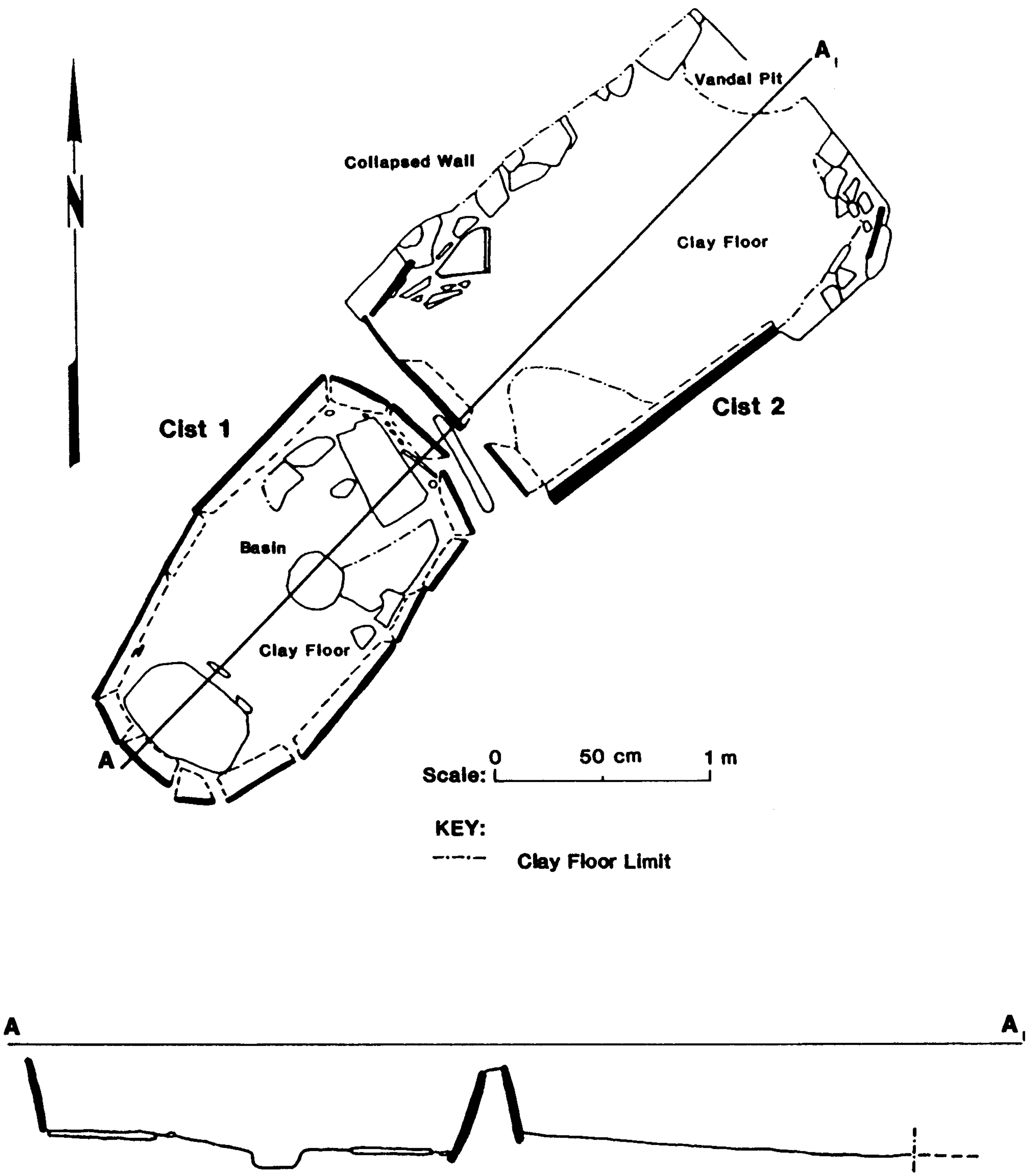



Figure 180. Plan map and cross-section drawing of Cist 1 and 2, 42Ws397.

terrace gravels, rocks and boulders. The stratum was culturally sterile. It originated at 55 to 65 cm. and was also observed below both cists. Stratum 2 was an extremely well compacted, brown-red sand and clay layer from which cultural materials were recovered. It was sparsely flecked with charcoal and appeared to have been deposited in lenticular layers that measured less than 1 cm. thick. Stratum 2 averaged 60 cm. thick and it seemed to increase in clay content, though becoming softer, in the lower 20 cm. All parts of the stratum included large stones.

Trench 2 measured 1 by 18 m. and was laid on an east to west axis, beginning on the edge of Unit G, Trench 1. Only the most westerly unit, 2-J was excavated to a depth of 24 cm. Although the trench had been intended to investigate a linear mound, only Stratum 2 and assorted cobbles were encountered. No features and only a limited collection of cultural materials was gathered. It was concluded that the stone was a fortuitous result of the grading of farmland just north of the site.

Trench 3 measured 1 by 12 m. and was run west from Unit 1-D in an attempt to investigate vertical sandstone slabs noted on the surface. Located in Unit 3-C and 3-D, these would eventually prove to be Cist 1. No further excavation, other than that associated with Cist 1, was undertaken within the trench.

Trench 4 was initially 3 m. long with an average width of 40 cm. It was oriented northwest to southeast. It was begun in the search for additional structures northwest of Cist 2 but, instead, the trench exposed a vandal's pit that appeared to originate at the existing surface. It was impossible to determine if the pit was dug before or after the area was leveled, but the lack of surface evidence of this pit suggests that it had been dug before the grading operation. The pit fill consisted of medium to well compacted, brown sand stained with ash and finely divided charcoal. This fill was, at most, 30 cm. thick and contained some stone. A large sandstone slab lay on a slant within the fill some 20 to 25 cm. deep. A thin, ashy lens, less than 1 cm. thick was noted on top of the slab. A pollen sample was taken from the ash lens along with a small collection of cultural materials.

Trench 4 was expanded an additional 60 cm. to increase the trench width to a full meter. The trench expansion revealed that the vandal's pit had an irregular bottom and sides. No cultural features were noted in the pit walls. The pit was some 3 m. in diameter. It was just southwest of the vandal's pit that the two storage cists were found.

Site Features

Cist 1. This was an oval, sandstone, slab-lined cist that measured 1.8 by 1.0 m. at floor level (Figs. 180,181). The long axis of the cist ran northeast to southwest. The walls of the structure were thin sandstone slabs, the tops of which had been sheared off by the heavy grading equipment used in the area. The vertical slabs had been set into the pit which was dug through Stratum 2 and into Stratum 1. The slightly leaning slabs were braced on the exterior by cobbles while the points of slab junction were chinked with small pieces of sandstone and pebbles.

The floor of the cist was laid after the walls had been set and it consisted of sandstone slabs with a few cobbles. The slab layer was then covered with a highly compacted sand which had developed a gray-purple surface, apparently through use. The sand did not extend across all of the floor slabs because of their irregular placement. As a result, several slabs at both ends of the cist lay exposed and flush with the sand layer. A pollen and a flotation sample were taken from the floor of the cist, but no cultural materials were in floor contact.

A single feature had been built within the cist. This was a circular basin 25 cm. in diameter and 9 cm. deep (Figs. 180-181). The basin was found near the center of the floor where it was apparently dug after the floor was laid. The basin was unlined and showed no evidence of use as a firepit.

Figure 181. View northeast of the fully cleared Cist 1, 42Ws397. Note basin at center.

No evidence of a roof was found. The fill lying on the floor consisted of well-compacted, brown-orange sand called Fill 1, which varied from 4 to 12 cm. thick. It contained no evidence of the clay so characteristic of roof-fall. Above Fill 1 lay Fill 2, a stratum 15 to 25 cm. thick composed of highly compacted, dark red-brown sand with scattered charcoal flecks. Fill 2 was similar to Stratum 2 and contained rock and sandstone slab fragments. These slab fragments appeared to have been sheared off during the leveling operations. Measurements taken on the slab fragments seemed to show that at least 20 cm. had been cut off by the grader. It should be noted that if higher parts of the slabs had fallen to the interior fill of the structure, this should mean that some fill was missing at the time the land was leveled. This could have been the result either of incomplete filling since the occupation or, as seems more likely, the fill of the structure had been vandalized.

Cist 2. Contiguous with the northeast end of Cist 1, Cist 2 was rectangular and measured 2.1 by 1.4 m at the floor level. Its orientation was approximately northeast to southwest, although it did not have quite the same alignment as Cist 1. Again, Cist 2 had been built by digging a pit through Stratum 2 into Stratum 1. The sides were then partially lined with slightly slanting sandstone slabs and partly with coursed cobbles (Fig. 182). There was a large tabular block of sandstone which had been placed between the two cists, apparently for structural security. This might suggest that the cists were built at the same time, although it could have as easily been set during the construction of the cist that was last to be built.

The floor of Cist 2 was constructed by laying slabs and cobbles and then covering these with a highly compacted brown sand. The floor subsequently developed a gray-purple surface. The floor lay at a depth of 35 cm. and was sampled for both pollen and flotation. Above the floor lay a 1 cm. thick layer of loose sand. It could not be determined whether the sand was a cultural or an aeolian deposit. No cultural materials were recovered from floor contact or the sand.

Figure 182. View southwest of fully cleared Cist 2, 42Ws397. Note cobbles forming the interior wall at lower left.

The fill above the sand consisted of highly compacted, dark, red-brown sand termed Fill 1 which was essentially identical to Fill 2 within Cist 1. Early during the accumulation of Fill 1, most of the wall slabs on the northwestern side of the feature had collapsed to the interior. Fill 1, extending to the graded surface, was 35 cm. deep and produced a limited collection of cultural debris.

During the removal of fill from Cist 2, another vandal's pit was noted in the northern corner. This intrusion penetrated some of the floor and appears to have been the reason some of the wall slabs were missing in this area. The pit had straight sidewalls and was filled with loosely compacted, orange-brown sand which was faintly stained with charcoal. Even though the two vandal pits were in close proximity, the different ways in which they had been dug suggested that different people had been involved.

In addition to a surface collection of the site area, the excavation team also collected Locus 1, a 5 by 8 m. area found 83 m. south-southwest of the northeast corner of Trench 1. It was separated from the artifact scatter of the site by a 10 to 15 m. gap.

Discussion

The site is best described as a sherd and lithic scatter associated with two contiguous slab-lined storage cists. The alignment of the two cists with the slight arc they created is clearly reminiscent of the traditional Pueblo I pattern as noted at 42Ws268 and 42Ws288 in the project area, as well as at other places. Trenching and augering failed to locate an associated pithouse, however. The absence of the habitation unit and the lack of roof-fall may indicate that the cists were not used. Countering that view would be the fair collection of cultural debris and the excavator observation that the floors of the cists had been used. It is quite possible that vandalism at the site was more extensive than recognized. In the case of Cist 1, it has already been noted that much of the cist must have been open at the time the area was graded in order for the tops of the wall slabs to fall so deeply into the fill.

The matter of missing roof-fall has concerned some observers. The presumption is, of course, that this would be visible since it would be made of higher quality clay, perhaps cleaned, than that found in the site area. Experience indicates that this was by no means always the case. In many instances the material excavated for construction would contain clay sufficient to hold for a season or so, and it could be readily repaired from material at hand. Such a roof, collapsed into the other materials of the site, would be virtually beyond identification.

It should also be noted that using an auger is by no means an infallible way of locating a pithouse particularly an unburned example with little stone used in its construction. The crew excavating 42Ws268 augered the pithouse and failed to recognize it; the structure was later found with a backhoe trench.

The site failed to produce carbon samples and the cultural materials (Table 32) may be suspect because disturbance may have been greater than recognized. At the same time, however,the few painted ceramics, the construction of the cists, and perhaps the projectile point, all indicate a Pueblo I occupation. The point is a Parowan Basal-notched example which, on good evidence, is associated with the Parowan Fremont. In Washington County,

TABLE 32

COLLECTION SUMMARY, 42Ws397

| | |
|---|---|
| Surface. | |
| North Creek Gray | 62 |
| Washington B/G | 4 |
| S - mano frags. | 2 |
| S - grinding slab frag. | 1 |
| S - ground stone frag. | 1 |
| Q - edge grinders | 5 |
| S - edge grinder | 1 |
| C - scraper | 1 |
| C - utilized flake | 1 |
| LL- utilized flakes (3 cortex) | 6 |
| C - drill | 1 |
| C - u/i point frag. | 1 |
| C - biface preforms | 2 |
| C - point preform | 1 |
| C - cores | 2 |
| LL- cores | 9 |
| C - biface flakes | 17 |
| LL- biface flake | 1 |
| C - core flakes (6 cortex) | 61 |
| C - core shatter flakes (15 cortex) | 53 |
| C - u/i flakes (2 cortex) | 119 |
| LL- core flakes (21 cortex) | 41 |
| LL- core shatter flakes (8 cortex) | 10 |
| LL- u/i flakes (9 cortex) | 21 |
| Q - core flakes (2 cortex) | 5 |
| Q - core shatter flakes (2 cortex) | 2 |
| Q - u/i flake | 1 |
| SS- u/i flake | 1 |
| C4- core shatter | 1 |
| L - core flakes (2 cortex) | 2 |
| L - core shatter flake | 1 |
| L - u/i flake (cortex) | 1 |
| Trench 1 Stratum 2 0-60 cm. | |
| North Creek Gray | 42 |
| Washington B/G | 1 |
| u/i Virgin Ser. B/G | 4 |
| B - edge pounder | 1 |
| C - utilized flake | 1 |
| LL- utilized flake | 1 |
| C - core | 1 |
| LL- core | 1 |
| C - biface flakes | 2 |
| C - core flakes | 6 |
| C - core shatter flakes (1 cortex) | 5 |
| C - u/i flakes (3 cortex) | 6 |
| LL- core flakes (2 cortex) | 4 |
| LL- core shatter flake | 1 |
| LL- u/i flake (cortex) | 1 |
| SS- core flake | 1 |
| Q - core shatter flakes (2 cortex) | 2 |
| Unit 2-J Stratum 2 0-10 cm. | |
| North Creek Gray | 2 |
| C - core flake (cortex) | 1 |
| C - core shatter flakes | 2 |
| Vandal Pit ash lens. | |
| North Creek Gray | 8 |
| C - u/i flake | 1 |
| Vandal Pit fill 0-30 cm. | |
| North Creek Gray | 32 |
| St.George B/G | 2 |
| u/i Virgin Ser. B/G | 1 |
| S - mano | 1 |
| Q - edge pounder | 1 |
| S - abrading stone | 1 |
| C - Rose Spring | 1 |
| C - core | 1 |
| SS- core | 1 |
| C - core flakes (1 cortex) | 5 |
| C - core shatter flakes (1 cortex) | 2 |
| C - u/i flakes (2 cortex) | 7 |
| LL- core flakes (1 cortex) | 3 |
| Q - core flake (cortex) | 1 |
| Q - u/i flake (cortex) | 1 |
| Cist 1 Fill 1 and 2. | |
| North Creek Gray | 8 |
| Washington B/G | 2 |
| C - core flakes | 2 |
| Cist 2 Fill 1 0-35 cm. | |
| North Creek Gray | 15 |
| u/i Virgin Ser. B/G | 2 |
| L - edge grinder | 1 |
| O - Parowan Basal-notched | 1 |
| C - biface flakes | 2 |
| C - core flakes (1 cortex) | 2 |
| C - core shatter flakes (1 cortex) | 2 |
| C - u/i flakes (2 cortex) | 6 |
| LL- u/i flake (cortex) | 1 |
| Q - core flake (cortex) | 1 |
| Q - core shatter flake (cortex) | 1 |
| white hematite frag. | 1 |

however, it has been regarded as having Pueblo II affiliation. It might be noted that the similar Abajo style in the Mesa Verde is associated with Pueblo I occupations. The Parowan Fremont, on the other hand, does not correlate with the Western Anasazi in temporal subdivisions. Thus, the Parowan Basal-notched point does not negate the Pueblo I temporal assignment for this site.

## 42Ws1208

The site proved to be a complex of two limited activity areas located on a point overlooking the junction of Quail and Cottonwood Creeks just above the north gap (Fig. 3). The site lay at an elevation of 3020 ft. some 75 m. south of Quail Creek. Vegetation on and around the site included creosote bush, snakeweed, sand sage, ephedra, fluffgrass, sand dropseed, cheatgrass, burro-brush and mesquite. Juniper was present on the west slop of the anticline directly across Cottonwood Creek.

The first of the limited activity areas produced no culturally or temporally diagnostic artifacts and it may have been affiliated with 42Ws268 which lay 75 m. west. Lacking any evidence, however, the discussion in this paper will concentrate on Locus 1, a Southern Paiute limited activity area which consisted of a small, sparse lithic and ceramic scatter with a possible cobble-lined hearth. The area lay 25 m. east of the storage cists of 42Ws268. Because of the sparse distribution of cultural materials, the limits of the site were difficult to establish, but it could not have been no more than 3 to 4 m. in diameter.

Locus 1. This area was tested by running a single trench on an east to west axis and positioned in such a manner as to cross a cobble ring. The trench measured 4 m. in length and was 1 m. wide. It was subdivided into two, 1 by 2 m. units, the first being designated 1-A on the west and 1-B on the east. The excavation of both units was carried to a depth of 65 cm. and two distinct strata were identified. The lowest layer, Stratum 1, was culturally sterile and was composed of light-red clay with some scattered caliche. Above this lay Stratum 2 which consisted of a gray, clay-impregnated sand containing sparse charcoal flecks. Beginning at the surface, this layer proved to be 60 cm. thick at the west end of the trench and 45 cm. at the eastern end. All cultural material were recovered either from the surface or from Stratum 2.

A single feature was exposed in the north wall of Unit 1-B. The feature consisted of four cobbles placed to form a roughly defined oval with interior measurements of 50 cm. north to south by 35 cm. No ash, charcoal, or color change was found to indicate the depth of the pit that was presumably related to the cobbles. Pollen and flotation samples were taken from the area within the ring.

Locus 2. This area featured an ash stain, some heat-cracked cobbles and several ground stone fragments. Trench 2, measuring 1 by 2 m., was aligned to bisect the apparent center of the ash stain and was excavated to a depth of 70 cm. The trench profile revealed three strata. The lowest of these, Stratum 1, was a culturally steril deposit of light-red clay with scattered caliche. Above it, Stratum 2 proved to be a layer of gray to tan, clay-impregnated sand lacking any evidence of cultural activity. Beginning at the surface, Stratum 3 proved to be a mixture of ash and sand containing sparsely distributed charcoal flecks found to a depth of 10 cm. near the center of the trench, but which extended to a depth of only 5 cm. at both ends. Stratum 3 also contained heat-altered stone such as silicified sandstone and limestone. Pollen and flotation samples were taken from the central part of the fill, but available carbon was insufficient for dating.

TABLE 33

COLLECTION SUMMARY, 42WS1208

| | |
|---|---|
| **Locus 1** | |
| Surface | |
| Paiute Plain | 1 |
| Paiute Marked | 1 |
| Trench 1, Stratum 3 | |
| S - mano | 1 |
| C - cores | 2 |
| C - core flake | 1 |
| C - core shatter flake | 1 |
| C - u/i flakes (2 cortex) | 3 |
| **Locus 2.** | |
| Trench 2, Stratum 3. | |
| S - mano frag. | 1 |
| Q - edge grinder | 1 |
| C - core shatter flake (cortex) | 1 |
| C - u/i flakes (1 cortex) | 6 |
| Q - core shatter flake (cortex) | 1 |

Discussion. The two loci just described could not be culturally associated. Locus 1 was probably of Southern Paiute origin, based on the evidence of only two Paiute sherds found on the surface. The limited assemblage of cultural debris argues that the site represented a one-time, limited use. The small rock arrangement may have been intended as a hearth, but no trace of fire was found.

Locus 2 contained a similar assemblage except that no sherds were present. On the other hand, there was definite evidence of fire even though there was no definable hearth. The absence of cultural diagnostics in Locus 2 suggests that it was another manifestation of Southern Paiute presence. Had the area been associated with 42Ws268, it seems likely that at least a few diagnostic sherds would have been found.

Thus both loci appeared to have been the product of limited plant procurement and processing activities because of the ground stone materials found within the assemblage. Beyond that, nothing in the evidence permits the development of more detail.

# MATERIAL CULTURE

## Introduction

The ceramic artifacts recovered from the Quail Creek excavations were analyzed and identified by Richard A. Thompson at his laboratory in Cedar City. The analysis of the lithic tools, projectile points, lithic debitage, ground stone, bone, and miscellaneous artifacts were conducted as a joint effort by Dennis G. Weder and Barbara Walling. The ground stone was analyzed at the excavation headquarters in Hurricane, Utah to avoid the logistical problems involved in moving large amounts of these heavy artifacts. The remainder of the artifacts were analyzed in a temporary laboratory in Salt Lake City.

## Ceramics

### Western Anasazi Ceramics

A venture into the mysteries of Western Anasazi ceramic taxonomy can be traumatic in the extreme for the newcomer. The initial reaction is almost invariably a view that one must almost endlessly subdivide into types. Following experience with a few thousand sherds, however, one tends to become a "lumper" in sheer self-defense. Colton himself appears to have passed through this experience, although his greater familiarity with the ceramics of other areas perhaps protected him a bit.

When Harold S. Colton published his Pottery Types of the Arizona Strip and Adjacent Areas in Utah and Nevada in 1952, he was breaking new ground. Others had examined ceramic samples from the region, but these earlier students had offered little more than cursory descriptions of some of the more striking forms. Colton sought much more than that. He was after a system or a taxonomic ordering of the ceramics of the area which would, he hoped, place the Western Anasazi (the term was not his) in some kind of relationship to the peoples of the better known regions of the southwest.

Colton used collections that had come to the Museum of Northern Arizona by various routes. Material had been gathered by Julian Steward, then of the University of Utah, by Ben Wetherill of the Museum of Northern Arizona, and, above all, by Joseph E. Spencer, who was then a doctoral candidate in Geography at the University of California in Berkeley. The total collection was a good one, but Colton placed himself at a serious disadvantage in one important respect. In discussions with archeologists who knew Colton personally, the present writer has been unable to find anyone able to recall an instance in which Colton visited the region from which the sherds were collected.

It is, of course, possible for workers who are new to an area to produce insights that may have been missed by those familiar with the region. More frequently, however, the new arrival commits errors of judgment and interpretation which grow directly out of personal inexperience with the country. Even during the recent twenty years of expanding contract activity, archeologists have entered the Arizona Strip and surrounding country and have

TABLE 34

CORRELATION OF ANASAZI CERAMIC TYPES

| TUSAYAN SERIES | VIRGIN SERIES | MOAPA SERIES |
|---|---|---|
| Lino Gray | Mesquite Gray<br>North Creek Gray | Moapa Brown<br>Boulder Gray |
| Kana-a Gray | Mesquite Gray<br>North Creek Gray | Moapa Brown<br>Boulder Gray |
| Tusayan Corr.<br>Moenkopi Corr. | North Creek Corr.<br>[Washington Corr.] | Moapa Corr.<br>[Clayhole Corr.] ** |
| Lino B/G | Mesquite B/G | Boulder B/G |
| Kana-a B/W | Washington B/G | Boysag B/G |
| Black Mesa B/W | St.George B/G | Trumbull B/G |
| Sosi B/W | North Creek B/G | Moapa B/G |
| Dogoszhi B/W | Hildale B/G | Slide Mtn. B/G |
| Flagstaff B/W | Glendale B/G | Poverty Mtn. B/G |
| Shato B/W<br>(painted/corr.) | | |
| Black Mesa style | Orderville B/G | Toroweap B/G |
| Sosi style | Hurricane B/G | Whitmore B/G |
| Dogoszhi style | Pipe Spring B/G | Fern Glen B/G |
| Flagstaff style | Parashant B/G | Tuckup B/G |

**The analogous forms exist in the Virgin and the Moapa Series but they have been dropped on the grounds that they are temporally non-significant.

made some sweeping generalizations for the entire Western Anasazi area on the basis of very limited observation. While Colton's errors, in this respect, do not seem to be too significant, his unfamiliarity with regional geography may have caused him to fail to see some of the very patterns he sought to identify.

At the same time, of course, Colton was guided by impeccable scientific standards. He postulated the existence of nothing he did not actually find in the collections. The result of this virtue was that, in a sense, many of the things that now seem inadequate in his work are problems of omission rather than errors of commission. It is difficult not to believe that he may well have filled in some of the gaps in his effort by a few weeks of personal work in the area.

Perhaps it was the result of the limitations discussed above that Colton failed to see parallels that existed in the ceramic series he identified. it was this inexperience that caused him to create a "Ware" in what should actually be regarded as another series within the Tusayan Gray and White wares. In this instance, he identified a Moapa "Ware" because of the striking character of the olivine/iddingsite temper it contains. Later and more detailed studies of very large Moapa collections have shown the Moapa to be a series that parallels the Virgin Series in all basic details of vessel forms and painted design styles. While the distinctive temper certainly continues to be the defining criteria for the Moapa Series (it is actually the only consistent distinction), that temper is quite valuable in determining the origin of this particular pottery. Its reclassification as a series further emphasizes the underlying homogeneity of the entire Western Anasazi region.

Colton appears to have begun his study of the collection with the assumption that the material from the Arizona Strip and nearby areas was derived from, and parallel to, the Tusayan Gray and White wares. The parallels do seem clear, and the assumption of an east to west cultural flow may be valid in most respects, but this ex orient lux mentality (Lyneis and Thompson, 1979:219) is perhaps too readily taken as axiomatic when readiness to call the assumption into question might be a more healthy approach.

Virgin Series ceramics are, with a few local exceptions, the dominant series for the entire Western Anasazi area, although there are some subtle but distinct regional variations. Colton identified the Basketmaker III ceramics as Lino Gray and Lino Black-on-gray even though he specifically stated his belief that this material was locally made. Recent students have begun to use the name Mesquite Gray and Mesquite Black-on-gray to counter the impression that these types are intrusive. Archeologists apparently tend to forget the classroom instruction which so often pointed out that items of material culture are usually named for geographic features or place-names of the area in which they are first found. They have been taught that the names are not meant to imply that the area for which they are named is the hearth of their manufacture.

Turning to later designs, Colton failed to find a Pueblo I painted style in the Moapa Series, but he did find it in the Virgin Series. Departing from his position in the case of Basketmaker III material, he named the Virgin Series Pueblo I designs "Washington Black-on-gray." He appeared to feel that Washington Black-on-gray would eventually prove to be analogous to Kana-a Black-on-white styles found in the Kayenta hearth, but his illustrated designs hint that the Western Anasazi Pueblo I designs might differ from those of the east.

It should be noted that Colton commented on the lack of neck-banding in Pueblo I gray ware in the Western Anasazi even though it was a common diagnostic in the Tusayan Series. This absence has proven so consistent that a neck-banded sherd has come, per se, to be considered intrusive. What is often forgotten is that Colton believed that neck-banded sherds were the only diagnostic for Kana-a Gray. Body sherds, he contended, were indistinct from those of Lino Gray and thus Lino Gray had little value as a temporal indicator. It should follow that if there is a high degree of parallelism between the Tusayan, the Virgin, and the Moapa series, it should follow that Basketmaker III Gray sherds should also be found in Pueblo I. There is a distinct possibility that this is, indeed, the case, but it is yet to be demonstrated owing to the difficulty involved in separating Mesquite Gray from North Creek Gray.

It remained for Schroeder (1955) to argue, with support from later workers, that Washington Black-on-gray is distinctive to the Western Anasazi region. Washington Black-on-gray is, in fact, more clearly a stylistic transition between Mesquite Black-on-gray and St. George Black-on-gray than Kana-a Black-on-white is a transition from Lino Black-on-gray and Black Mesa Black-on-white. While Western Anasazi design styles show minor differences, even in the case of Basketmaker painted styles, but more notably in the Pueblo II designs, the Western Anasazi designs are clearly analogues of those from further east. Thus, Black Mesa Black-on-white becomes St. George Black-on-gray in the Virgin Series and Trumbull Black-on-gray in the Moapa Series. Sosi Black-on-white becomes North Creek Black-on-gray in the Virgin Series and Moapa Black-on-gray in the Moapa Series.

For some reason, Colton again became rather inconsistent at this point. In the Tusayan White Ware, two distinct styles, Sosi Black-on-white and Dogoszhi Black-on-white are recognized even though they occupy almost the same temporal position. In the Western Anasazi, however, Colton named the two forms North Creek Black-on-gray Type A and Type B. The terminology is cumbersome and North Creek Type B has been renamed Hildale Black-on-gray in the Virgin Series, and Slide Mtn. Black-on-gray in the Moapa Series.

There are further modifications in Colton's taxonomy but it serves no useful purpose to treat with them here. Table 34 charts the Tusayan, Virgin, and Moapa series, giving all of the names presently in use by workers in southwestern Utah. The parallels in the three series are obvious and, with two exceptions, the design styles can properly be considered analogues of each other. With the exception of the substitution of the term Mesquite for Lino, Colton's terms have been used. New terms have been added where Colton did not identify the type or, in some cases, where it is felt that he lumped too much under a single term when some subdivision of types is justified. All of the new terms used in the table have been underlined.

A third series that may belong to the Western Anasazi is omitted here. This is the Shinarump Series. While its reality is confirmed, its distinguishing traits are subject to considerable disagreement and the temporal sequence has yet to be worked out more fully. Colton identified no Shinarump prior to Pueblo II. Recent research seems to indicate that it is temporally equivalent with the other series, but the details remain to be fleshed out.

Although over 50 radiocarbon dates have been obtained in southwestern Utah and in northwestern Arizona within the last decade and a half, the distribution of those dates is uneven and many more are needed. Work in the Western Anasazi area is further handicapped by the lack of a dendro sequence, although a beginning appears to have been made. This means that Western Anasazi studies continue to rely on ceramic cross-dating as a working tool. While some earlier writers, including the present one, attempted to calculate a time-lag for the interval needed for design styles to 'migrate' from the east, recent practice has been to accept the dates for analogous painted styles as they have been identified in the Kayenta. There can be no question but what this may introduce some inaccuracies, but greater precision in dating will come with accumulated information. Some workers believe, however, that the direction to be taken by temporal adjustments is still unclear.

TABLE 35

TIME SPANS OF SELECTED ANASAZI CERAMIC TYPES

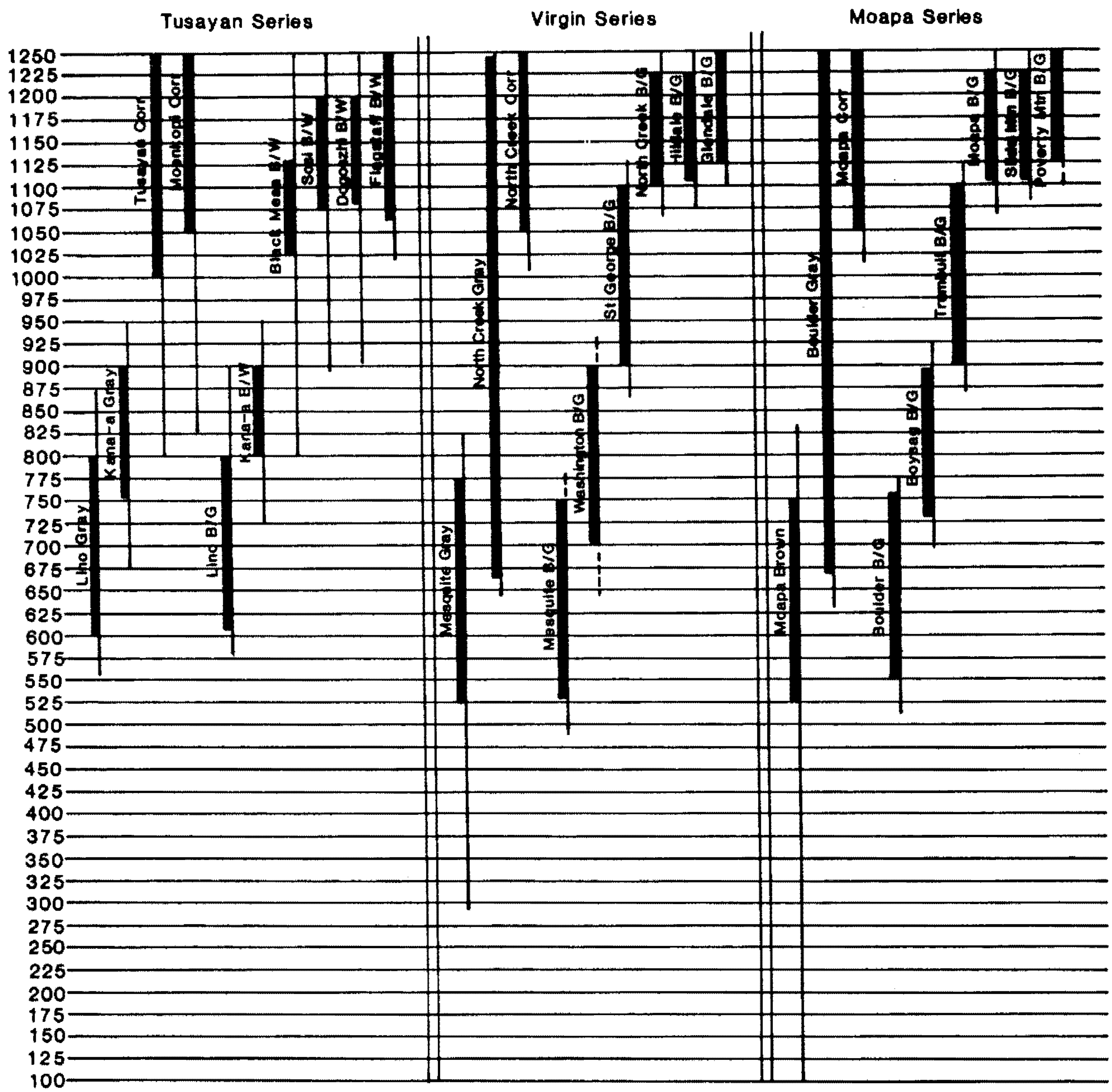


Table 35 plots the temporal extent of the three major series within the Tusayan Gray and White wares. The dates for the Tusayan Series are taken from Breternitz (1966). The dating of the Virgin and the Moapa series is derived from the writer's field work as well as the work of others. Where the type is not well-dated, the dates from the Kayenta materials have been accepted for Western Anasazi ceramics.

It will immediately become apparent that two dates, those for Mesquite Gray and for Moapa Brown, are so early that few will find them acceptable. Logic should remind the critic that these seemingly abberant dates would not have been plotted had not the researchers believed that the data was good. There are other anomolies as well. In the Virgin and Moapa series, St. George Black-on-gray and Trumbull Black-on-gray are shown as earlier than Black Mesa Black-on-white. This is not meant to argue that the arrows of culture flow should be reversed. The discrepancies exist in this instance only in terms of the periods of greatest abundance. For the full duration of time during which the three types are known, Black Mesa Black-on-white is both earlier and later than St. George Black-on-gray and Trumbull Black-on-gray.

It is suggested here that some of the problem is more apparent than real. No one would claim that all of the evidence for the Kayenta is in, or that no amendments to the temporal sequences will be made in the future. From the vantage point of western regions of Anasazi occupation, it would appear that some of the evidence has, by chance, accumulated at points where there are gaps in the knowledge of the Kayenta.

It would perhaps be well to make an important point at this juncture. Students have long been told that, within the Mesa Verde culture area, the appearance of corrugated pottery is accompanied by an almost immediate disappearance of plain ware vessels. While the charts found in Breternitz (1974:71) do not seem to agree with this, it is a view maintained by workers in that area. Apparently this change is almost as abrupt in the Kayenta, although some poorly made Tusayan Gray Ware sherds do date after the advent of corrugated ceramics.

In the case of the Western Anasazi, however, the appearance of corrugated pottery does not bring an end or even a sharp decline in the manufacture of plain gray vessels. After recording a total of 500 sites in Mohave County over a period of some nine years, the two sites showing the highest percentage of corrugated sherds relative to the total collections amounted to 26 percent and 29 percent, respectively. It was not until 1980 that two sites recorded on Little Creek Mountain in Washington County, Utah produced ceramic collections in which corrugated sherds accounted for more than 50 percent of the total. Even in these cases, however, plain gray sherds continued to appear in excess of 35 percent of the total. This is a significant distinction that should be kept in mind by students accustomed to accepting the disappearance of plain sherds coincident with the development of corrugated forms.

The evidence to date argues that North Creek Corrugated appears at about A.D. 1050. Since St. George Black-on-gray is known by about A.D. 900, or slightly later, and it persists until about A.D. 1075, it is possible to derive three temporal subdivisions with-in Pueblo II. The first is marked by collections including St. George Black-on-gray but which lack corrugated. A short period, probably from A.D. 1050 to 1075, is identified with collections that include both North Creek Corrugated and St. George Black-on-gray. After this time, North Creek Black-on-gray and Hildale Black-on-gray combine with North Creek Corrugated to mark the final years of Pueblo II. A similar subdivision exists within the Moapa Series, although it is possible that Moapa Corrugated never attains the numerical prominence of North Creek Corrugated.

A final note on Western Anasazi corrugated ceramics. The distinction between Tusayan Corrugated and Moenkopi Corrugated in Tusayan Gray Ware is generally well understood, although we have found disagreements among workers in the Kayenta area on the degree of coil obliteration that is required to justify the term Moenkopi. There appears to be no significant cultural distinction, and manuals appear to suggest that the temporal distinction amounts to only some ten years.

For some time workers in the Western Anasazi have followed this lead and have recognized a similar distinction in North Creek Corrugated and Washington Corrugated. Colton did not find the distinction in the Moapa series, but it has since been found in abundance, so that Moapa Corrugated with nearly obliterated coils has been given the term Clayhole Corrugated. After almost twenty years of work in the Western Anasazi, however, many have come to feel there is temporal, cultural, or functional difference in the two types. The types persist, in other words, simply because the distinction lends itself to narrative description. The distinction is herein dropped and it is hoped the others will follow suite, although others may have evidence of some kind of significance that many have not yet identified.

In his analysis of "Virgin Branch" ceramics, Colton (1952:49) described North Creek Gray as ranging in color from light to dark gray, with some sherds of tan or pinkish color. He found the temper to be dominated by abundant, fine-grained quartz sand accompanied by occasional opaque fragments of gray, black, tan, or reddish color. Colton also appeared to feel that surface visibility of temper was almost a series diagnostic.

At the present time, Colton may perhaps be amended in a number of ways. Colors, for example, should go beyond pinkish to dull red, while on the cold side of the spectrum, a purplish hue is often found on vessel exteriors. Most workers would today characterize North Creek Gray sherds as being dominated by medium-grained quartz sand, while the Colton list of opaque fragments would include white fragments that should not be confused with the white sherd in the temper, or with the white calcite of Logandale. The white material noted here often shows a surface shine suggesting some cryptocrystalline material--probably the ubiquitous 'chert.' The red fragments Colton mentions appear to come from the sands of the washes that bring the material from the Navajo and Kayenta sandstones, or from the sandstones of the Shinarump Conglomorate of the Chinle Formation. The different sandstones are purely a matter of local topography and represent unintentional inclusions.

Two characteristics found in the Virgin Series that are not found elsewhere are, unfortunately, in insufficient frequency to make them diagnostics. The first is the tendency for longitudinal fractures to occur in the vessel walls. This seems to have first been published as an observation

Figure 183. Jar rim profiles and painted designs from 42Ws395 (facing).

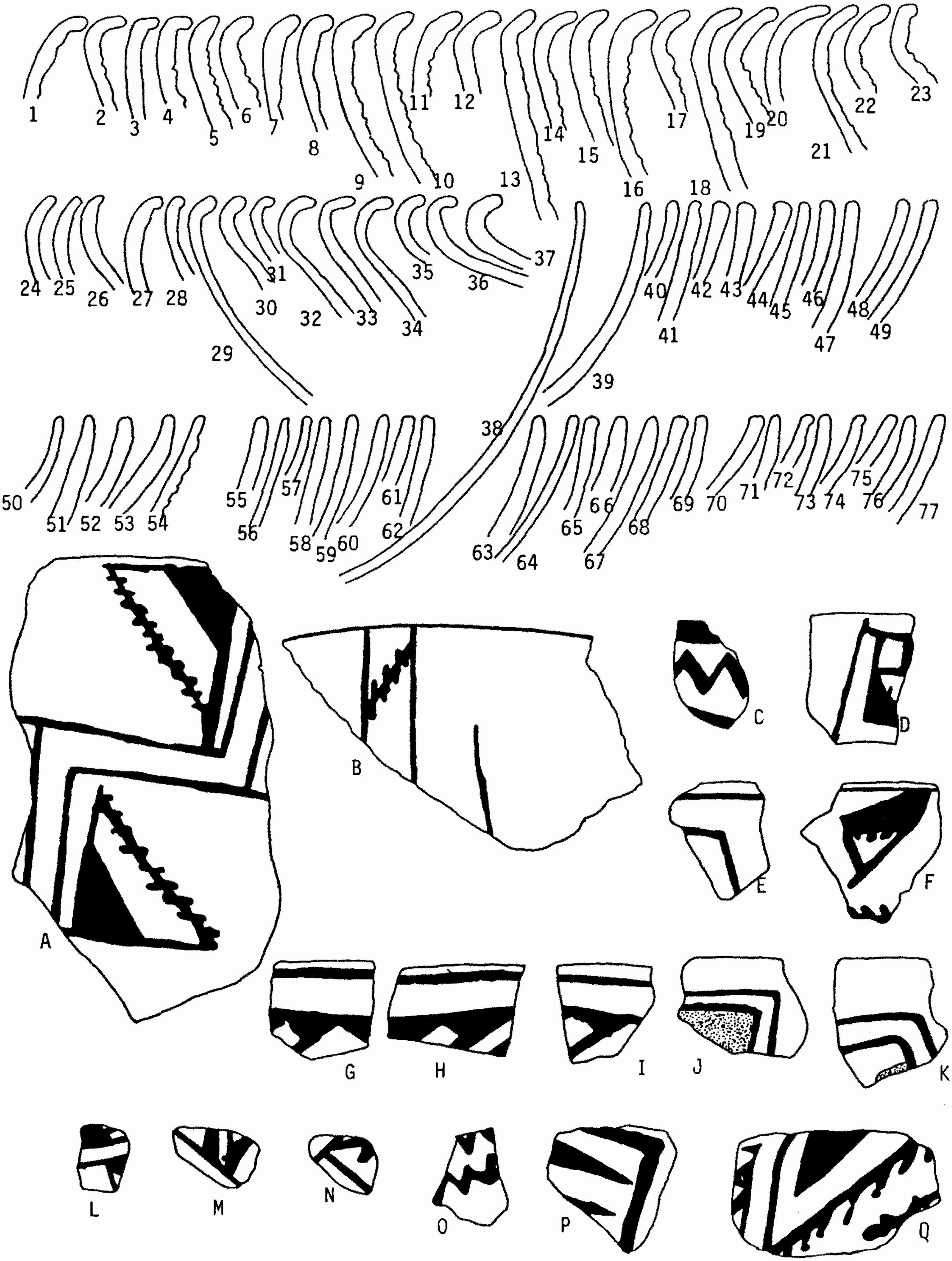
Jar rim profiles: 1-23 = North Creek Corrugated; 24-37 = North Creek Gray.

Bowl rim profiles: 38-47 = Washington B/G; 48-49 = St. George B/G; 50-62 = North Creek B/G; 63-69 = Hildale B/G; 70-71 = Glendale B/G; 72 = Parashant B/G; 73 = Middleton B/R; 74-75 = Mesquite B/G; 76-77 = Unidentified Virgin Series B/G.

Painted designs: A-Q = Washington B/G

Correlation of painted designs with rim profiles: A = 38, B = 39, D = 41, G = 42, H = 43, I = 44, J = 46.

Figure 184. Part of Mesquite Gray pot showing the common Pueblo I rim.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by Aikens (1965:93). The second is a somewhat less frequent occurrence of a white, frothy-looking material that sometimes surrounds individual grains of transparent quartz sand. In spite of its appearance, it does not seem to be a carbonate.

Colton's description of the temper in Washington Black-on-gray and in St. George Black-on-gray was very close to his description of North Creek Gray. The most significant difference seems to be that the size of the quartz sand in the painted materials was thought to be of fine to medium size. This means that he found the temper to be finer in plain sherds than in painted. He further described the quartz sand temper of his North Creek Black-on-gray as medium.

The view today would suggest that, for much of the time, the temper in plain and painted sherds is much the same. Where differences do occur, the tendency would be to find the temper of painted sherds to be slightly finer. If there is a long-term trend in both plain and painted materials, it would be from medium-grained quartz sand in the direction of fine-grained quartz sand as the dominant non-plastic material. This would reverse Colton's observations for North Creek Black-on-gray. This is not intended as a challenge of what Colton actually saw. The difference would appear to be those associated with slightly different localities, different potters, and perhaps in some cases, a different set of pots made by the same artisan.

An interesting case of local variation is seen in the North Creek Corrugated from Little Creek Mountain. The temper is the usual quartz sand but it is unusually fine. While not every corrugated sherd recovered on the mesa displays this trait, it is a dominant one and, curiously, it does not extend to plain and painted sherds.

The present writer does not agree with those who regard temper analysis as a matter of scientific objectivity, but there is certainly agreement with the observation that there is a great deal of subjectivity involved in the identification of painted design styles. When collections from intensive surveys of large areas, or from the excavation of a number of sites of different temporal positions within a single, limited locality are analyzed, one is often struck with what seems to be the transitional nature of many designs. Certainly it seems unlikely that prehistoric potters changed their painted design styles from one day to the next. Thus, the existence of many 'intergrade' designs should occasion no surprise. In the Western Anasazi this is particularly notable in the transition from Mesquite Black-on-gray to Washington Black-on-gray and from Washington Black-on-gray to St. George Black-on-gray. There are fewer transitional examples in the later styles although they do occur. The SUSC collections include of number of North Creek Black-on-gray sherds from the Frie Site near Santa Clara which are uncharacteristically ornamented with the pendant dots of the previous style.

The problem of red wares within the Western Anasazi region has never been addressed in systematic fashion. For the most part, sherds of the Tsegi and San Juan wares have been presumed intrusive. The single exception had been in the case of Middleton Black-on-red and Middleton Red, types found in Spencer's collections and named for a small community near St. George, Utah. Colton himself doubted its origin west of the Colorado River, although he implicitly acknowledged that it had not been reported from any point east of the river.

Curiously, Colton's map for the distribution of Middleton Black-on-red included only Kane County and omitted its distribution in Washington County where Spencer had collected the type specimens.

To understand some of the problems involved as well as the significance of recent developments, a review of Colton's (1952, 1956) distinction between Tsegi Orange Ware and San Juan Red Ware (Little Colorado Series) is necessary. Briefly, Colton characterized the Tsegi material as having orange paste, sherd temper, and a red slip. The San Juan Red Ware, meanwhile, had a red paste, quartz sand temper, and was rarely slipped. In 1956, however, Colton introduced an exception with his definition of Nankoweap Polychrome. It was included with San Juan Red Ware because of its quartz sand temper. Had sherd temper been present, the sherds would have been Citadel Polychrome. Like the Tsegi Ware, however, Colton stated that Nankoweap Polychrome had either a red or an orange paste with red slip. Yet in describing the decoration, Colton simply said red slip and black paint on orange paste.

Just prior to the appearance of Colton's 1956 work, Schroeder (1955:125) reported another polychrome. Because it was cross-hatched in the manner of Middleton Black-on-red, he called it Middleton Polychrome. Schroeder said the paste was red but he felt that the slip was more ephemeral than that common to Tsegi Orange Ware. While agreeing that, in many cases, at least, the red slip in this type is less durable than other red slips examined, the experience in southern Utah would seem to indicate that orange paste was fairly common. On the other hand, this may result from the fact that red slip on red paste would be more difficult to detect.

During the course of the Quail Creek Project, a reconstructable jar (Fig. 191) was readily identified as Middleton Black-on-red. Prior to reconstruction, however, laboratory workers scrubbed some of the sherds with unusual vigor and, upon completion of the reconstruction, the supposed Middleton Black-on-red was found to have the cross-hatched design painted on red slip over orange paste. By definition, this could not be Middleton Black-on-red since that has red paste and no slip. It could not be Tusayan Black-on-red because the temper in the new find was quartz sand. The fact that the vessel was almost a complete restoration clearly demonstrated that it was not Schroeder's Middleton Polychrome.

It seemed that some kind of a revision should be in order. There are some taxonomic difficulties involved, but it is here provisionally suggested that the slipped Black-on-red type with quartz sand temper should be called Kanab Black-on-red. Logic would then seem to suggest that Schroeder's Middleton Polychrome might well be renamed Kanab Polychrome. This would, of course, leave Nankoweap Polychrome with its name unchanged but it is obviously related to the two Kanab types. At present this view must remain a tentative one. In a sense this writer, and others working in the area, are paying a price for ignoring numerous hints that have been received during the past ten to fifteen years. The occurrence of slipped San Juan Red Ware has been previously seen and, to be blunt, largely ignored. While the vessel from Quail Creek is an obvious exception, it presently seems that the slipped ceramic materials are more common in Kane County sites, while being relatively rare in Washington County.

Figure 185. Selected rim profiles and painted designs (facing).

42Ws388. Jar rim profiles: 1-14 = North Creek Gray. Bowl rim profiles: 15-19 = North Creek Gray; 20-25 = Washington B/G.

42Ws268. Jar rim profiles: 26-30 = North Creek Gray.

42Ws397. Jar rim profiles: 31-33 = North Creek Gray. Bowl rim profiles: 34 = Washington B/G.

42Ws387. Jar rim profiles: 35-44 = North Creek Gray. Bowl rim profiles: 34 = North Creek Gray. Painted designs:

42Ws388. A-M = Washington B/G.

42Ws268. N-Q = Washington B/G.

42Ws397. R = Washington B/G.

42Ws345. S = Washington B/G.

Correlation of painted designs with rim profiles: A = 20, B = 21, C = 22, D = 23, E = 24, F = 25, R - 34.

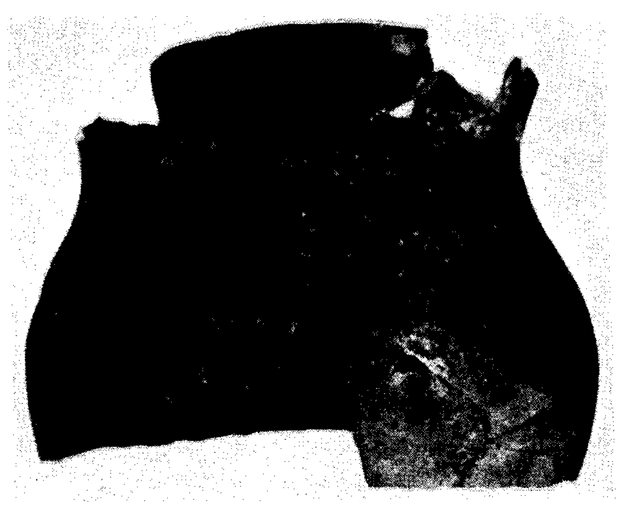
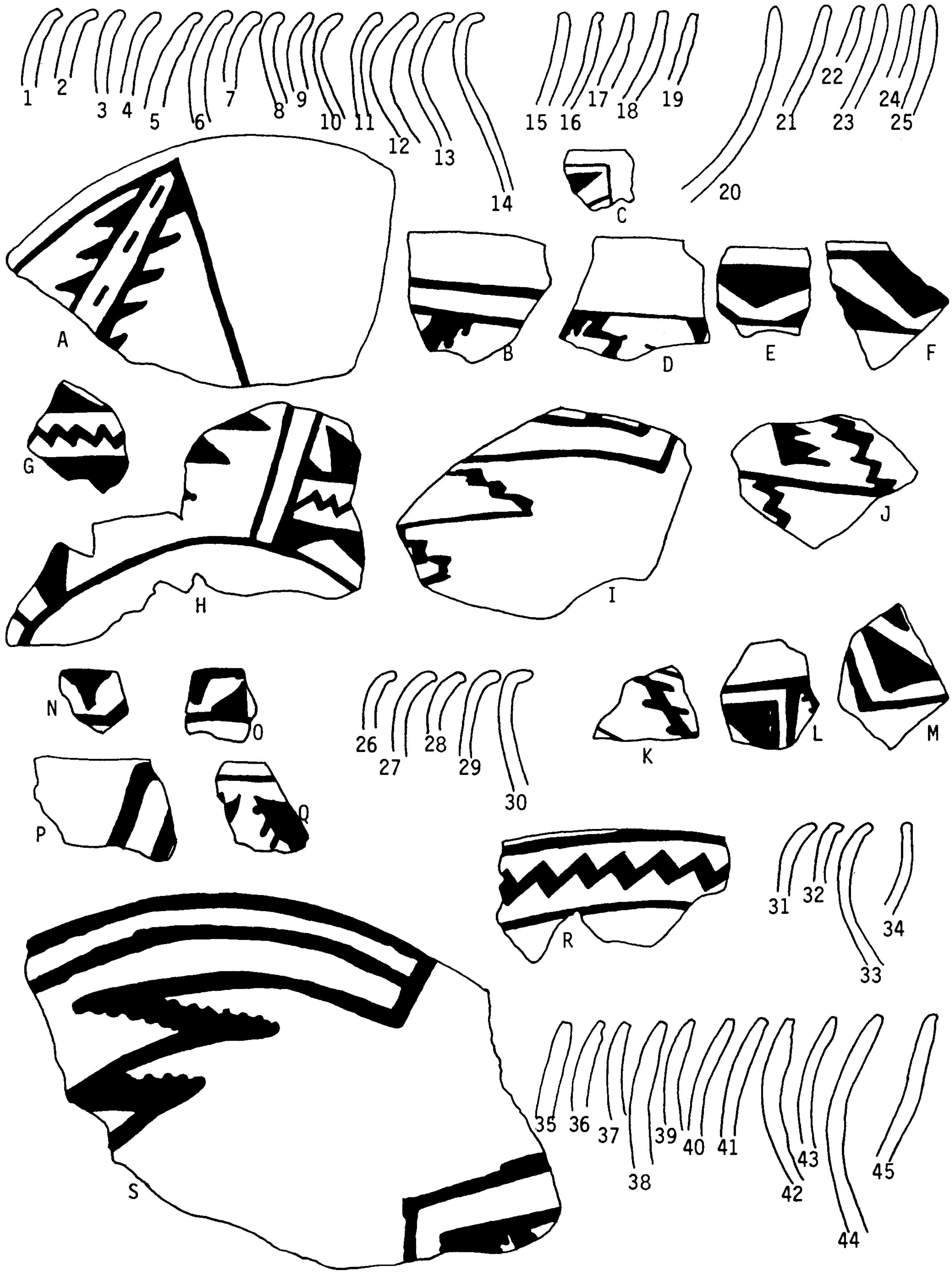


Figure 186. Part of a North Creek Gray pot showing the characteristic Basketmaker III rim.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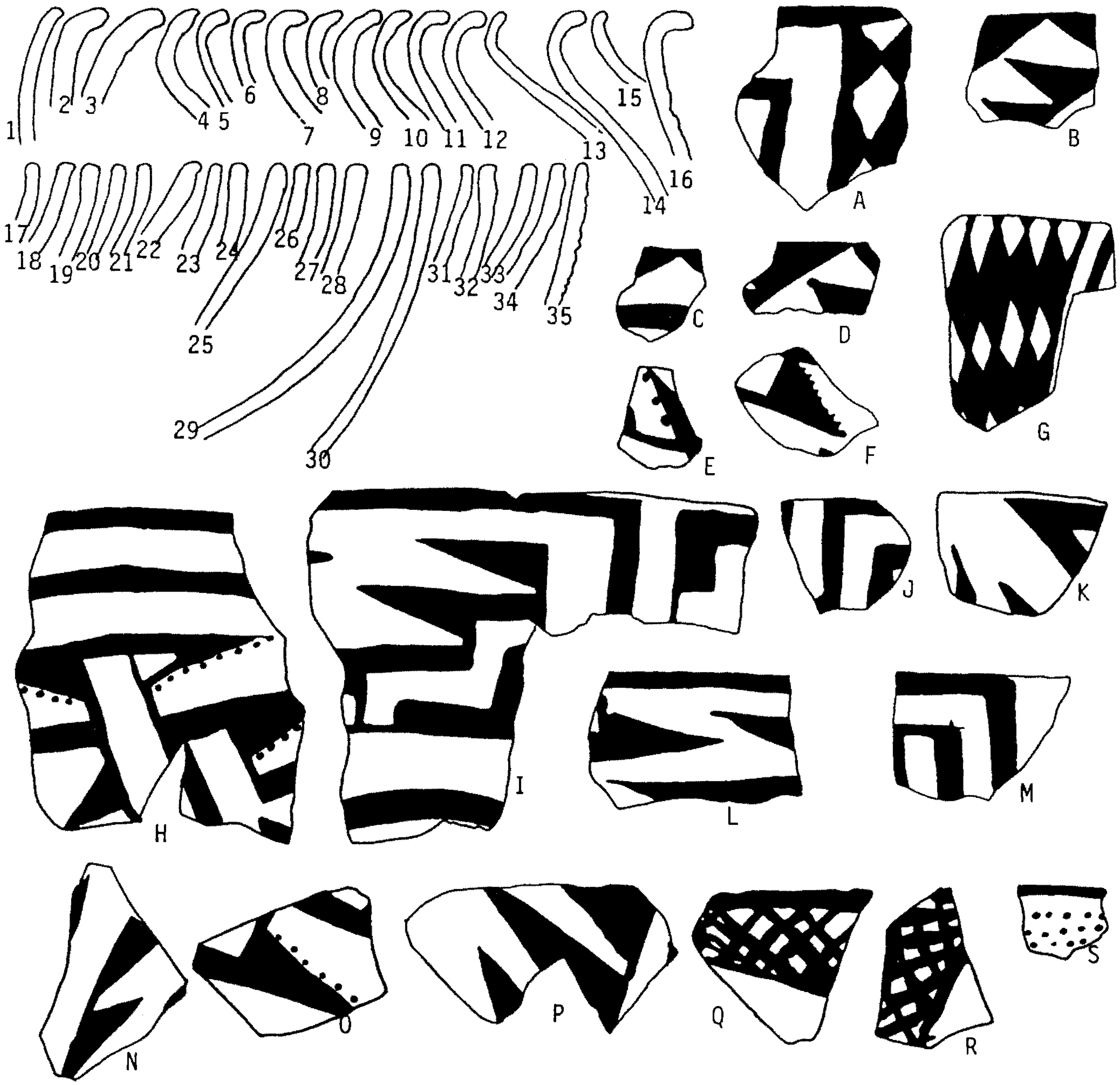



Figure. 187. Rim profiles and painted designs from 42Ws288.

Jar rim profiles: 1-5 = North Creek Gray; 16 = North Creek Corrugated.

Bowl rim profiles: 17 = Possible Mesquite B/G; 18-28 = St. George B/G; 29-34 = North Creek B/G; 35 = Parashant B/G.

Painted designs: A-G = St. George B/G; H-P = North Creek B/G; Q-R = Parashant B/G; S = Possible Mesquite B/G.

Correlation of painted designs with rim profiles: A = 25, B = 28, C = 24, D = 26, E = 27, H = 30, I = 23, J = 31, K = 33, L = 32, M = 33, Q = 34, S = 17.

This carries with it a rather unexpected logic. Colton long ago expressed the view that there was a connection between the Shinarump Series and Middleton Black-on-red (Hall, 1942:21). He though it possible to produce Middleton Red by firing Shinarump Gray in an oxidizing atmosphere. This writer is inclined to doubt that they are the same, although the subject remains open. Certainly the clear quartz sand found in both types is quite similar.

Some have assumed that the dark colors characteristic of Shinarump ceramics indicates iron in the clay. This would appear to be challenged by the nearly total absence of red sherds in Shinarump ceramics, in spite of Colton's demonstration to Hall. The view taken here is that manganese is the mineral causing the dark color of most sherds in the series. The center for the manufacture of Shinarump appears to lie between Johnson Canyon and the Paria River in Kane County, Utah. At least one mangenese mine is known just a few miles east of the mouth of Johnson Canyon. A more complete study of the Shinarump Series may yet demonstrate that there are two sub-types, one with iron and one with manganese.

Paiute Ceramics

During the past half century or so, reference has been made to the existence of Southern Paiute pottery thought to center in the Moapa and Virgin River drainages of southeastern Nevada, northwestern Arizona, and southwestern Utah. Within the past 25 years, this pottery has been found to extend further east in Utah and Arizona and further north in Utah and Nevada than was, at one time, believed.

In 1950, Baldwin sought to summarize what was then known about this ware. He drew largely upon his own field work in southeastern Nevada as well as the work of M. R. Harrington working in the same area. They both described the material in essentially the same terms. Vessels were usually conical in form with the surface color ranging from brown to black. The pots were found to be either plain or decorated with lines of fingernail impressions. Rims flared outward although they were short.

While some workers had declared that Paiute pottery was finished with paddle and anvil, implying a connection with lower Colorado peoples, Baldwin saw evidence of coiling and scraping, even to the point of finding evidence of both methods being used on a single vessel. At the same time, there was a general agreement that the pottery was rather thick-walled and generally friable. The clay was poorly cleaned and the temper was usually course sand. There was a consensus that Paiute pottery was of very poor quality.

It remained for the Thompsons (1983) to suggest the reasons for the difference between pottery of the Paiute and the Fremont and, by extension, the Western Anasazi. They raised issues that had only occasionally been taken into consideration. The Thompsons remarked that the quality of ceramics made by sedentary people...

> "...clearly indicates that the clay was thoroughly cleaned. This requires time and fair quantities of water. Similarly, the clay was probably aged for some time, though no precise estimate can be made. The striking uniformity of the temper also indicates that it was selected with great

Figure 188. Rim profiles and painted designs from 42Ws392 (facing).

Jar rim profiles: 1-10 = North Creek Gray (#10 is a miniature jar fragment).

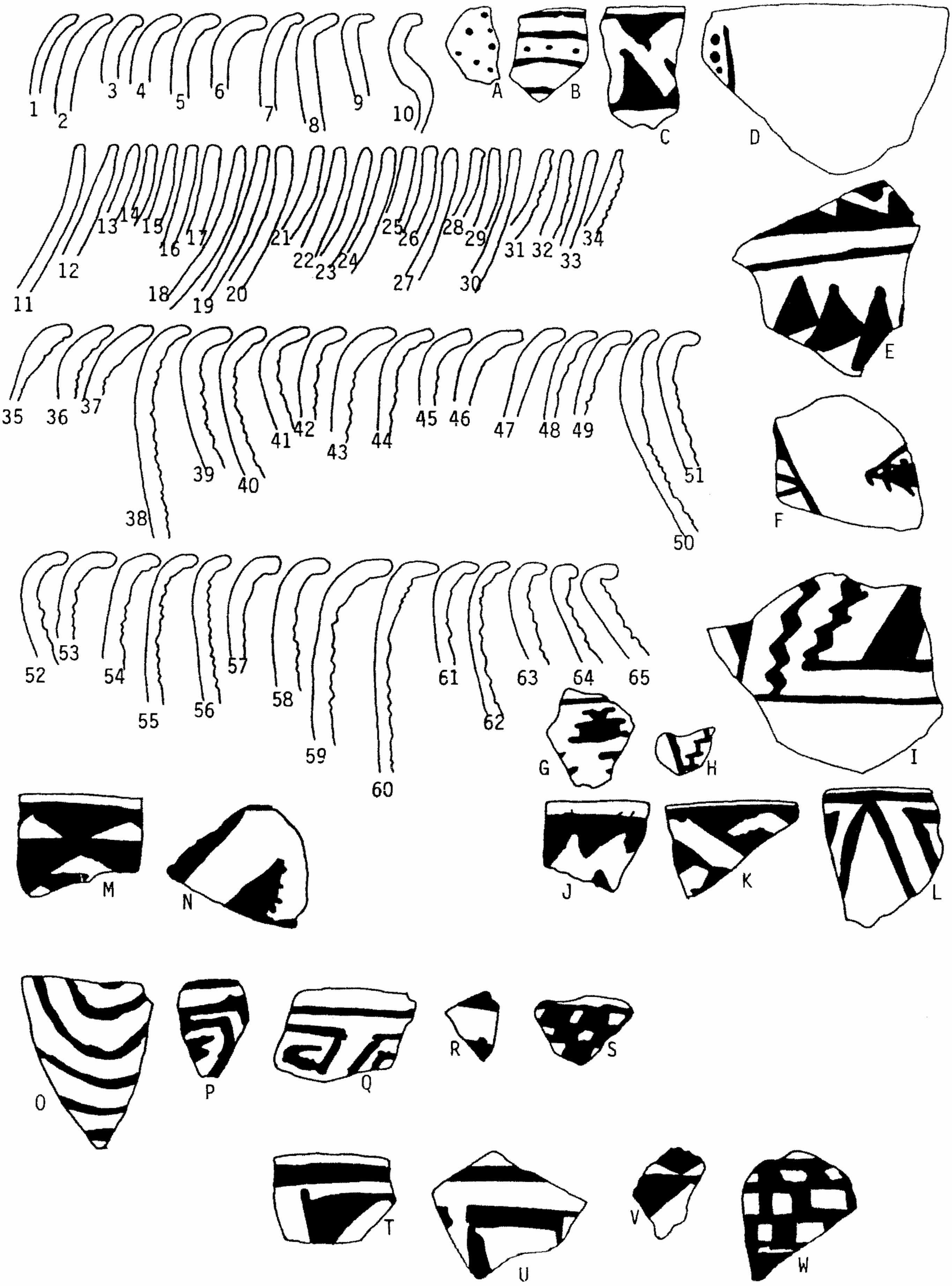
Bowl rim profiles: 11-13 = Mesquite B/G; 14-16 = Washington B/G; 17 = St. George B/G; 18-20 = North Creek B/G; 21-30 = Hildale B/G; 31-32 = Pipe Spring B/G; 33 = Glendale B/G; 34 = Parashant B/G.

Corrugated jar rim profiles: 35-65 = North Creek Corrugated.

Painted designs: A-E = Mesquite B/G; F-L = Washington B/G (G is the only painted sherd found on 42Ws258); M-Q = St. George B/G; R = Orderville B/G; S-T = Trumbull B/G; U-W = St. George B/G (V from 42Ws269, W from 42Ws271).

Correlation of painted designs with rim profiles: C = 13, D = 11, J = 14, K = 15, L = 16, M = 17.

Figure 189. North Creek Corrugated pot 25 cm. tall, 17 cm. in diameter at the rim and 25 cm. in diameter at the widest part of the body.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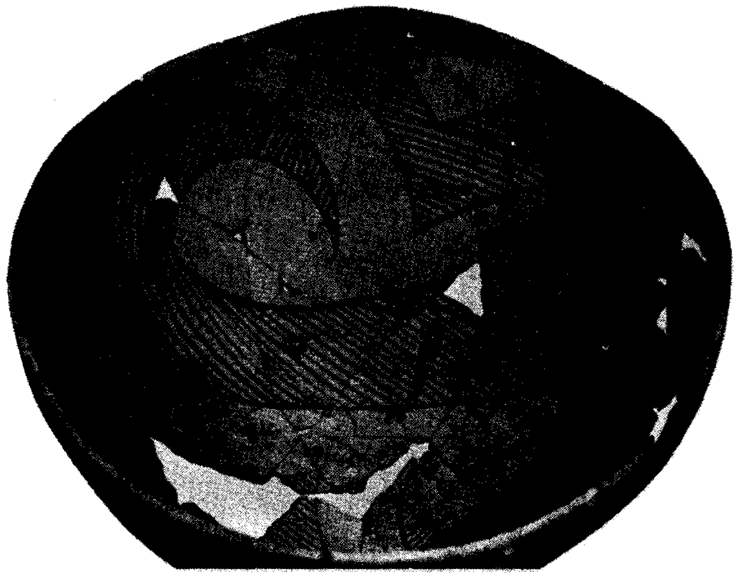


Figure 190. Hildale Black-on-gray bowl, 27 cm. in diameter and 12 cm. deep, 42Ws392.

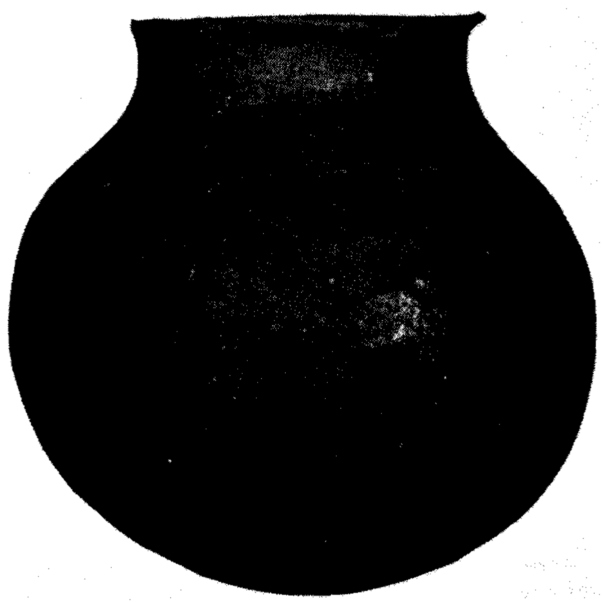


Figure 191. Kanab Black-on-red jar, 21 cm. high, 12 cm. in diameter at rim and 22 cm. in diameter at widest part of body, 42Ws392.

care. Finally, since Snake Valley sherds are quick to turn red in the presence of an oxidizing atmosphere (at least they do if manufactured in the Parowan Valley), fuels would have to be selectively chosen, some being used for heat intensity and others for long burning qualities. This would be essential in order to build a good fire which would create a reducing atmosphere for much of the six to eight hours required for this kind of firing."

The writers went on to note that people living within a foraging pattern would be unable to employ the care common among sedentary peoples. The manufacture of ceramics by mobile people, actually a somewhat unusual phenomenon, would be constrained by the need for frequent movement and the necessity of carrying all of their possessions. The result would be the production of the lower quality pottery characteristic of the Southern Paiute. The point was, the Thompsons believed, that the lower quality of Paiute ceramics was a function of the subsistence strategy rather than of a lack of technical skill.

A total of seventeen of the sites in the Quail Creek project area were either Paiute or contained a Paiute component. Typically, these sites proved to be ephemeral in the extreme and most yielded only limited data. One interesting point may be made, however. Carbon samples recovered from eleven Paiute sites were submitted for assay and all produced expected A.D. dates. These were 1270, 1280, 1310, 1750, 1840, and six classed as "modern" which was interpreted by the laboratory as less than 100 years.

The Washington County site form files shows that there is a great abundance of Paiute sites southwest, west, and northwest of the project area, roughly along the route taken by I-15 as it climbs the 3,000 ft. from the St. George Basin to the New Harmony and Cedar Valleys to the north. The sites undoubtedly represent a record of seasonal transhumance. The extremely limited evidence of Paiute activity in the Quail Creek project area is a striking comment of the value of the area to foragers. The Quail Creek Reservoir Basin may have proven useful to earlier Anasazi horticulturalists, but its aridity was greater than the higher ground to the west near the Pine Valley Mountains.

The dates suggest that the Paiute had tested the area in the early years of their occupation and found its resources much more limited than nearby areas. They understandably concentrated on those regions within their round that promised to be more productive. How then, is it possible to account for the identification of six sites dated to the late nineteenth century? The interretation offered here takes the lead offered 50 years ago by Joseph E. Spencer (1936).

In his study of modern populations in the St. George Basin, Spencer noted that Mormon pioneers were far more favorably disposed towards Native Americans than were most frontier farmers. At the same time, he observed, that the arrival of Mormon Euro-Americans in the area proved to be just as devastating to the Indian as was the advent of others less well-disposed. The pioneer preemption of the most desirable land deprived the Paiute of some of their most productive foraging grounds and greatly increased the stress of their subsistence efforts, causing hardships that can only be imagined.

Figure 192. Painted designs from 42Ws392 (facing).

Painted designs: A-E = North Creek B/G; F-J = Hurricane B/G; K-Q = Hildale B/G; R = Pipe Spring B/G; S-W = Hildale B/G; X-CC = Glendale B/G; DD-FF = Parashant B/G; GG-HH = Middleton B/R; II = Nankoweap Polychrome; JJ = Tusayan B/R.

Correlation of painted designs with Fig. 188 profiles: A=19, B=18, C=20, K=30, L=24, M=29, N=23, O=26, R=31, X=33, DD=34.

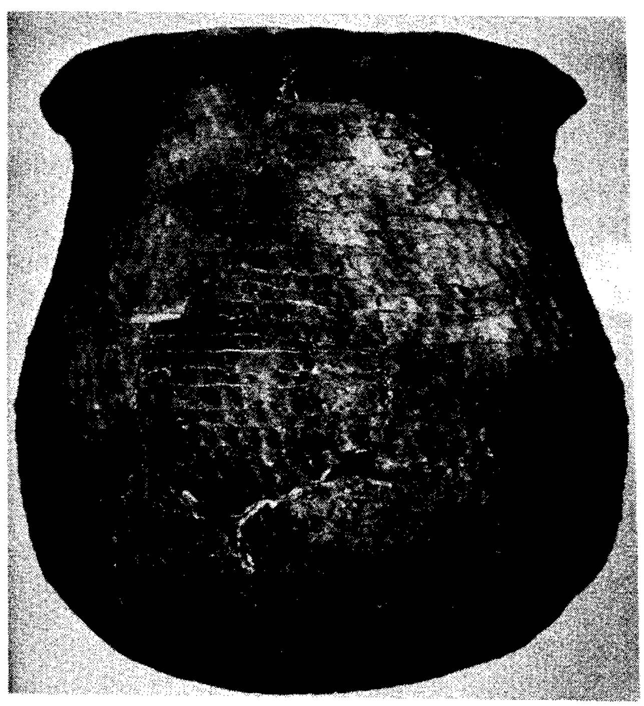
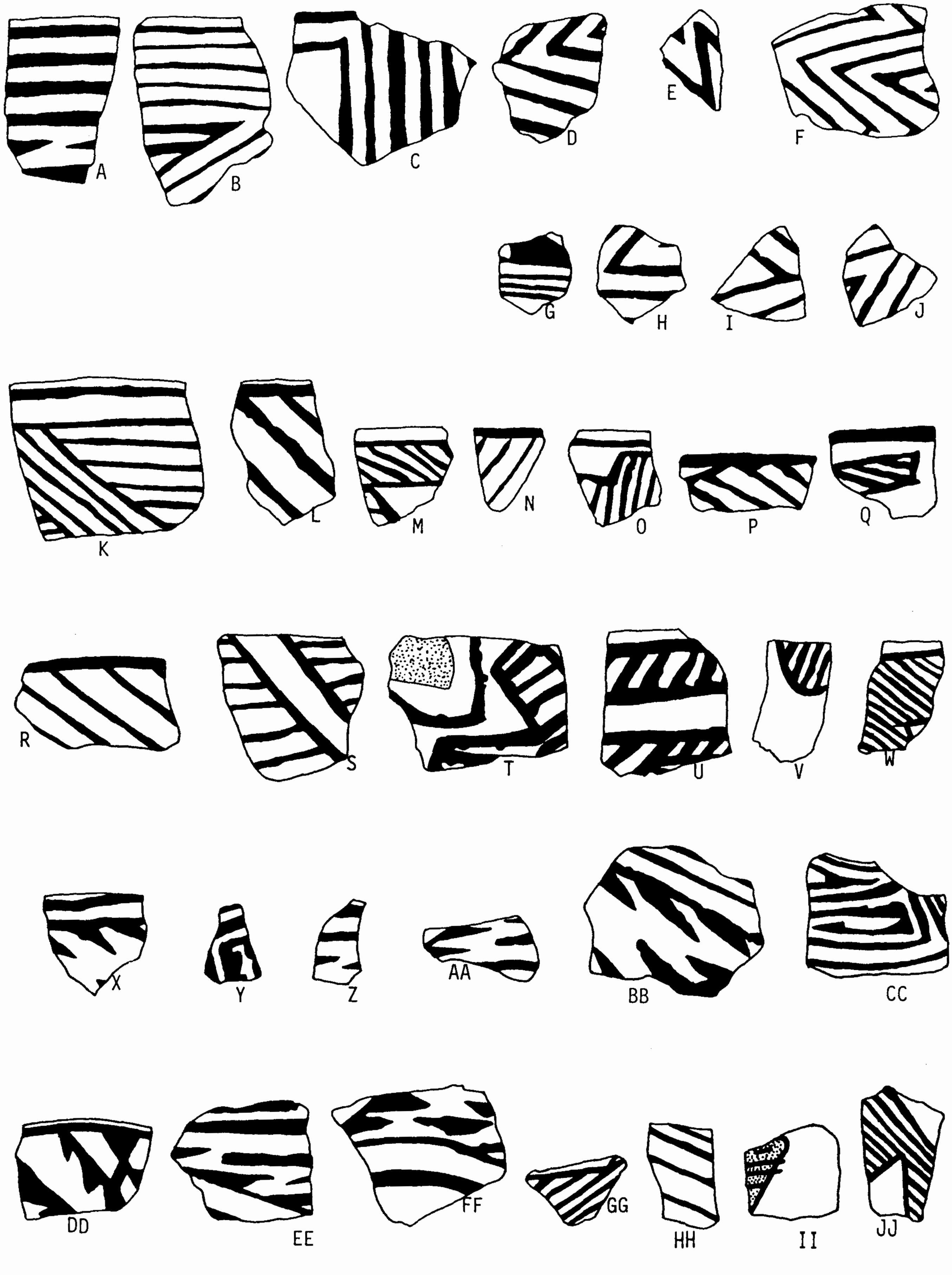


Figure 193. North Creek Corrugated pot 24 cm. tall, 25 cm. in diameter at the rim and 28 cm. in diameter at the widest part of the body, 42Ws392.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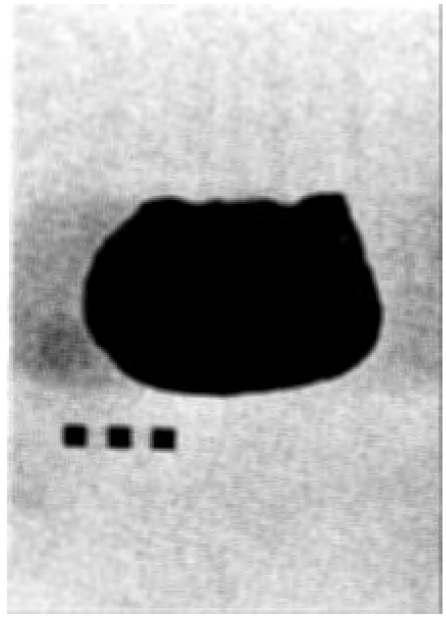


Figure 194. North Creek Gray bowl (crude) is 8 cm. deep and 8.5 cm. in diameter at rim and 12 cm. in diameter at widest part of body.

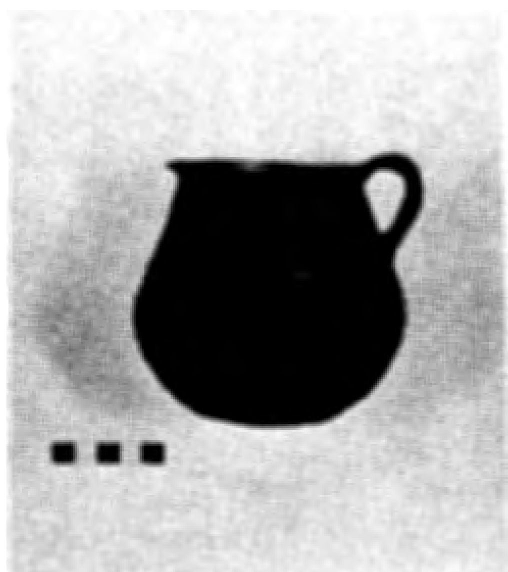


Figure 195. North Creek Corrugated jar with handle is 11 cm. deep, 9 cm. in diameter at the rim and 12 cm. in diameter at the widest part of the body.

The six "modern" dates should doubtless be seen as a demonstration of Spencer's perception. Deprived of much of their normal areas, the Paiute found themselves forced onto territory which their experience had told them would offer more limited food resources. For a brief period, at least, the Paiute sought to compensate for lost resources through the exploitation of more marginal areas not yet taken by the pioneer farmers.

A final note on Paiute ceramics remains. The present writer is one of a few workers who claim to have identified a type they call Paiute Corrugated. This is not to be confused with the fingernail marks so widely found on Paiute vessels. Sherds of the corrugated form display a surface manipulation that is very reminiscent of North Creek Corrugated. When found, these sherds have been identified as Paiute rather than a poorly made North Creek because they have been associated with other Paiute sherds in contexts in which Western Anasazi ceramics have not been found. Although it was not intended when the type was identified, Paiute Corrugated sherds may imply an early date within the Paiute occupation. Presumably they would represent the influence of the Anasazi corrugated form. With the passage of time, however, the surface manipulation became less frequent or perhaps "degenerated' into the fingernail impressions. The type is by no means established and judgment should be suspended until more collections are accumulated with controls more specifically designed to test the validity of the type.

## Quail Creek Ceramics: Rims and Painted Designs

Figures 183, 185, 187, 192, 196, 198 reproduce the most clearly definable painted design styles and rim profiles recovered during the Quail Creek project. In a very real sense, the basis for the identification goes far beyond the project area. Taxonomic decisions have been made on the basis of attempts to understand Western Anasazi ceramics for nearly 20 years. That experience includes eleven years of survey and excavation at and near the center of the major source of Moapa Series ceramics in the Tuweep Area of Grand Canyon National Park, Mohave County, Arizona, as well as eight years in southeastern Washington County, Utah. In addition, the research has involved contract projects in Kane and Washington Counties since 1974. Inevitably some judgments will be called into question and there will be differences of opinion as to what design styles are represented on many sherds.

The best executed representations of the design elements is always a poor second to handling the actual sherds themselves, but it is certainly superior to verbal description. The examples figured in this report are, of course, always available for examination by serious workers.

In the representation of rim profiles, a high degree of accuracy has been obtained by actually cutting the sherds with a rock saw, tracing the outline on paper and then redrawing the form in ink just inside the pencil lines. There is one critical point required in obtaining the correct rim form which goes beyond this simple procedure. It calls to mind the problem in physical anthropology of measuring prognathism on a human skull. The researcher could get almost any degree of prognathism desired simply by tipping the skull. Consistency is obtained by requiring that a line tangental to the top of the ear opening and the bottom of the eye socket be kept absolutely parallel to the ground.

Figure 196. Painted designs from 42Ws395 (facing).

Painted designs: A-D = St. George B/G; E = Orderville B/G; F-L = North Creek B/G; M-O = Hurricane B/G; P-X = Hildale B/G; Y-DD = Glendale B/G; EE-FF = Parashant B/G; GG = Middleton B/R; HH-II = Kanab B/R; JJ-KK = possible Mesquite B/G; LL-MM = Unidentified Virgin Series B/G.

Correlation of painted designs with Figure 183 rim profiles: A = 38, B = 39, F = 55, G = 56, I = 57, J = 58, K = 59, P = 63, Q = 64, R = 65, S = 66, T = 67, U = 68, Z = 70, AA = 71, JJ = 74, KK = 75, LL = 76, MM = 77.

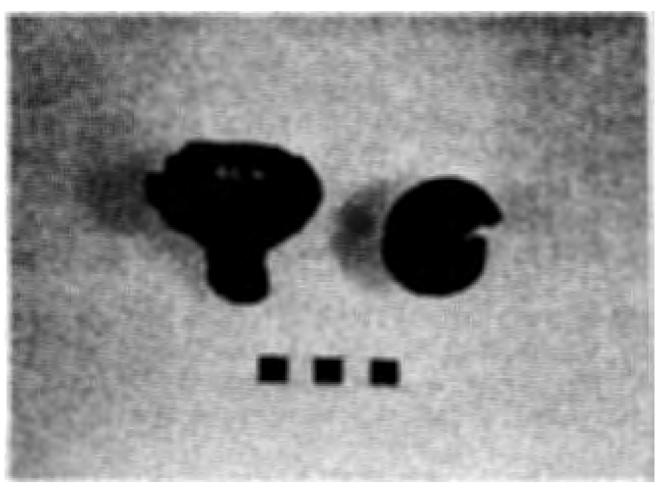
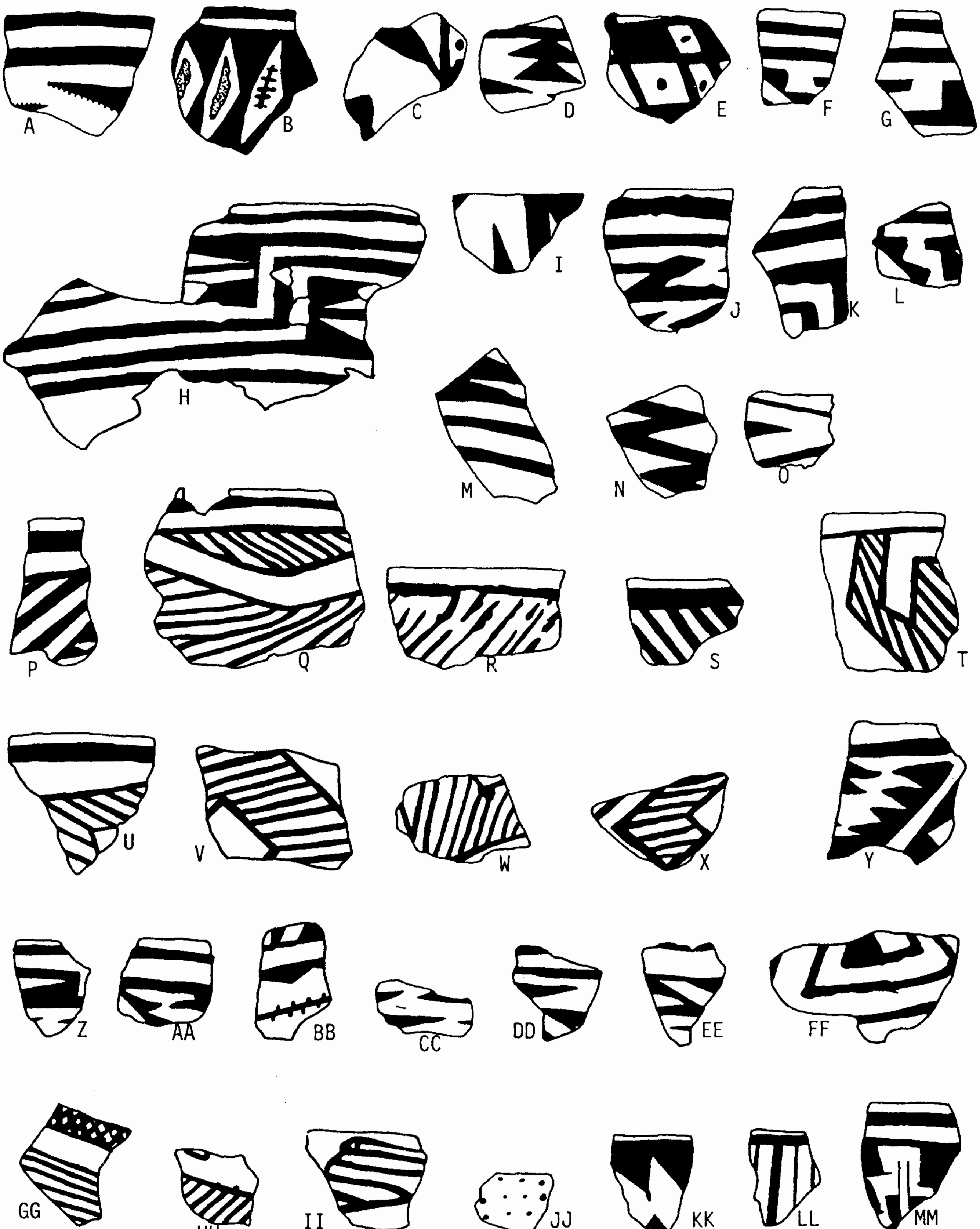


Figure 197. Left, Ceramic "goblet"; right, miniature North Creek bowl.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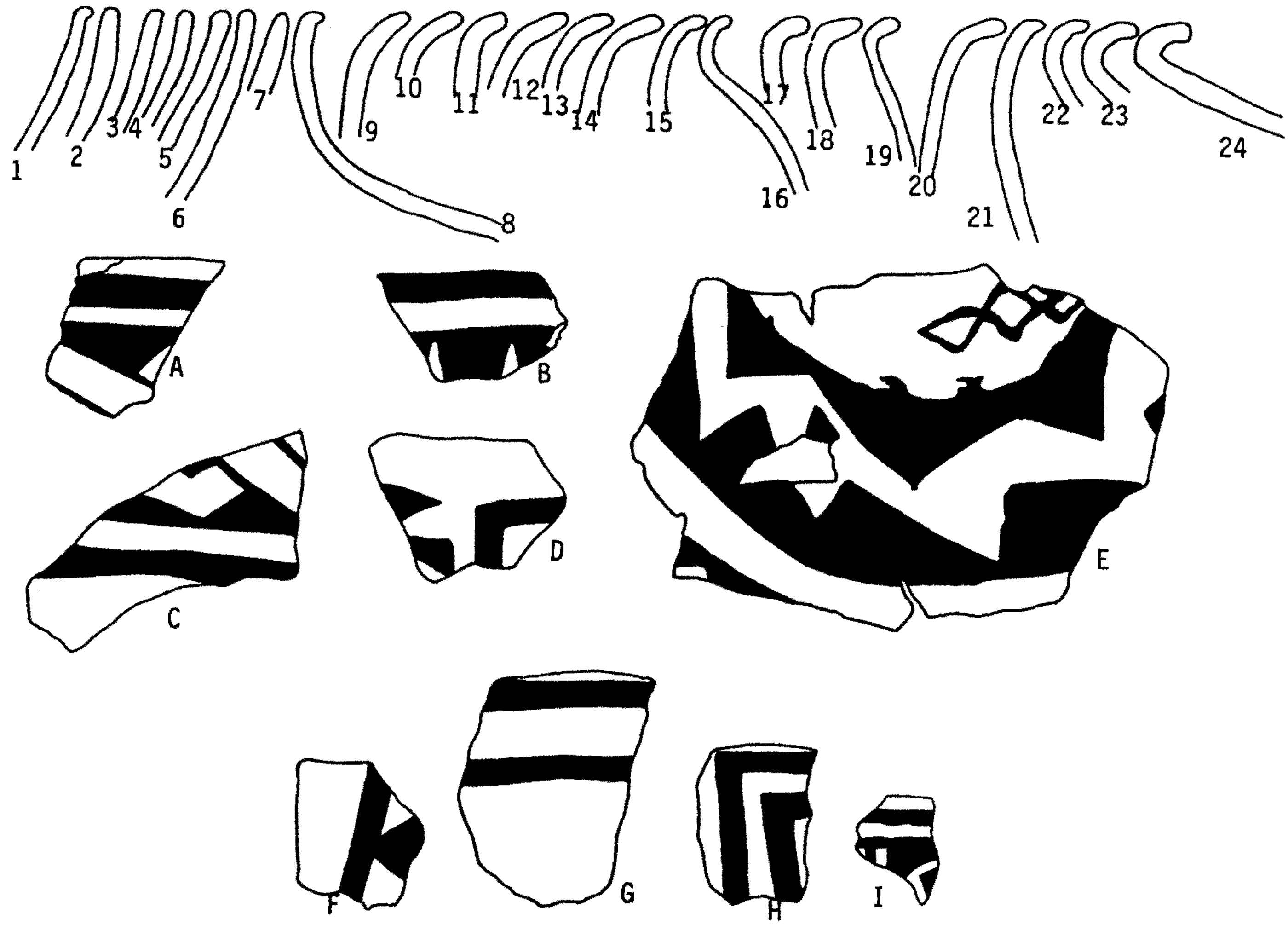


Figure 198. Rim profiles and painted designs from 42Ws390.

Bowl rim profiles: 1-2 = St. George B/G; 3-4 = North Creek B/G; 5-7 = Moapa B/G. Jar rim profiles: 8 = Moapa B/G (exterior design); 9-24 = North Creek Gray.

Painted designs: A-D = North Creek B/G; E-I = Moapa B/G.

Correlation of painted designs with rim profiles: A = 3, B = 4, E = 8, G = 6, H = 5, I = 7.

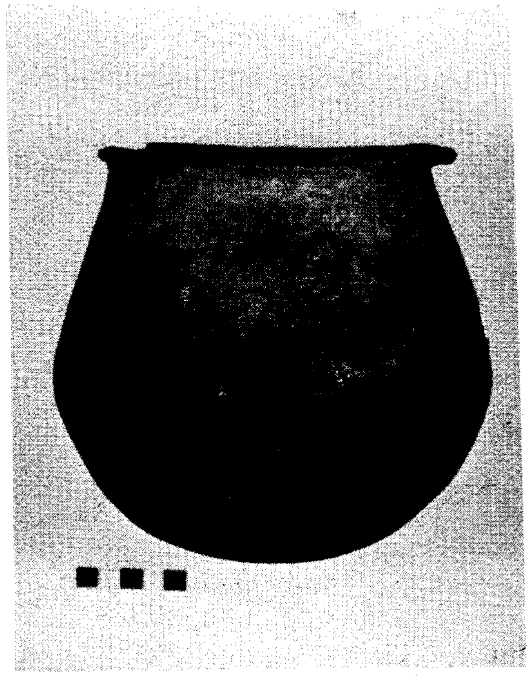

Figure 199. North Creek Gray pot is 15 cm. tall, 14 cm. in diameter at the rim and 18 cm. in diameter at the widest part of the body. 42Ws395.

Figure 200. North Creek Gray pot fragment is ca. 20 cm. tall and 18 cm. in diameter at rim and ca. 24 cm. in diameter at widest part of the body. 42Ws395.

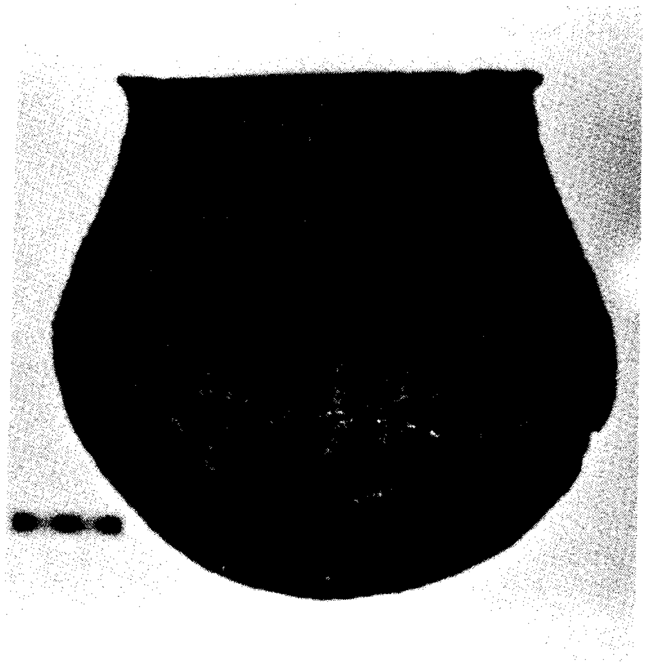

Figure 201. North Creek Corrugated jar. Jar is 20 cm. tall, 15 cm. in diameter at the rim, and 21 cm. in diameter at widest part of the body. 42Ws395.

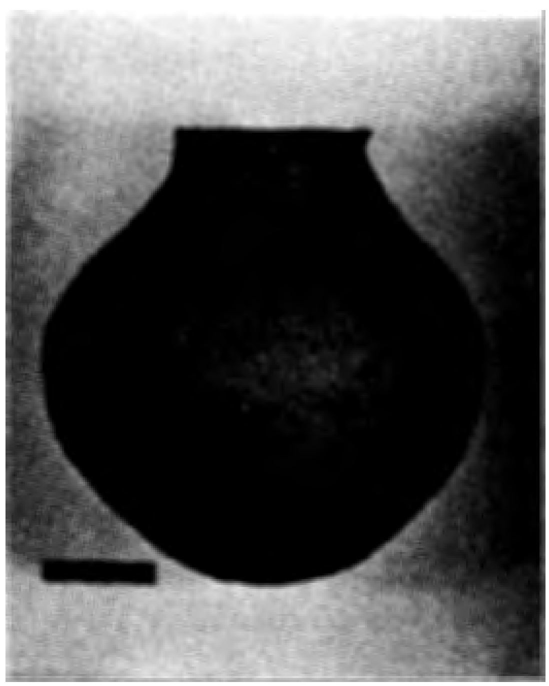

Figure 202. North Creek Corrugated jar. Jar is 17 cm. tall, 7.5 cm. in diameter at the rim and 17 cm. in diameter at the widest part of the body. 42Ws395.

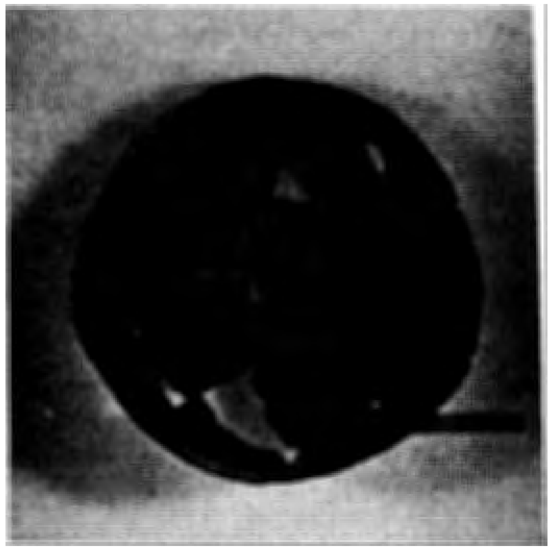

Figure 203. North Creek Black-on-gray bowl from the 42Ws395 burial. Bowl is 18 cm. in diameter and 7 cm. deep.

Figure 204. North Creek Black-on-gray from the 42Ws395 burial. Bowl is 18 cm. in diameter and 9 cm. deep.

By the same token, the direction taken by the walls of sherds can be ascertained with accuracy only if one first identifies the parallel plane of a rim. This tends to be fairly easy in the case of bowl rims, but it can be more of a problem with the rims of jars and pots. The best method to gain experience is to place a jar rim sherd on a small piece of wood or stiff cardboard. There should be a point at which all points of the rim will be in contact with the board surface. If the board is then inverted while holding the sherd against it, the worker will have the horizontal plain of the rim. With practice, the analyst can learn to make this determination by eye, but some experience is first advisable.

## Ceramic Vessels

A full, descriptive section on the vessels recovered from the Quail Creek sites was not prepared for inclusion in this report. However, the majority of the artifacts, along with brief metric data, are presented throughout this section as Figures 184, 186, 189, 190, 191, 193-195, 197 and 199-204. In the main, the vessels are from the burials at 42Ws392 and 42Ws395.

## Flaked Stone and Debitage

### Artifact Typology

Before discussing the individual artifacts and debitage collected from the Quail Creek Project inventory and excavations, the important parameters of the artifact typology will be briefly explained. Several broad categories of artifact types are used: bifaces, projectile points, drills, utilized flakes, scrapers, hammerstones, edge pounders, cores, and lithic debitage.

A lithic material typology was devised in order to evaluate possible correlations between tool categories and material types and also to evaluate raw material procurement strategies. Except for a few very rare materials, the lithic sources were all located within or very near to the project area. The definitions of each of these material types is shown in Table 36. The materials introduced in the table also pertain to the Ground Stone section to follow.

### Bifaces

Bifaces can be subdivided into four categories, three of which are technologically related. Blanks, preforms, and knives are three stages in the manufacture of biface cutting tools. Blanks exhibit bifacial, hard-hammer retouch, preforms are characterized primarily by soft-hammer retouch; while knives primarily exhibit pressure retouch techniques. These three biface types are arbitrary divisions of a manufacturing process which proceeds by reduction from blanks to preforms to knives. Muto (1971) postulated that certain biface forms, commonly classified as crude bifaces, were actually preliminary stages in a biface manufacturing sequence. Based on his knapping experience, he was able to recognize platform preparation techniques such as edge grinding and bevelling on a small sample of "crude" bifaces to confirm his hypothesis. Recent studies of bifaces from a number of sites in southern Utah, using the same hypothesis, but with quantifiable parameters, came to the same conclusion.

TABLE 36

LITHIC MATERIAL TYPE DEFINITIONS

---

C: This material is a chert which may be colored red, yellow, translucent gray, opaque-white and mottled with tan flecks, or any combination thereof. The most prevalent color is red with small amounts of yellow or translucent gray. The nearest known source of this chert is site 42Ws322 and is discussed in the text. Type C was the preferred material used to manufacture the more elaborate knapped tools.

C2: This material is an opaque-white chert which is identical in origin to material type C. These two types have been subsumed into type C.

C3: This material is an opaque-red chert which may be identical to material type C.

C4: This material is a rare, opaque-gray chert found in the form of stream-tumbled, tabular plates. Although its source is unknown, it was probably procured from the Quaternary gravels along Quail Creek.

C5: This material is a dark-gray, opaque chert of unknown source.

C6: This material is an opaque, light-tan chert with white specks. Its source is unknown.

C7: This material is an opaque, black chert with pale-blue translucent veins. Its source is unknown.

C8: This material is a dark-brown, translucent chert of unknown source.

C9: This material is an opaque, gray chert with small areas of amethyst caused by localized concentrations of manganese. Its source is unknown.

Q1: This material is a dark, olive-green chert with red vugs. It is a rare type and its source is unknown.

B: This material is a coarse-grained basalt found in plentiful quantities in the Quaternary alluvial gravels along Quail Creek.

CQ: This material is a conglomeratic quartzite formed by the silicification of a conglomerate deposit followed by metamorphosis caused by pressure and heat. Its source is unknown.

L: This material is a tan, oolitic limestone which, because of its coarse texture, was not commonly used for tools which require delicate knapping. Its source is the Quaternary gravels along Quail Creek.

LL: This material is lithographic limestone, which is a very fine grain gray or tan limestone that has been sufficiently silicified to exhibit a conchoidal fracture. It is still significantly softer than the various available cherts and was, therefore, not used for tools that require elaborate knapping or extended use life. It is very plentiful in the Quaternary gravels along Quail Creek.

O: This material is a black, translucent obsidian. The nearest known source of obsidian is near Modena, Utah, along the Utah-Nevada border about 50 miles northwest of the project area.

PW: This material is a coarse-grained petrified wood, usually brown and tan in color with a distinctly non-conchoidal fracture. It is locally abundant in both the Shinarump and Petrified Forest Members of the Chinle Formation.

S: This material is a fine-grained, well-cemented, tabular, tan sandstone. It is locally available from the unnamed sandstone member of the Upper Red Beds, but is not common.

SS: This material is a silicified sandstone which has not been subjected to the heat and pressure required to transform it into quartzite. It is sufficiently silicified to be knapped, however. Its source is the Quaternary gravels along Quail Creek.

ST: This material is a silicified volcanic tuff. Its source is unknown.

Q: This material is a quartzite found in the form of numerous stream-worn cobbles in the Quaternary gravels along Quail Creek. Its color varies greatly: white, purple, red, black, tan, pink and light green. Quartzite was used extensively for various purposes due to its unique combination of conchoidal fracture and resistance to impact and edge damage.

FB: This material is a fossilized bone which is brown and tan in color. Although its source is unknown, it may have originated in the same formation as the petrified wood. This material is extremely rare, represented by only a single artifact.

A large sample of bifaces, approximately 700 in number, have been studied by one of the authors. These included tools taken from (a) a series of Fremont pithouses on Bull Creek near Hanksville (Jennings and Sammons-Lohse, 1981); (b) the primary Archaic occupation at Cowboy Cave (Jennings, et al., 1980); (c) a large Archaic lithic scatter at Dangling Rope in Glen Canyon (Schroedl, 1978); (d) a series of Kayenta Anasazi dwellings in the Glen Canyon area (Schroedl, 1978); and (e) a series of Late Archaic and Basketmaker III or Pueblo I campsites near La Sal Junction, Utah (Weder et al., 1979). These bifaces were all analyzed by measuring maximum length, maximum width, maximum thickness, minimum edge angle and maximum edge angle. In each subsample, it was shown that, as would be expected from a lithic reduction sequence, the dimensions of the bifaces decreased from the blank stage through the preform stage to the knife stage. In addition, the difference between the minimum and maximum edge angles, known as the edge angle range, also decreased as the cutting edge of the biface was refined. Due to the variability in the size of the starting blank, the dimensional characteristics of the three biface stages are less diagnostic than the edge angle range, although the bifaces from the various sites do become more dimensionally similar at the knife end of the manufacturing sequence. Since the edge angle range is the critical factor from a functional viewpoint, it is not surprising that it is the best diagnostic indicator for subdividing the three biface stages.

The edge angle range is actually an easily measured approximation of the biface edge sinuosity. In order to function as an efficient cutting instrument, a biface must have an edge with minimal sinuosity, because any amount of sinuosity results in a large portion of the biface edge being positioned at an angle to the direction of the cutting motion. As a result, the highly sinuous edges of the biface blanks make very poor cutting instruments and any decrease in the sinuosity improves the cutting ability of the tool. Because sinuosity is a difficult parameter to quantify, however, the measurement of the edge angle range was used because it requires only two readings, the maximum and minimum edge angle. With a little experience, the largest and smallest edge angle on a particular specimen can be visually located and quickly measured with a contact goniometer. This approach does contain some error because even an edge with no sinuosity can have a variable edge angle. This error does not seem to be significant, however, since the large sample of bifaces already examined has shown that the edge angle range does correlate very well with the three biface categories (blank, preform, knife) which are defined by the flaking technique exhibited.

The 700 biface specimens were also examined microscopically for evidence of edge grinding and wear polish. Sheets (1973) has shown that edge grinding is a common edge preparation technique during the knapping of bifaces which is easily distinguishable from other edge damage possibilities. Data from the 700 specimens showed that edge grinding is commonly found on all three stages of the biface manufacturing sequence. Wear polish, the result of tool utilization, is increasingly more prevalent as the biface becomes more refined, as would be expected.

The evidence from the several sites referenced indicates that there was no apparent temporal/cultural change in the biface manufacturing sequence.

The fourth biface type, characterized by bifacial pressure retouch of a small flake was originally designated BPRF during the earlier stages of research on this biface category. The BPRF is a small flake which has been subjected only to pressure retouch. The BPRF can frequently be recognized because the pressure retouch does not always completely cover the faces of the original flake. In addition, because the pressure retouch is the first and only flaking technique applied, the edge angle range is much higher than that on the pressure retouch knives. The dimensions of the BPRF examples are roughly equivalent to the knife stage. Since edge grinding is common and wear polish rare on all BPRF specimens examined thus far, the probability that they are an initial stage of manufacture is strengthened. In addition, the BPRF specimens are present only at post-Archaic sites. This situation resulted in the hypothesis that the BPRF is the first stage in arrow point manufacture since the arrow point is the only finished tool smaller than the BPRF (Schroedl, 1978). After having repeated this series of measurements on several excavated assemblages, it is apparent that the hypothesis has not yet been disproven. Therefore, the term BPRF is replaced by the more specific term "arrow point preform." Consequently, the BPRF can be used as a diagnostic for the post-Archaic period.

## Projectile Points

Projectile points are subdivided into dart points and arrow points, primarily on the basis of size and stylistic differences. The size differences become a critical diagnostic factor when fragmentary specimens are encountered. Since dart points are dimensionally very close to knives, exhibit nearly identical edge angle ranges, and very frequently have well-developed wear polish, it is not possible to determine whether a tip fragment is from a knife or dart point. Arrow points, however, are dimensionally distinct from both dart points and knives especially in terms of thickness (Jennings, et al., 1980). Thus, fragmentary arrow points may be recognized as such by their pressure retouch, low edge and angle range, and thinness. Using these criteria greatly increases the data base from excavated sites by including the large percentage of specimens which are broken. The recognition of arrow point tip fragments at limited activity sites is an important piece of information since their presence immediately allows the site to be classified as post-Archaic, instead of unknown, where no other cultural diagnostics are present. This seemingly minor distinction assumes a critical importance when one is attempting to distinguish differences in settlement patterns between the Archaic and post-Archaic occupations.

The basic discrimination between dart points and arrow points does not necessarily imply mutually exclusive temporal periods, however. Certain "dart" points, such as the Elko series and the Gypsum type are frequently found in confident association with post-Archaic assemblages. The reason for this temporal overlap, which is particularly evident for the Elko Corner- and Side-notched varieties, is probably because these "dart" points maintained their utility as cutting instruments long after the replacement of the atlatl dart by the arrow.

The Cowboy Cave assemblage revealed that "dart" points of several styles exhibited definite evidence indicating their use as cutting instruments all through the Archaic period, so the continued utilization of "dart" points as knives after the introduction of the bow and arrow cannot be considered aberrant (Jennings, et al., 1980). The popularity of the Elko style in particular seems to have continued until recent times as Powell collected a hafted Elko-type point in 1873 from his Southern Paiute informants (Fowler, et al., 1973:41).

## Drills

Drills are tools characterized by a bifacially flaked bit with a roughly diamond-shaped cross section. The handle may be knapped to a form symmetrical about the axis of rotation, but often the handle is simply the unworked remainder of the flake. In a few rare instances a dart point has been reworked to form a drill.

When present, the wear evidence on drills is very distinctive. In these cases, the wear is generally similar to that formed during biface edge grinding, i.e., the edge damage is coarse, rough, and has definite striations perpendicular to the bit edge. In addition to these factors, the rounded aspect of the edge damage and its location near the tip all indicate that drills were often used with a rotary motion on hard substances. Wear polish, like that noted on knives, is less commonly found on drill bit edges.

Cores

Cores are large pieces of chert or other suitable stone from which flakes or blades are struck. Since blade technology is not well documented in Utah, most cores were utilized as a source of flakes and are not usually found far from their geological source.

Hammerstones

Hammerstones are generally small cobbles which exhibit varying degrees and amounts of battering. The damaged areas on hammerstones are typically circular or oval with rough battered surface regions located on prominences. This type of damage indicates that this tool category was used for pounding or crushing hard materials. Typical uses would be flint knapping; crushing pigments, minerals or ceramic temper; and the shaping of metates or sandstone architectural elements (Dodd, 1979:239). The critical distinction between the hammerstone and other similar categories,such as the edge pounder, is the circular or oval shape of the hammerstone's attrition area.

Many different types of lithic material were used as hammerstones. Basalt and quartzite, both readily available in the project area, are the best materials because of their tough, well-cemented, granular nature. Other materials, such as chert, were also commonly utilized.

Edge Pounders

Edge pounders are quite similar to hammerstones, consisting of small cobbles which exhibit battering along a rounded edge of either natural or manufactured origin. Those specimens which were first flaked and then battered to achieve a narrower, rounded edge were probably prepared in this manner in order to create a smaller striking area with its inherently higher impact pressures. Edge pounders are differentiated from edge grinders by the distinctly flattened working edge of the latter tool type. Edge grinders are described in the section on ground stone.

Utilized Flakes

Utilized flakes are defined as flakes which exhibit use retouch along one or more edges. Even though pressure retouch was occasionally used to refine the edge angle of a flake, more often a flake with the proper natural edge angle was selected from unmodified flakes at hand. Use retouch can be distinguished from intentional pressure retouch flaking by several characteristics. A use retouch flake scar is generally quite small, irregular in size, and expands rapidly from its point of initiation. In addition, the use retouch scar normally terminates in a hinge or step fracture (Crabtree and Davis, 1968). All of these characteristics imply that the angle of applied force and/or the degree of force was unlike that which would be used for skilled, intentional, pressure retouch (Tringham, et al., 1974). It is thus apparent that use retouch is most likely the result of excessively forceful tool pressure on a hard object. The results of Crabtree and Davis' experiments (1968) agree with this interpretation.

Utilized flakes are characterized by edge angles which cluster between 40° and 50°. As is the case with the biface manufacturing sequence, there is no apparent morphological variation in the characteristics of utilized flakes during the Archaic and post-Archaic periods.

The knife and utilized flake categories represent complementary cutting functions. Knives only rarely show evidence of use retouch and are therefore interpreted as instruments for cutting soft materials. Since utilized flakes are recognized by the presence of use retouch, their use as cutting instruments for hard materials such as wood, bone, or antler is inferred. The possibility that utilized flakes were also used for cutting soft materials cannot be ruled out, however. It is difficult to distinguish utilized flakes which do not have use retouch from non-utilized debitage without conducting an exhaustive microscopic examination of every piece of debitage.

### Scrapers

A scraper is defined as a thick flake which has had one or more edges minimally modified by unifacial pressure retouch so as to achieve a steep edge angle. Either use retouch and/or polish may be present. The wear polish found on scrapers has a frosty appearance like edge grinding, but is shinier. In addition, the scraping edge is rounded rather than flattened as is the case for intentional edge grinding. The attritional rounding of the edge is often so extensive that it is easily visible without magnification.

The angle of the working edge of scrapers is characteristically between 60° and 70°. The mean edge angle for scrapers from Dangling Rope is 69° with a standard deviation of 9.8° (Schroedl, 1978); from Clear Fork, Texas, 60-75° (Hester, Gilbow, and Albee, 1973); Paleo-Indian, 66-75° (Wilmsen, 1968, 1970); Sudden Shelter, 60-65° (Jennings, et al., 1980); and from Cowboy Cave, 66-69° (Jennings and Sammons-Lohse, 1981).

### Lithic Debitage

Lithic debitage consists of the remnants of knapping activities which were not subsequently utilized. For analytical purposes, the debitage is classified first into unidentifiable flakes (those without recognizable striking platforms), identifiable flakes (those with recognizable platforms), and core shatter. The majority of the debitage typically is unidentifiable because of the large percentage of flakes which shatter into several pieces when removed. Core shatter flakes are those irregularly shaped fragments which are the result of flaws in a core. Core shatter is commonly produced during the early stages of core preparation when the other portions of the core, usually weathered and often flawed by stress cracks, are removed to expose the inner portion of the core.

The identifiable flakes can be subdivided into two groups, biface flakes and core flakes. Biface flakes are the flakes removed from a biface during the biface manufacturing sequence and are recognized by several characteristics. Biface flakes have faceted platforms which are at an acute angle to the dorsal surface of the flake. Frequently, the platform has a lip on the ventral side and the edge of the platform, which was also the edge of the biface, which exhibits edge grinding. The dorsal surface of the biface flake is also faceted as a result of flakes removed previously from the biface. Core flakes, as their name indicates, were removed from a core and generally have unfaceted platforms and high platform angles.

## Quail Creek Artifacts

### Bifaces

The bifacially flaked specimens were visually classified into blank, preform, knife, arrow point preform, dart point, and arrow point categories. In those instances where a fragment could be either a knife tip or a dart point tip, the specimen was included in the knife category. Their dimensions and edge angles were measured (Table 37) and then they were examined with a 7X to 40X binocular microscope for evidence of edge grinding and wear polish (Table 38). Table 37 demonstrates that these artifacts exhibit the blank-preform-knife manufacturing sequence as expected. The dimensions and edge angle ranges decrease as the biface approaches the finished product. It should also be noted that in most cases, the standard deviations become smaller as the biface is refined, which indicates that the earlier manufacturing stages have more dimensional and edge angle variability than the knife stage. In addition, the data in Table 37 shows that the minimum edge angle for the knife category is only slightly less than the minimum edge angle for the preform. This indicates that the lower range of edge angles is generally established at the preform stage and that the reduction in sinuosity found in the knives is achieved by removing the higher edge angle portions of the preform edge. This phenomenon is also revealed in the assemblages of bifaces from previously examined sites.

Table 38 shows the results of the microscopic examination. As expected, the early stage forms (blanks and preforms) show evidence of edge grinding but wear polish is prevalent only on the knife and dart point specimens. These observations confirm the hypotheses that the edge grinding is a manufacturing activity and that the completed specimens were used for cutting.

A review of the materials used for the manufacture of blank, preforms, knives, and dart points (see Collection Summaries, Excavations, above) shows that chert type C was the preferred material. With the exception of the dart points, chert type C was used for over 90 percent of all these biface specimens. The dart point category is small and therefore skewed because of the five obsidian (19 percent) dart points, one of which was a Silver Lake point obviously curated and included in the burial offerings at 42Ws395. The lack of obsidian knives is not unexpected since obsidian is not a very durable material for cutting purposes because of its low tensile strength. The low tensile strength allows it to be easily flaked, but for the same reason, its edge is also easily damaged and, therefore, does not remain sharp for very long when used as a cutting instrument.

### Dart Points

The small collection of dart points (Figs. 205,206) from the Quail Creek Project is indicative of the minor role played by these tools in the spectrum of Western Anasazi subsistence activities. Out of a total of 21 dart points,

TABLE 37

BIFACE STATISTICS

| Statistic | Length | Width | Thickness | Maximum E. A. | Minimum E. A. | Edge Angle Range |
|---|---|---|---|---|---|---|
| | | | Blanks | | | |
| X | 4.40 | 2.68 | 1.06 | 72° | 51° | 21° |
| S | 1.29 | 0.70 | 0.37 | 9.8 | 8.9 | |
| N | 29 | 48 | 72 | 76 | 76 | |
| | | | Preforms | | | |
| X | 4.48 | 2.40 | 0.71 | 61° | 42° | 19° |
| S | 1.03 | 0.40 | 0.18 | 11 | 6.8 | |
| N | 12 | 37 | 70 | 74 | 74 | |
| | | | Knives | | | |
| X | 7.76 | 2.40 | 0.55 | 48° | 41° | 7° |
| S | 0.19 | 0.53 | 0.11 | 9.7 | 9.7 | |
| N | 2 | 10 | 32 | 32 | 32 | |
| | | | Dart Points | | | |
| X | 4.71 | 2.24 | 0.05 | 53° | 43° | 10° |
| S | 1.14 | 0.36 | 0.09 | 8.6 | 7.5 | |
| N | 7 | 15 | 20 | 18 | 18 | |

only 16 are sufficiently complete to be identified. These identifiable dart points include one Silver Lake, two Pinto, one Gypsum, three Elko Eared, four Elko Corner-notched, four Elko Side-notched, and one unnamed specimen of possible Basketmaker II affiliation.

The Silver Lake point (Fig. 205a) is the oldest of the projectile points found during the Quail Creek project, but since it was recovered as a part of a burial offering in a small jar at 42Ws395, it is obviously a curated specimen. Silver Lake points and a temporally associated variant, the Lake Mohave point, are diagnostic of a time period approximately dated between 9000 and 7500 B.P. in the southern Great Basin (Hauck, et al., 1979:42). Although these two point types have been recovered from numerous sites in southern Nevada and from the southern Escalante Desert in Utah (Keller and Hunt, 1967), they are generally from surface proveniences lacking radio-carbon dates. The particular point in question here is made of obsidian and has slight edge grinding on the base. The tip was broken and reworked before it was curated by the Anasazi. No evidence of use or reworking after its curation was noted.

The two Pinto points (Fig. 205a,b) are diagnostic of the Late Archaic period, ca 5500 to 2000 B.P. in the southern Great Basin (Hauck, et al., 1979:45), but like the Silver Lake point, were recovered from contexts indicating that they were curated from their original proveniences. One of the Pinto points was recovered from the post-abandonment fill of the pithouse at 42Ws268 and the other from the fill above the roof-fall in Cist 5 at 42Ws388. Both of these points were made of locally available materials and may indicate that the project area was utilized by an Archaic-period population. The quartzite and chert type C which were used for these two points are not peculiar to the project area, however, and may have been manufactured elsewhere.

One Gypsum point was recovered from the project area (Fig. 205d). This point type is also a Late Archaic diagnostic in the southern Great Basin, ca 5500 to 2000 B.P. (Hauck, et al., 1979:45), although they are not uncommon in post-Archaic contexts (Jennings, et al., 1980).

TABLE 38

BIFACE EDGE MODIFICATION CHARACTERISTICS

| | Wear Polish | Edge Grinding |
|---|---|---|
| Blanks | 0 | 22% |
| Preforms | 3% | 38% |
| Knives | 35% | 0 |
| Dart Points | 17% | 0 |
| Arrow Point Preforms | 1% | 37% |
| Cottonwood | 0 | 8% |
| Arrow Points | 0 | 0 |

The Gypsum point was recovered from 42Ws288 from the roof-fall or above within the pithouse fill. This point is made of chert type C and may have been manufactured locally, but as was pointed out before, this chert type is common in many areas of southern Utah. Unfortunately, the uncertain provenience of this point does not allow a resolution of its origin.

A total of 11 Elko series points (Fig. 205,206) were recovered from the project area including four Side-notched, four Corner-notched and three Eared specimens. The dating of the Elko series in the project area is uncertain because of its location near the boundary of two different culture areas. In the eastern Great Basin and northern Colorado Plateau, the Elko series point styles are found in contexts ranging from early Archaic through post-Archaic (Holmer, 1978:62). This long temporal occurrence is also shown at O'Malley Shelter in Nevada to the northwest of the project area (Fowler, Madsen, and Hattori, 1973:23). In the southern Great Basin, however, the Elko series seemingly does not appear until the post-Archaic period, but this assignation is based on very tenuous data. Elko series points were found in association with several aceramic pithouses excavated by Harrington in the Lower Moapa Valley during the 1920s and 1930s. These pithouses were assigned a Basketmaker II affiliation by Shutler (1961) when he reviewed Harrington's

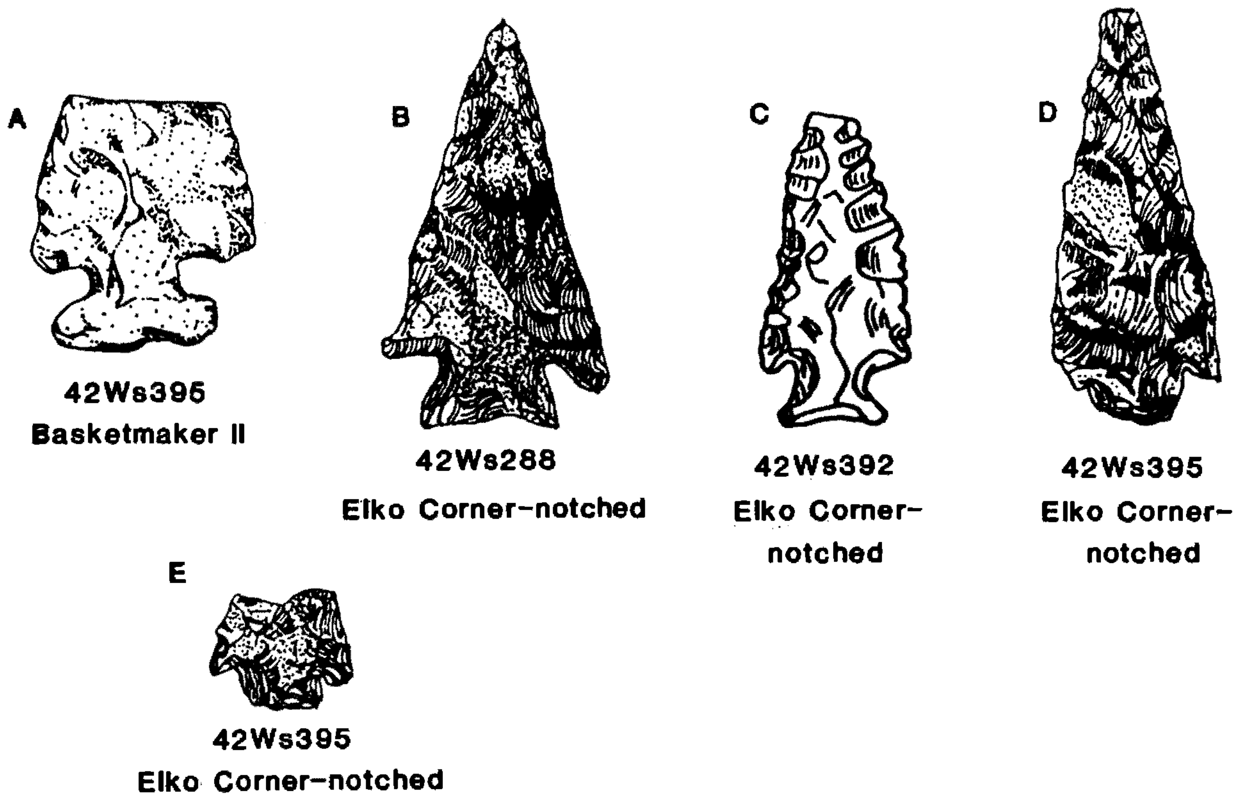


Figure 206. Dart Points II: Basketmaker II, Elkos.

and 6 others had to be included in one of several "mixtures" of different Anasazi styles because their particular patterns of breakage precluded exact categorization. Each of these styles will be discussed individually beginning with the earlier forms.

The Rose Spring form is the first arrow point style to appear in the Intermountain West and is a convenient marker for the beginning of post-Archaic period. The earliest confident radiocarbon date for the advent of the Rose Spring point in southern Utah is about A.D. 350 at Cowboy Cave (Jennings, et al., 1980:38). Additional data summarized by Holmer and Weder (1980:67) show that the Rose Spring style was common until about A.D. 900 after which it was replaced by numerous regionally differentiated arrow point types. Although they are not designated as such, Rose Spring points are also prevalent at Basketmaker III and Pueblo I sites in the Four Corners region. These two periods coincide almost exactly with the dates tabulated by Holmer and Weder (1980) which did not include Mesa Verde Anasazi data. Comparative examples of these analogous Mesa Verde Anasazi arrow point styles are shown by Brew (1946:Figure 172) from Alkali Ridge, Roberts (1929:136) from Shabik'eshchee Village, Rohn (1977:218) from Chapin Mesa, and Martin and Rinaldo (1938:415) from several sites in the Ackmen-Lowry area.

A total of 14 Rose Spring points were recovered from sites in the project area (Figure 207). Two of these points were recovered from 42Ws388, one from the pre-collapse aeolian sand deposit on the pithouse bench and one from the main pithouse where it was found embedded in the floor clay. This site was dated by ceramic and radiocarbon methods to the Pueblo I period. Another Rose Spring point was recovered from a vandal pit at 42Ws397 which was also placed

TABLE 39

ARROW POINT STATISTICS

| Statistic | Length | Width | Thickness | Maximum E. A. | Minimum E. A. | Edge Angle Range |
|---|---|---|---|---|---|---|
| | | | Arrow Point Preforms | | | |
| X | 3.02 | 1.93 | 0.52 | 59° | 44° | 15° |
| S | 0.65 | 0.38 | 0.13 | 11 | 8.5 | |
| N | 39 | 68 | 121 | 124 | 124 | |
| | | | Cottonwood | | | |
| X | 2.82 | 1.84 | 0.45 | 48° | 39° | 9° |
| S | -- | 0.24 | 0.10 | 11 | 6.1 | |
| N | 1 | 12 | 13 | 13 | 13 | |
| | | | Arrow Points - Anasazi | | | |
| X | 2.59 | 1.64 | 0.36 | 52° | 44° | 8° |
| S | 0.49 | 0.27 | 0.075 | 10 | 8.9 | |
| N | 40 | 55 | 100 | 98 | 98 | |
| | | | Arrow Points - Numic | | | |
| X | 2.33 | 1.36 | 0.29 | 41° | 34° | 7° |
| S | 0.44 | 0.21 | 0.037 | 5.7 | 4.8 | |
| N | 4 | 4 | 7 | 7 | 7 | |

in the Pueblo I period on the basis of its ceramics and architecture. Even though this particular specimen was found in a disturbed context, there are no cultural diagnostics at this site from any other temporal period which might cast doubt on its Pueblo I association.

Three Rose Spring points were found at 42Ws390, but two were from dubious contexts: one from the level in or above the roof-fall of the rectangular storage room, and one from the surface of the site. Since several areas of this site, including the storage room, were heavily vandalized, the resulting artifact assemblage is a complex contextual mixture of early and late, foreign and local Anasazi diagnostics with aberrant radiocarbon dates to help confuse the interpretation. The one Rose Spring point found in a reliable context was recovered from the use deposit of the pithouse. However, this use deposit contained local Pueblo II ceramics, and while a roof beam was radiocarbon dated to A.D. 1380.

Two other arrow point types dating to the Basketmaker III/Pueblo I periods were also found in limited numbers at sites in the Quail Creek Project. These two types are the Abajo (four specimens) and Eastgate (two specimens). The

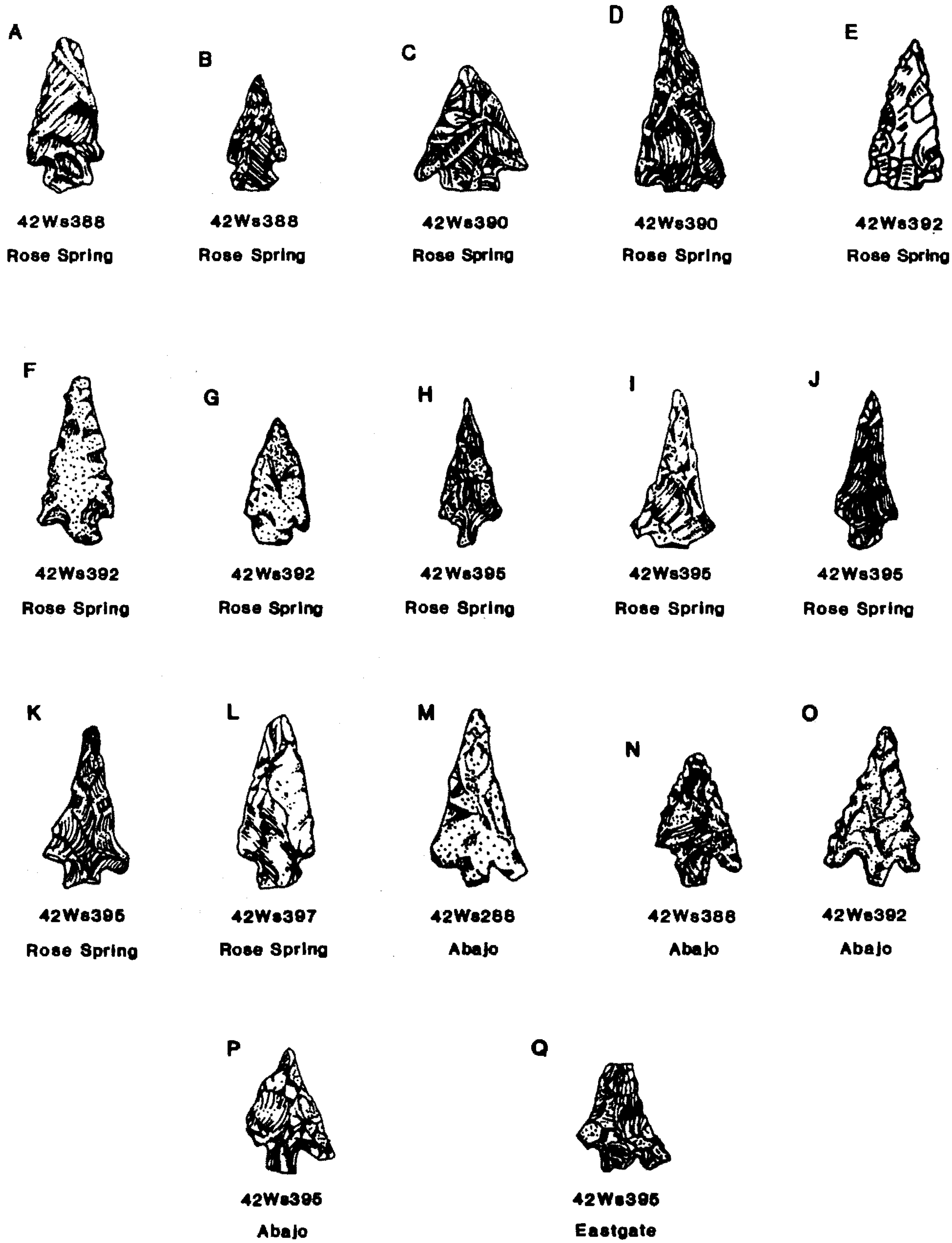


Figure 207. Early arrow points: Rose Springs, Abajos, Eastgate.

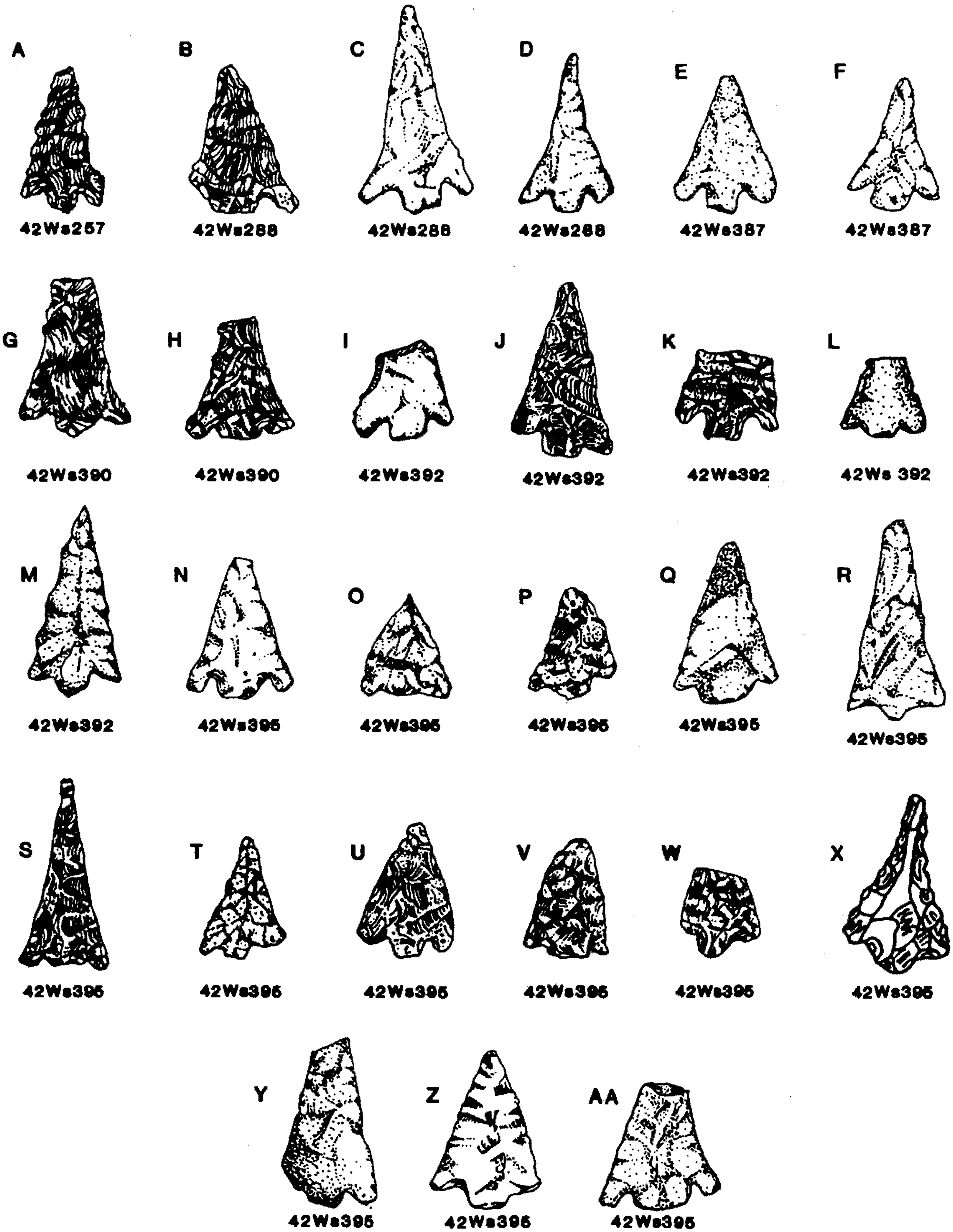


Figure 208. Parowan Basal-notched arrow points.

Abajo arrow point was defined by Dykman (1976) based on numerous specimens from southeastern Utah. The Abajo point is defined by its long pointed tangs and a narrow stem which extends well below the ends of the tangs (Fig. 207). Although it is possible to define the Abajo point in such a manner that it is obviously distinct from the Rose Springs style, when actual assemblages are examined, there are usually enough intermediate forms to preclude an unambiguous division of the assemblage into Rose Spring and Abajo categories (Dykman, 1976; Brew, 1946; Figure 172; Martin and Rinaldo, 1930:415). It would thus seem that the Rose Spring and Abajo categories are simply an arbitrary subdivision of a single point type. This interpretation is supported by the fact that the time ranges and cultural affiliations of both point types are identical. It should be pointed out, however, that the Abajo category does have some utility because this type is found only in Anasazi contexts, unlike the Rose Spring variety, which is found over a much wider area including the Great Basin and northern Colorado Plateau.

The two Eastgate arrow points, like the Abajo point, are a regional variant of the Rose Spring style found most commonly in the northeastern Great Basin. The diagnostic features of the Eastgate type are based on its convex base with deep parallel or slightly angled notches, which result in tangs with relatively flat proximal ends (Fig. 207). The Eastgate point has been dated to a time range between A.D. 500 and 800 (Holmer and Weder, 1980) and coincides, therefore, with the middle of the Rose Spring temporal span.

Neither of the Eastgate points from the Quail Creek Project were recovered from architectural contexts so they cannot be dated. One point is from the upper 15 cm. of Trench 8 at 42Ws392 and the other was recovered from the surface in Trench 7 at 42Ws395. Both of these specimens are made of chert type C and were probably manufactured locally.

The most common arrow point style in the project area is the Parowan type represented by a total of 30 specimens (Fig. 208). The geographical extent of the Parowan style is generally limited to southwestern Utah and that portion of southern Nevada occupied by the Western Anasazi. A detailed summary of the geographical range and cultural affiliation of the Parowan point within Utah is presented by Holmer and Weder (1980). These data indicate that this point style is diagnostic of either Sevier Fremont or Western Anasazi sites and dates to between A.D. 950 and 1150. These dates are based primarily on ceramic cross-dating, since radiocarbon dates are rare, especially from the Western Anasazi sites. Parowan points were recovered from six sites in the Quail Creek Project area.

Six additional Anasazi arrow point specimens were recovered, which could not be specifically typed due to their fragmentary nature. Four of these specimens are either Parowan or Abajo points, one is either a Rose Springs or Abajo and one is either a Rose Springs or Parowan point (Fig. 209).

The final arrow point type to be discussed is the Desert Side-notched. This point style, as defined by Holmer and Weder (1980), is a diagnostic of the Numic occupation throughout the intermountain area dating between about A.D. 1150 and 1850. The advent of this point style may have been somewhat earlier in the Western Anasazi region, however. There is considerable data from Harrington's work in the Lost City area which indicates that there was a

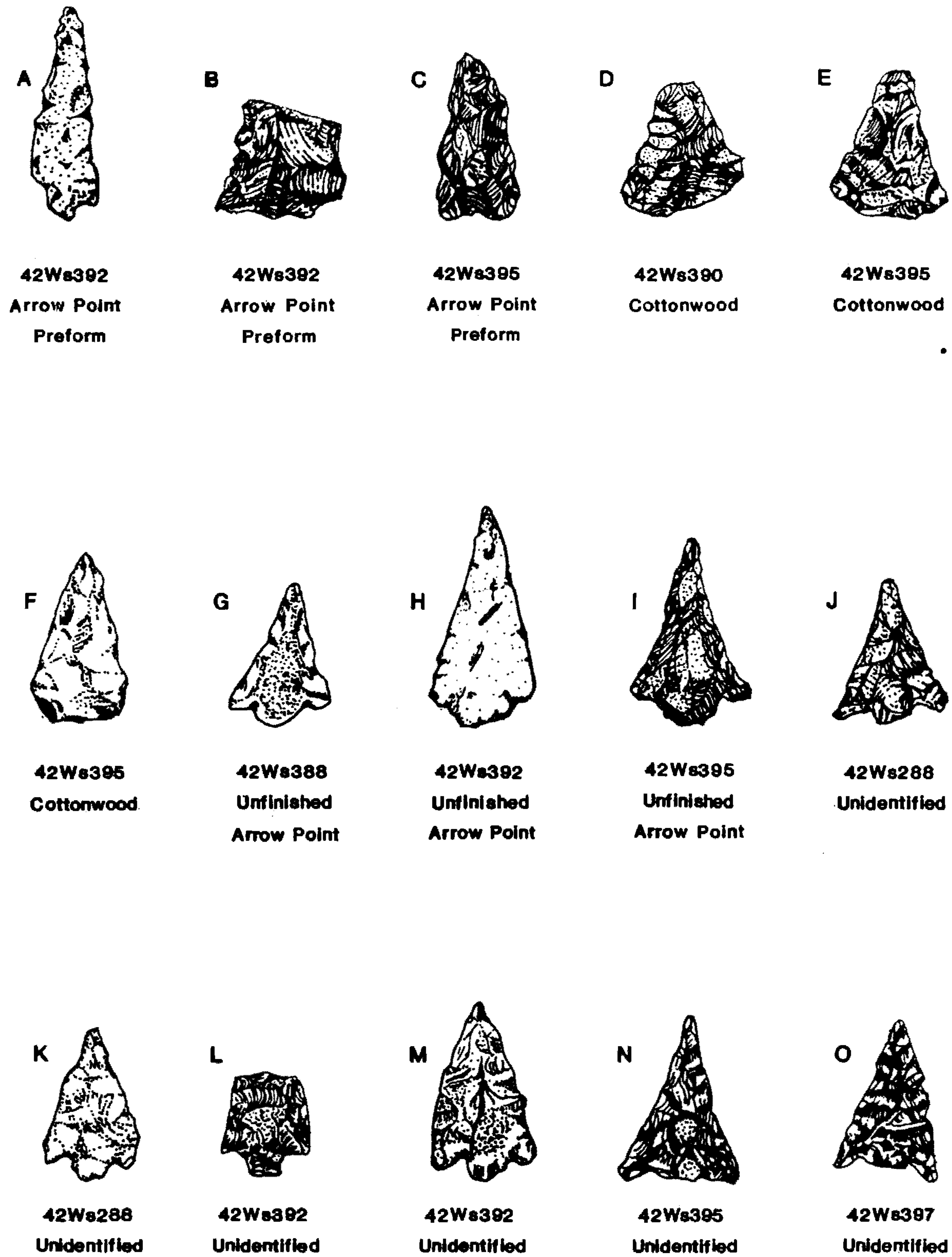


Figure 209. Miscellaneous Anasazi arrow points.

contemporaneous occupation in southern Nevada by both Western Anasazi and Numic populations for at least 100 years and possibly 200 years (Shutler, 1961:69; Hauck, et al., 1979:60; Fowler, et al 1973; Madsen, 1975).

The seven Desert Side-notched points from the Quail Creek Project were recovered from five different sites, three of which were radiocarbon dated. All of these points were recovered from surface or near surface contacts, however, and cannot be definitely associated with the dated hearths. The Desert Side-notched point style is characterized by side notches and a basal notch and/or concavity (Fig. 210). In addition, the Desert Side-notched type is generally thinner than other arrow points (Table 39). Several of the specimens from the project area have unusually deep basal concavities (Fig. 210). This characteristic seems to define a local variant found in the Southern Paiute locality of the Numic region (see Shutler, 1961:Plate 93:C and Plate 65:z, aa, bb for additional examples).

The earliest of these radiocarbon dates from the project area is A.D. 1280 from a hearth at 42Ws260. Two Desert Side-notched points and Southern Paiute sherds were recovered from this site. Because of the lack of any Anasazi diagnostics, the contemporaneity of the points, ceramics and hearth is probably a reasonable assumption.

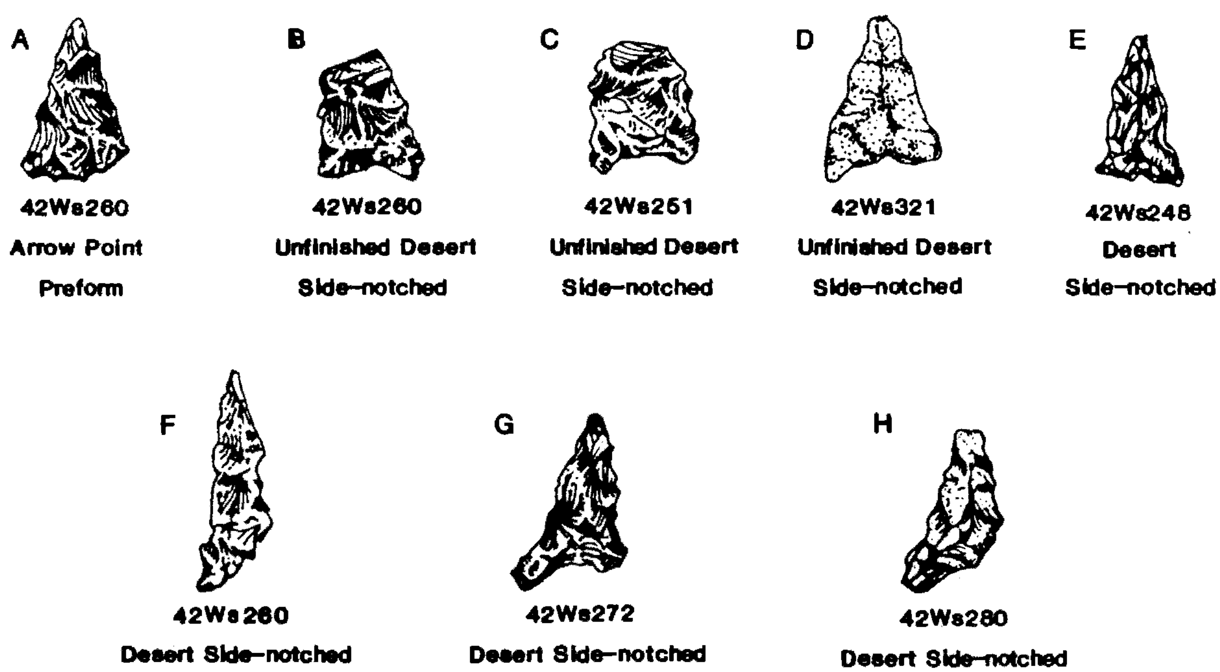


Figure 210. Southern Paiute arrow points.

Another Desert Side-notched point was recovered from 42Ws280. This site contained a hearth dated to A.D. 1750 and surface specimens of Southern Paiute ceramics. A fourth point was found on the surface at 42Ws251. This site also had surface specimens of Southern Paiute ceramics and a "modern" radiocarbon date. The two remaining Desert Side-notched points were recovered from undated sites 42Ws272 and 42Ws248.

Four of the Desert Side-notched points were made of chert type C and the other two points were made of obsidian and a chert of unknown origin.

## Drills

A total of 22 drills were recovered from the sites in the Quail Creek Project. Measurements of the drill bits are summarized in Table 40. Four of the drill bits were unfinished and were not included.

TABLE 40

DRILL MEASUREMENTS (CM.)

| | Length | Drill Bit Width | Thickness | Wear Polish Length | Edge Grinding Length |
|---|---|---|---|---|---|
| X | 0.83 | 0.50 | 0.31 | 1.20 | 0.50 |
| S | 0.78 | 0.26 | 0.14 | 1.24 | 0.16 |
| N | 14 | 18 | 18 | 4 | 6 |

The drill bit data clearly show a wide dimensional variability. In addition, microscopic analysis revealed two different uses for the drills. Of the ten specimens which exhibit edge damage, four have distinct wear polish and six have edge grinding. The specimens with wear polish, which indicate use on a soft material, tend to have the wear polish on a longer portion of the drill bit than those specimens which have edge grinding. The specimens with edge grinding generally exhibit striations which clearly indicate a rotary motion on an abrasive material.

All but two of the drills were made of chert type C. One of these was made of an unknown chert and the other of fossil bone, also of unknown origin.

## Eccentric

A single eccentric specimen of unknown use was recovered from Trench 2 in the vicinity of Cist 1 at 42Ws288. This specimen was made of chert type C and exhibits marginal bifacial pressure retouch with subsequent purposeful crushing of its edges.

## Utilized Flakes

Utilized flakes are comparatively rare in the Quail Creek Project area. Only 102 specimens were recovered from 20 of the sites and nearly half of these specimens are from 42Ws392 and 42Ws395. Chert type C (59 percent) was the predominant lithic material type used for utilized flakes with lithographic limestone a distant second (28%). Overall, 40 percent of the specimens exhibited wear polish which indicates that they were used for cutting a soft material such as meat, hide or grass. The lithographic limestone specimens seemingly have an unusually high frequency of wear polish (86 percent), but this occurrence is probably just a result of the relative softness of this material which allows the more rapid development of wear polish during use. Of the specimens with wear polish, 78 percent also have use retouch on the same working edge. The coincidence of these two edge wear categories is not necessarily contradictory because of the fragility of the flake edge. In most instances, the edge angle of a particular flake edge will vary and with a given usage, even on a soft material, the edge angle will tend to stabilize during use by the removal of use retouch flakes from the thinner, more fragile portions of the edge. Continued use will then cause wear polish to develop over the use retouch flake scars. The prevalence of coincident wear polish and use retouch was also analyzed for each individual lithic material category and no apparent difference among these categories was noted.

Since use retouch is the most primary defining and most easily recognizable characteristic of utilized flakes, its presence was noted on 87 percent of the specimens. Data was compiled on these specimens to determine the frequency of unifacial versus bifacial use retouch. These data show that 54 percent of the utilized flakes have only unifacial use retouch, 29 percent have bifacial use retouch, and 3 percent have both, i.e., unifacial use retouch on one segment of the working edge and bifacial use retouch on another segment. When these categories were subdivided by lithic material type, it was revealed that on a percentage basis, chert type C has twice as many specimens with bifacial use retouch as the lithographic limestone specimens. The significance of this disparate distribution is not known.

A small number of utilized flakes exhibited well developed edge grinding which indicates that these flakes were used on a hard substance such as wood, bone or stone. Ten of these specimens were recovered of which five also have bifacial use retouch, two also have unifacial use retouch, and one also has wear polish. On three of these specimens, the edge grinding is so well developed that striations perpendicular to the working edge were noted during microscopic examination. Only one of these specimens has a concave working edge, and only one has purposeful unifacial pressure retouch.

Twenty-one percent of the utilized flakes exhibit intentional pressure retouch. Although the purpose of pressure retouch on utilized flakes has not been conclusively determined, this type of manipulation was probably performed to either resharpen a dull edge or adjust the edge angle before use. In most cases, however, the pressure retouch is not extensive. An analysis of this characteristic by lithic material type revealed that chert type C was represented by eight specimens with unifacial pressure retouch and three specimens with bifacial pressure retouch. Lithographic limestone was represented by seven specimens with unifacial pressure retouch and two specimens with bifacial pressure retouch. In addition, two quartzite specimens exhibit unifacial pressure retouch.

Although the majority of utilized flakes have straight or convex working edges, one specimen from 42Ws288 has six, small, purposefully made notches and two specimens have concave working edges. The notched specimen has unifacial use retouch, one of the concave specimens also has edge grinding and bifacial use retouch and the other concave specimen has unifacial use retouch and wear polish.

The utilized flakes appear to be mostly core flakes, but this conclusion can be confidently shown in only 27 percent of the specimens where cortex and/or a core striking platform is present. Biface flakes were present, but rare, accounting for only 4 percent of the total utilized flakes. The remainder of the utilized flakes were nonidentifiable because they lacked their original striking platform.

Measurements of the maximum and minimum edge angles of 101 specimens were taken (notched example excluded). Results are: Maximum Edge Angle: mean, 52° ; standard deviation, 15.1° . Minimum Edge Angle: mean, 46° ; standard deviation, 149° .

These data indicate that the utilized flakes from the Quail Creek Project are characterized by edge angles similar to assemblages previously analyzed from both Archaic and post-Archaic contexts.

Scrapers

A total of 24 scrapers were recovered from the Quail Creek Project excavations. The majority of the scrapers (16) were made from chert type C with lithographic limestone (3) a distant second. Ninety-two percent of the scrapers have unifacial use retouch and a relatively high frequency of wear polish (54 percent) characteristic of hide scraping (Hayden, 1979:207). Only three scrapers (12.5 percent) show evidence of having been used on abrasive surfaces.

Two specimens with wear polish also have sparse striations perpendicular to the working edge. The combination of wear polish and striations is generally the result of errant abrasive particles.

Although the majority of the scrapers exhibit wear evidence on the dorsal, pressure-retouched surface, five specimens have wear evidence on the unflaked ventral surface, indicating that they were used with an adze-like motion (Gould, Koster, and Lontz, 1971). All five of these specimens exhibit wear polish on their ventral surfaces. In addition, one has perpendicular striations and another has both wear and polish and heavy grinding.

Five of the scrapers were reworked, presumably to resharpen their working edges; all five had either wear polish or use retouch on the reworked edge. Three of the specimens were resharpened by pressure retouch, one by soft hammer and one by hard hammer. None showed any evidence of having been used after they were resharpened; however, two of the scrapers were reworked on their ventral surface, which is uncommon but not unknown (Honea, 1965).

One of the scrapers has a serrated working edge with no evidence of use, and two scrapers have concave working edges with both unifacial use retouch and wear polish.

Four of the scrapers exhibit multiple working edges. One of these is the serrated specimen mentioned above which also has two other working edges. One working edge has unifacial use retouch and the other has well-developed wear polish which has been partially removed by incomplete resharpening. Another scraper, already mentioned, has four small concave scraping edges, all with unifacial use retouch and one with wear polish. The third scraper is a double end scraper with both working edges exhibiting unifacial use retouch and abrasive grinding. The fourth specimen has two distinct scraping edges, both with unifacial use retouch.

Measurements of the minimum and maximum edge angles of all the scrapers are: Minimum Edge Angle: mean, 67°; standard deviation, 13°. Maximum Edge Angle: mean, 74°; standard deviation, 14°.

The edge angles of the Quail Creek specimens are typical of scrapers from other sites and time periods.

## Edge Pounders

A total of 48 edge pounders (Fig. 211) were recovered from sites in the Quail Creek Project area. Unlike the piercing, cutting and scraping tools already discussed, the edge pounders are predominately made of quartzite cobbles (22) with chert type C noticeably rare (only one example). Limestone (L - seven specimens) and lithographic limestone (LL - 11 examples) are the other major material contributor. The working edges of 60 percent of the specimens were bifacially flaked with a hard hammer prior to use. The working edges of the remaining 40 percent were used in their natural state. A statistical comparison of the attrition width of both categories indicated that there is no difference between the flaked and unflaked specimens as far as the attrition width is concerned. The maximum and minimum attrition widths for both categories are shown in Table 41.

The data show the nearly identical values for the attrition widths on both categories of edge pounders. The similarity in these values probably indicates that the flaked specimens were modified in order to achieve a certain working edge width.

Table 41 also shows the overall size of the cobbles from which the edge pounders were made. The size range exhibited is such that the specimens can be conveniently held in one hand.

The function of the edge pounders is not known. The characteristics of the edge attrition indicate that the working edges attained this attrition by impact with hard, abrasive surfaces. These tools could, therefore, have been used for a wide variety of activities such as shaping sandstone for architectural purposes, processing hard-shelled seeds on a metate, striking flakes from cores, or manufacturing and maintaining manos and metates (Dodd, 1979:239).

## Hammerstones

A total of 39 hammerstones (Fig. 212) were recovered from the Quail Creek Project. In general, these specimens are stream cobbles with little or no modification. Sixty-seven percent (26) of these specimens are made of quartzite. No other material contributed more than five specimens to the

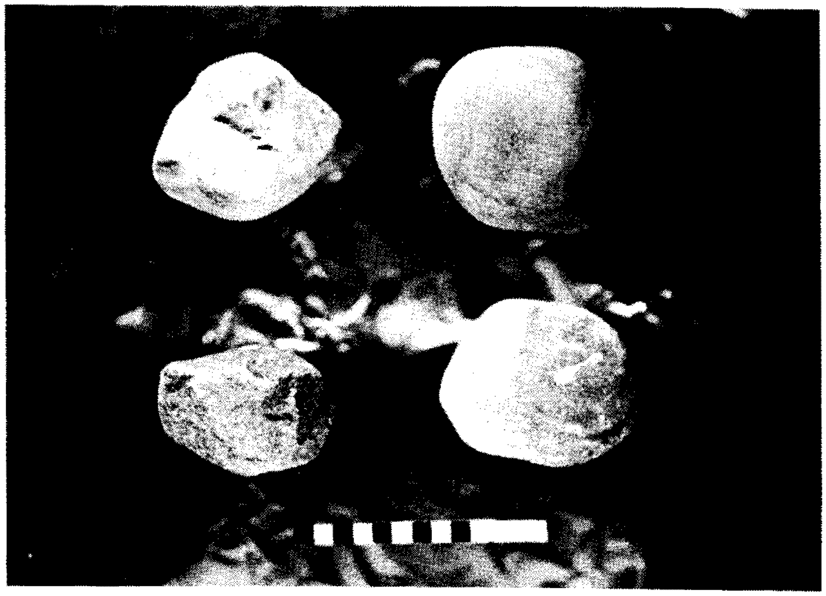

Figure 211. Edge pounders of quartzite and limestone.

Figure 212. Hammerstone of quartzite and petrified wood.

TABLE 41

EDGE POUNDER MEASUREMENTS

| | Specimen | | | Attrition Width | | | |
|---|---|---|---|---|---|---|---|
| | | | | Natural Edge | | Flaked Edge | |
| (cm.) | Length | Width | Thickness | max. | min. | max. | min. |
| X | 9.0 | 7.1 | 4.8 | 0.70 | 0.37 | 0.73 | 0.35 |
| S | 2.4 | 1.7 | 1.4 | 0.26 | 0.12 | 0.28 | 0.14 |
| N | 48 | 48 | 48 | 19 | 19 | 29 | 29 |

total. Twenty-three percent of the hammerstones were flaked bifacially with a hard hammer before use while the majority (77 percent) were not modified before use.

The overall hammerstone dimensions and measurements of the attrition areas are shown in Table 42.

TABLE 42

HAMMERSTONE MEASUREMENTS

| | Specimen | | | Attrition Area | |
|---|---|---|---|---|---|
| (cm.) | Length | Width | Thickness | max. | min. |
| X | 9.2 | 7.3 | 5.0 | 1.73 | 1.48 |
| S | 2.5 | 1.9 | 1.6 | 0.79 | 0.77 |
| N | 36 | 6 | 6 | 9 | 39 |

Like the edge pounders, the overall cobble size of the hammerstones allows them to be held conveniently in one hand. The measurements of the attrition area show a distinct difference, however. The attrition areas on the hammerstones are circular or oval and much wider than on the edge pounders.

The location of each attrition area was also noted during the analysis. Seventy percent of the hammerstones have the attrition area on the end of the cobble while only 11 percent show evidence of impact attrition on the cobble edge. Sixteen percent of the specimens show evidence of use on both the end and edge of the cobble. Only one specimen (3 percent) has attrition on its face.

Although the macroscopic and microscopic characteristics of the hammerstone attrition areas are indistinguishable from the edge pounders, the distinct differences in the shape and location of the attrition areas seem to justify the separation of these two categories. The most plausible function of the hammerstones is the production of core flakes and early stages of biface manufacture.

Cores

A total of 257 cores (Fig. 213) were recovered from the Quail Creek Project. The majority (52 percent) of the cores are locally available lithographic limestone with chert type C a distant second at 18 percent. If all the locally available lithic materials (lithographic limestone, limestone, quartzite, silicified sandstone, and sandstone) are grouped together, they account for 77 percent of the total cores. The remaining 5 percent consists of lithic types of unknown origin (C3, C4, C5, Q1, and silicified tuff).

These three groupings were used to analyze the sizes of the cores. The results of these analyses are shown in Table 43. It is immediately obvious that the cores of local origin are significantly larger than either chert type C or those of unknown origin. It is possible that the local lithic materials were available in larger nodules than the other material types. A more plausible explanation, however, is that chert type C and the unknown origin chert cores were worked more extensively because of their better quality and/or the difficulty involved in obtaining them.

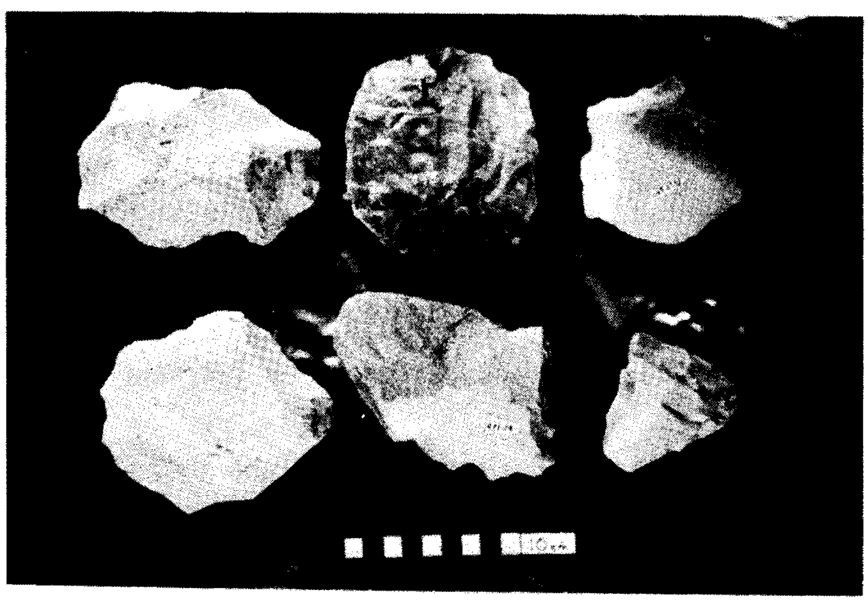

Figure 213. Representative cores from the Quail Creek sites.

In order to further investigate this line of reasoning, the cortex frequency of each lithic material type was established. These data show that the locally available materials all have very high cortex frequencies (92 to 100 percent) while chert type C has a low frequency (38 percent). This distinction may be due solely to the imported status of chert type C, but may also reflect the more thorough utilization of the cores of this material because of its inherent quality.

The platform angles of all the cores are: Maximum Platform Angle: mean, 79°; standard deviation, 10°; Minimum Platform Angle: mean, 70°; standard deviation, 10°.

Lithic Debitage

Nearly 7000 flakes were recovered from the Quail Creek excavations (Table 44). A complete summary of the debitage by material type, flake type, and site can be found in the Collection Summaries in the Excavations section, above. Table 44 clearly indicates that chert type C was the predominant lithic material in all four flake type categories accounting for 72 percent of the flakes recovered. Lithographic limestone is the second most prevalent lithic material, but accounting for only about 17 percent of the total debitage. The remaining 11 percent include the other thirteen material types.

Table 44 also reveals that biface flakes make up only a small percentage of the total debitage (7.0 percent) and are predominantly chert type C (94 percent). The dominance of chert type C is not unexpected since this material type comprised nearly 90 percent of the biface tool specimens. Three other lithic material types also show relatively high frequencies of biface flakes: C4, C5, C6 and obsidian. Not coincidentally, the obsidian and C4 were the second and third most prevalent biface tool materials. Chert types C5 and C6 also have a relatively high percentage of biface flakes, but the sample sizes are quite small and only four biface tools of these materials were recovered. Although three lithographic limestone biface blanks were recovered, no silicified sandstone bifaces were found.

As would be expected, the biface flakes have a high frequency of striking platform grinding. Although the presence of platform grinding varies from 0 to 100 percent, depending on the material type, these extremes are found in the lithographic limestone, C6, and silicified sandstone categories which have very small sample sizes. Overall, 60 percent of the biface flakes exhibit platform grinding and chert type C has the same frequency because it dominates the sample.

Core flakes are the second most common flake category, comprising almost 34 percent of the debitage. All of the lithic material categories are represented but again are dominated by chert type C. Since core flakes are the starting point for nearly all of the lithic tools, their prevalence is not unexpected. An examination of the core flakes revealed that grinding of the striking platform was extremely rare, present on only 0.4 percent of the core flake specimens. This general lack of platform grinding conforms with the scarcity of blades which require more careful preparation of the core striking platform.

TABLE 43

CORE DIMENSIONS BY LITHIC MATERIAL ORIGIN

| (cm.) | Chert Type C Length | Chert Type C Width | Thickness |
|---|---|---|---|
| X | 5.3 | 4.0 | 2.3 |
| S | 2.0 | 1.8 | 1.0 |
| N | 47 | 47 | 47 |

| (cm.) | Local Origin Length | Local Origin Width | Thickness |
|---|---|---|---|
| X | 8.7 | 6.9 | 4.2 |
| S | 2.1 | 1.8 | 1.6 |
| N | 196 | 196 | 196 |

| (cm.) | Unknown Origin Length | Unknown Origin Width | Thickness |
|---|---|---|---|
| X | 5.6 | 4.5 | 3.0 |
| S | 2.4 | 1.8 | 1.5 |
| N | 13 | 13 | 13 |

Core shatter is the third most common debitage category, but again is dominated by chert type C. All of the flake categories, except two of the most rare, are represented (Table 44). The implications of this flake category will be discussed below when lithic material sources are discussed.

The non-identifiable (U/I) flakes, those lacking identifiable striking platforms, are the largest category of flake types. Typically, the U/I flake category is the largest because it includes both biface and core flake fragments which have fractured during removal.

In order to evaluate the lithic material procurement strategies, the presence or absence of cortex was tabulated for each of the flakes recovered from the project area. The rationale behind the collection of this data is the hypothesis that the closer a site is to the source of the lithic materials used, the greater will be the frequency of cortex on the discarded debitage. In the situation where the source is adjacent to the site, the cores will be brought to the site because the cost of procuring a possibly worthless core is low. Conversely, if a lithic source is distant, the cores will be tested at the quarry so that only the acceptable cores, biface blanks and/or flakes are taken.

TABLE 44

FLAKE TYPE BY MATERIAL

| | Biface Flakes | Core Flakes | Core Shatter | U/I | Total | (%) |
|---|---|---|---|---|---|---|
| C | 460 | 1373 | 1032 | 2183 | 5048 | 72.20 |
| LL | 2 | 576 | 201 | 430 | 1209 | 17.29 |
| C4 | 16 | 74 | 6 | 48 | 144 | 2.06 |
| C5 | 3 | 3 | 1 | 4 | 11 | 0.16 |
| C6 | 2 | 8 | 1 | 2 | 13 | 0.19 |
| C7 | | 3 | 1 | | 4 | 0.06 |
| C9 | | 1 | | | 1 | 1.01 |
| Q | | 165 | 47 | 86 | 298 | 4.26 |
| O | 5 | 11 | 2 | 27 | 45 | 0.64 |
| L | | 40 | 9 | 18 | 67 | 0.96 |
| CQ | | 2 | 3 | 3 | 8 | 0.11 |
| Q1 | | 7 | 7 | 4 | 18 | 0.26 |
| B | | 3 | 1 | 4 | 8 | 0.11 |
| S | | 3 | | | 3 | 0.04 |
| SS | 3 | 81 | 5 | 26 | 115 | 1.65 |
| TOTAL | 491 | 2350 | 1316 | 2835 | 6992 | 100.00 |
| (%) | 7.0 | 33.6 | 18.8 | 40.6 | - | - |

The preceding hypothesis was tested by first dividing the lithic materials of known source into local and imported categories (Table 45). It is immediately apparent that the only known import, chert type C, has distinctly lower cortex frequencies on all flake types than the lithic materials found in the Quail Creek alluvium. Three of the lithic material types (C4, obsidian, quartzite Q1, and conglomerate quartzite) also have high cortex frequencies and may, therefore, be locally available. The cortex frequencies on the cores of these same material types support the debitage cortex data (Table G).

Chert type C4 is notably a rare, but locally available, material for several additional reasons. Type C4 cores are all small, thin, tabular, stream tumbled, and very heavily patinated, but a very excellent knapping material once the cortex is removed. The "cores" are all barely large enough for the manufacture of the typical knife, and yet this material is found at most of the major sites (see Collection Summaries, Excavations, above). Since it is such an excellent material, if a concentrated source had been known, it would have been used in greater quantities. It is, therefore, most plausible that it was available in the Quail Creek alluvium in small quantities and collected when encountered.

An unexpected result of these data is the strong indication that at least some of the obsidian is of local origin. Evidence on many of the obsidian specimens indicates that they were procured as stream tumbled pebbles or small cobbles. When no obsidian was found during the environmental investigations, the proprietor of a local lapidary shop was questioned and confirmed the apparent lack of any concentrated obsidian source in the vicinity. Like chert type C4, some obsidian could have been present in the Quail Creek alluvium and used when encountered. Unfortunately, no trace element analyses have been performed on any of the obsidian samples, so the exact origin or origins of the obsidian cannot be determined. An unknown local source cannot be completely ruled out since there has been considerable volcanic activity in the vicinity.

The conglomerate quartzite is the third lithic material which might be of local origin based on its high frequency of cortex. Since no tools were made of this material and the sample size is so small, it is difficult to substantiate the local classification.

The final lithic material in the unknown (but possibly local) category is quartzite type Q1. Although the overall cortex frequency of this lithic type is fairly low, the frequency of cortex on the core shatter is high. In addition, this material was used for high attrition tools (utilized flakes and scrapers), which is an unlikely utilization for an imported material.

Four lithic material types (C5, C6, C7, and C9) are classified as probable imports based on their low cortex frequencies. Additional considerations which support this conclusion include the overall scarcity of these lithic materials and the exclusive utilization of types C5, C6, and C7 for the manufacture of bifaces. Chert type C9 is represented by only a single core flake.

Seven additional lithic material types are also represented among the various artifacts, but not in the form of debitage. Chert type C3 was noted in the form of three cores. The source of this lithic material type is unknown, but was most likely imported because of its scarcity. Chert type C8 is represented by a single biface preform. Because this material type is so rare and recovered in the form of a biface, it is also probably an import. Petrified wood was used for the manufacture of a single Cottonwood point and three hammerstones. Petrified wood is present, but rare, at the base of the Shinarump Conglomerate so it could have been collected locally. A more concentrated source of indistinguishable petrified wood is present at the same location as the chert type C quarry (42Ws322), however, so the exact source cannot be determined. Two cores of silicified tuff were recovered, one of which has cortex remnants. The cortex remnant and volcanic activity in the region indicate that this material may have been collected from the local alluvial gravels. Its comparatively poor quality would not have warranted its import from any great distance. Finally, three bifaces (a Cottonwood, a Parowan, and a Desert Side-notched point) were recovered which are made of three "other" chert types. The source of these three chert types is unknown, but they are probably imported.

## Discussion

A summary of the lithic tool types correlated with the lithic material type categories is shown in Table 46. These data indicate that chert type C is the predominant lithic material used for most tool categories and is also the most common type of debitage. The only artifact types not dominated by

TABLE 45

DEBITAGE CORTEX FREQUENCY

| | | Biface | Core Flakes | Core Shatter | U/I | ALL | TOTAL |
|---|---|---|---|---|---|---|---|
| Imported | C | *7 - 1.5%** | 225 - 16% | 372 - 36% | 204 - 9% | 808 - 16% | 5048 |
| Local | LL | 1 - 50% | 382 - 66% | 144 - 72% | 231 - 54% | 758 - 63% | 1209 |
| | L | | 30 - 75% | 7 - 78% | 8 - 44% | 45 - 67% | 67 |
| | Q | | 113 - 68% | 37 - 79% | 44 - 51% | 194 - 65% | 298 |
| | SS | 1 - 33% | 47 - 58% | 3 - 60% | 11 - 42% | 62 - 54% | 115 |
| | S | | 1 - 33% | | | 1 - 33% | 3 |
| | B | | 3 - 100% | 0 - 0% | 3 - 75% | 6 - 75% | 8 |
| Unknown, possibly local | C4 | 2 - 12% | 50 - 68% | 4 - 67% | 13 - 27% | 69 - 48% | 144 |
| | O | 0% | 7 - 64% | 2 - 100% | 9 - 33% | 18 - 40% | 45 |
| | CQ | | 1 - 50% | 3 - 100% | 0 - 0% | 4 - 50% | 8 |
| | Q1 | | 1 - 14% | 4 - 57% | 1 - 25% | 6 - 33% | 18 |
| Unknown, possibly imported | C5 | 0 - 0% | 2 - 25% | 0 - 0% | 0 - 0% | 2 - 18% | 11 |
| | C6 | 0 - 0% | 2 - 29% | 0 - 0% | 0 - 0% | 2 - 22% | 13 |
| | C7 | | 1 - 33% | 0 - 0% | | 1 - 25% | 4 |
| | C9 | | 0 - 0% | | | | 1 |

* Number of specimens with cortex
** percentage of specimens with cortex

chert type C are the pounding tools and the cores. The edge pounders, hammerstones, and edge grinders are predominantly quartzite and lithographic limestone is the most common core material.

The scarcity of high quality chert within the Quail Creek drainage resulted in the importation of chert type C from a quarry several miles up the Virgin River. A number of other cherts and, possibly, obsidian were imported and used primarily for biface tools.

Although the Southern Paiute sample size is small, there are apparently some differences in the lithic material procurement and use strategies between the Anasazi and Southern Paiute occupations. The Southern Paiute sites contain plentiful examples of chert type C and also quartzite, conglomerate quartzite, silicified sandstone, lithographic limestone, and obsidian. The lithographic limestone, however, is extremely rare, represented by a total of two flakes and three cores. Conversely, obsidian tools (arrow points not included) are from Southern Paiute sites. Considering the relatively small number of Paiute sites, their small size and limited length of occupation, it is quite evident that the Southern Paiute used a disproportionate amount of obsidian. Although the Paiute may have been aware of a source of obsidian in the project area that was unknown to the Anasazi, this is extremely unlikely. Since its high cortex percentage indicates that the obsidian was probably not imported from any great distance, it seems plausible that the Paiute were

TABLE 46

LITHIC TOOL AND MATERIAL TYPE CORRELATION (# of SPECIMENS)

| Artifact Category | C | C3 | C4 | C5 | C6 | C7 | C8 | C9 | O | Q | LL | L | PW | Other | FB | Q1 | SS | S | B | ST | CQ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Blanks | 70 | | 2 | | | | | | | 1 | 3 | | | | | | | | | | |
| Preforms | 67 | | | | 1 | | 1 | | 2 | 2 | | | | | | | | | | | |
| Knives | 30 | | 2 | | | | | | | | | | | | | | | | | | |
| Dart Points | 16 | | | | 1 | | | | 5 | 3 | | | | | | | | | | | |
| Arrow Point Preforms | 116 | | 2 | 1 | | 1 | | | 4 | | | | | | | | | | | | |
| Cottonwood | 11 | | | | | | | | | | | | 1 | 1 | | | | | | | |
| Anasazi Arrow Points | 85 | | 3 | | 1 | | | | 10 | | | | | 1 | | | | | | | |
| Southern Paiute Arrow Points | 5 | | | | | | | | 1 | | | | | 1 | | | | | | | |
| Eccentric | 1 | | | | | | | | | | | | | | | | | | | | |
| Drills | 20 | | | | | | | | | | | | | 1 | 1 | | | | | | |
| Utilized Flakes | 60 | | 1 | | | | | | 3 | 8 | 28 | | | | | 2 | | | | | |
| Scrapers | 16 | | 1 | | | | | | 1 | 1 | 3 | | | | | 2 | | | | | |
| Edge Pounders | 1 | | | | | | | | | 22 | 11 | 7 | | | | | 3 | 2 | 2 | | |
| Hammerstones | 1 | | | | | | | | | 26 | 1 | 5 | 3 | | | | 2 | | 1 | | |
| Edge Grinders | | | | | | | | | | 91 | 8 | 3 | | | | | 5 | | 5 | | |
| Cores | 47 | 3 | 4 | 1 | | | | | | 37 | 132 | 12 | | | | 3 | 13 | 2 | | 2 | |
| Biface Flakes | 460 | | 16 | 3 | 2 | | | | 5 | | 2 | | | | | | 3 | | | | |
| Core Flakes | 1373 | | 74 | 3 | 8 | 3 | | 1 | 11 | 165 | 576 | 40 | | | | 7 | 81 | 3 | 3 | | 2 |
| Core Shatter | 1032 | | 6 | 1 | 1 | 1 | | | 2 | 47 | 201 | 9 | | | | 7 | 5 | | 1 | | 3 |
| U/I Flakes | 2183 | | 48 | 4 | 2 | | | | 27 | 86 | 430 | 18 | | | | 4 | 26 | | 4 | | 3 |

regularly utilizing a resource area not frequented by the Anasazi occupants of the project area. The only obsidian tool category that does not fit the pattern described above is the arrow point category. Although the Anasazi obsidian arrow points outnumber the Southern Paiute points by eleven to one, this situation supports the present argument. Because obsidian was not readily available to the Anasazi inhabitants, it was used primarily for the most sophisticated labor-intensive tool type. The points were probably manufactured either nearer the source or obtained through trade as completed specimens. The Paiutes were using the obsidian for more prosaic, high attrition-uses, which implies that obsidian was more readily available to them.

## Ground Stone

### Introduction

462 pieces of ground stone were recovered from the excavations, including some material from almost every excavated site in the Quail Creek Project area. These artifacts were divided into types on the basis of each specimen's morphological and technological attributes. These were assessed by macroscopic examination, by low-power magnification, and by the occasional use of a 20X binocular microscope. In addition, artifact classification and description was directed by the typology devised by Woodbury (1954) and previous work conducted by the author. The principle artifact types included metates, grinding slabs, manos, polishing stones, abrading tools, edge grinders, axes, and some individual miscellaneous categories.

### Metates

A total of 44 metates, 10 complete and 34 fragments, were recovered during excavations. Metates are defined as a stone slab on which food materials have been ground in a back-and-forth motion, which, in turn, forms an ovoid to rectangular basin or trough in the surface of the slab. The utilized slab is frequently modified by pecking and grinding, while the grinding area is initially prepared by pecking in order to form an abrasive use surface. Once the basin has been ground smooth, it is repecked to maintain its abrasive qualities.

Three types of metates were distinguished in this collection, based upon morphological attributes, including the placement of the grinding basin and the presence or absence of a secondary shelf adjacent to the basin. There were also a number of metate fragments which could not be placed specifically within the three main type varieties. These incomplete fragments were placed within three additional categories devised solely to deal with them.

Utah Type. This, the most prevalent type, is distinguished by the presence of a shovel-shaped trough, with one end open and generally adjacent to the far end of the slab. The enclosed end is adjacent to a ground, but otherwise unutilized shelf. The placement of the shelf at the near end of the metate suggests that it was used as a mano rest, particularly as it does not appear to have been a use surface. This variety is often called the Utah type, due to its prevalence in collections from this state. Utah metates commonly occur in collections from Fremont sites to the north and northeast of the project area, although they are frequently recovered from the Western Anasazi area.

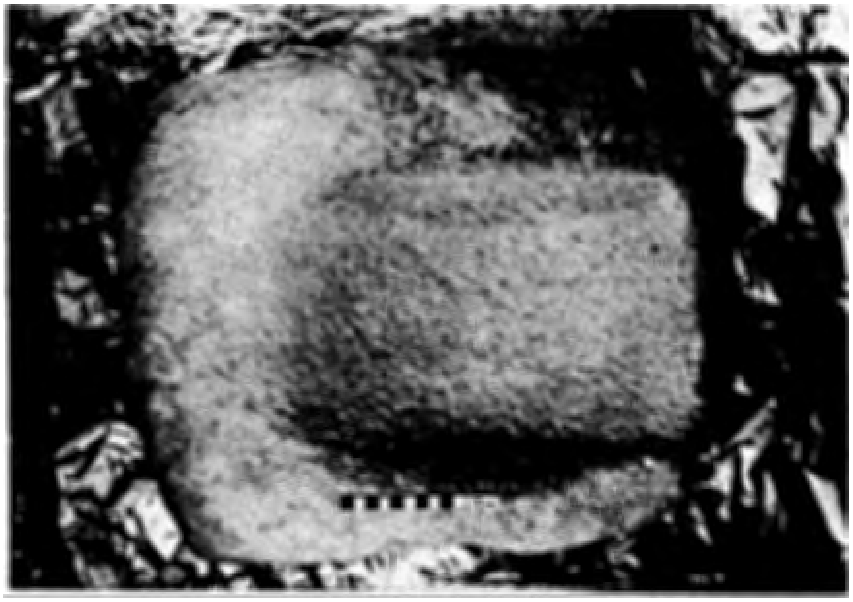

Figure 214. Metate from 42Ws395.

Figure 215. Metate from 42Ws269.

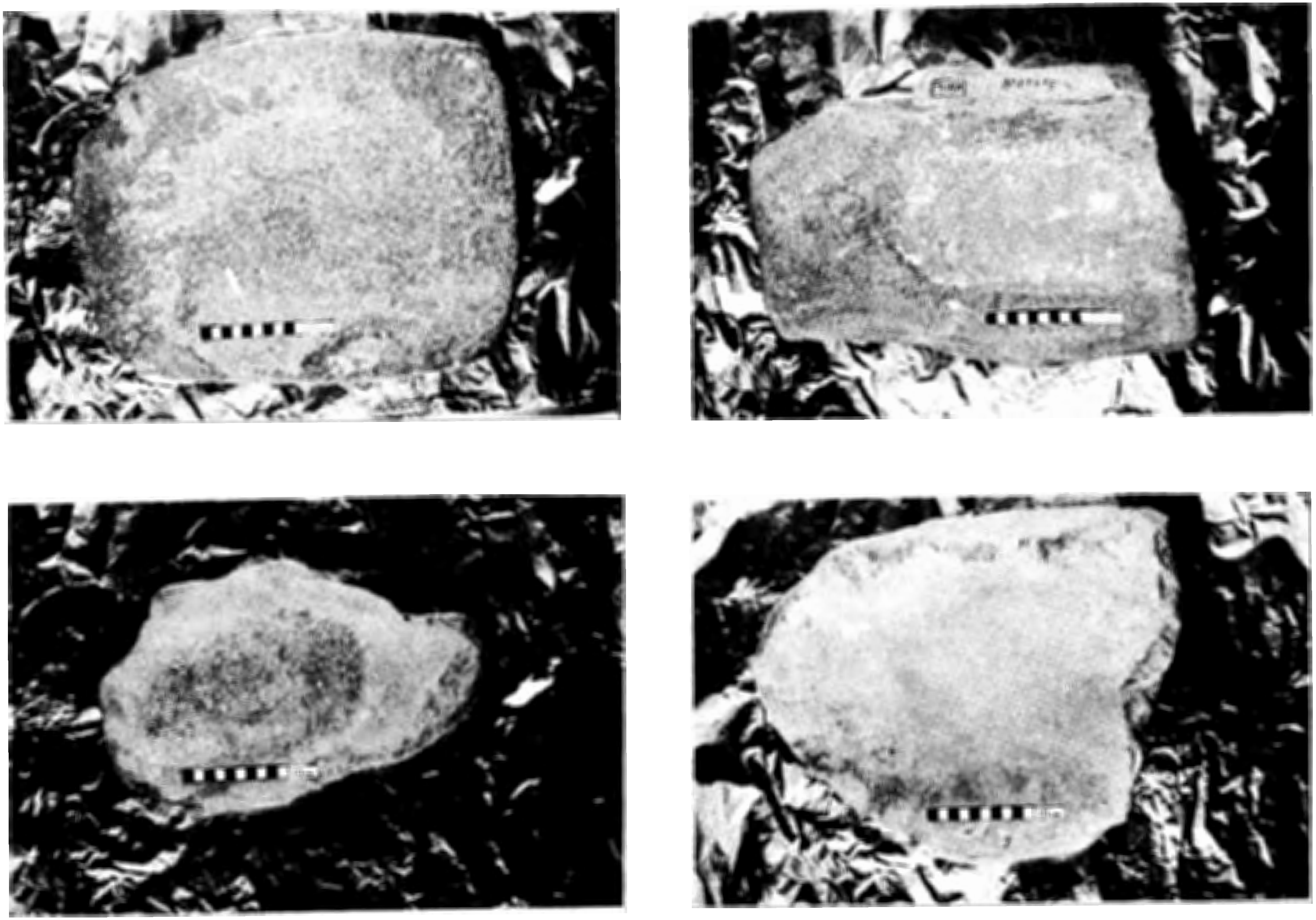

Figure 216. Metates from 42Ws395

Figure 217. Basin metate from 42Ws395.

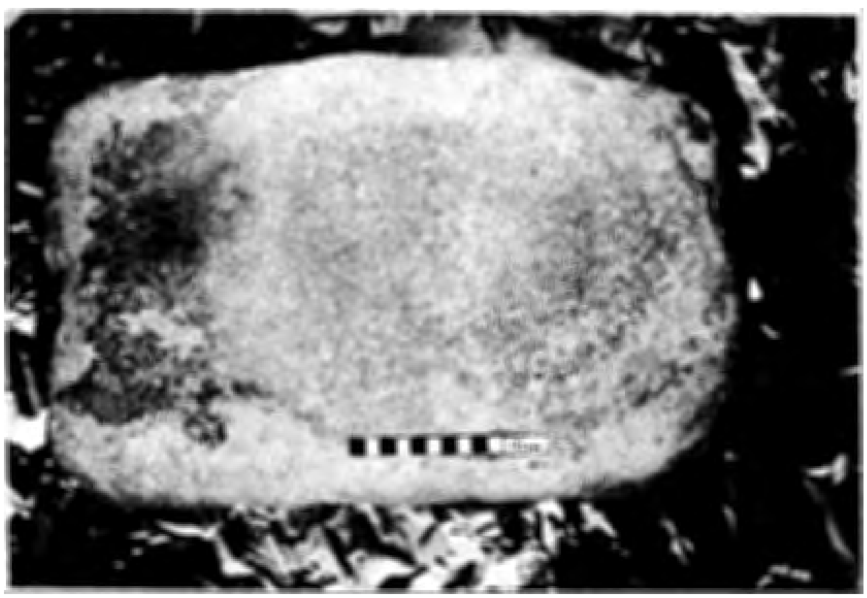

Figure 218. Basin metate from 42Ws395.

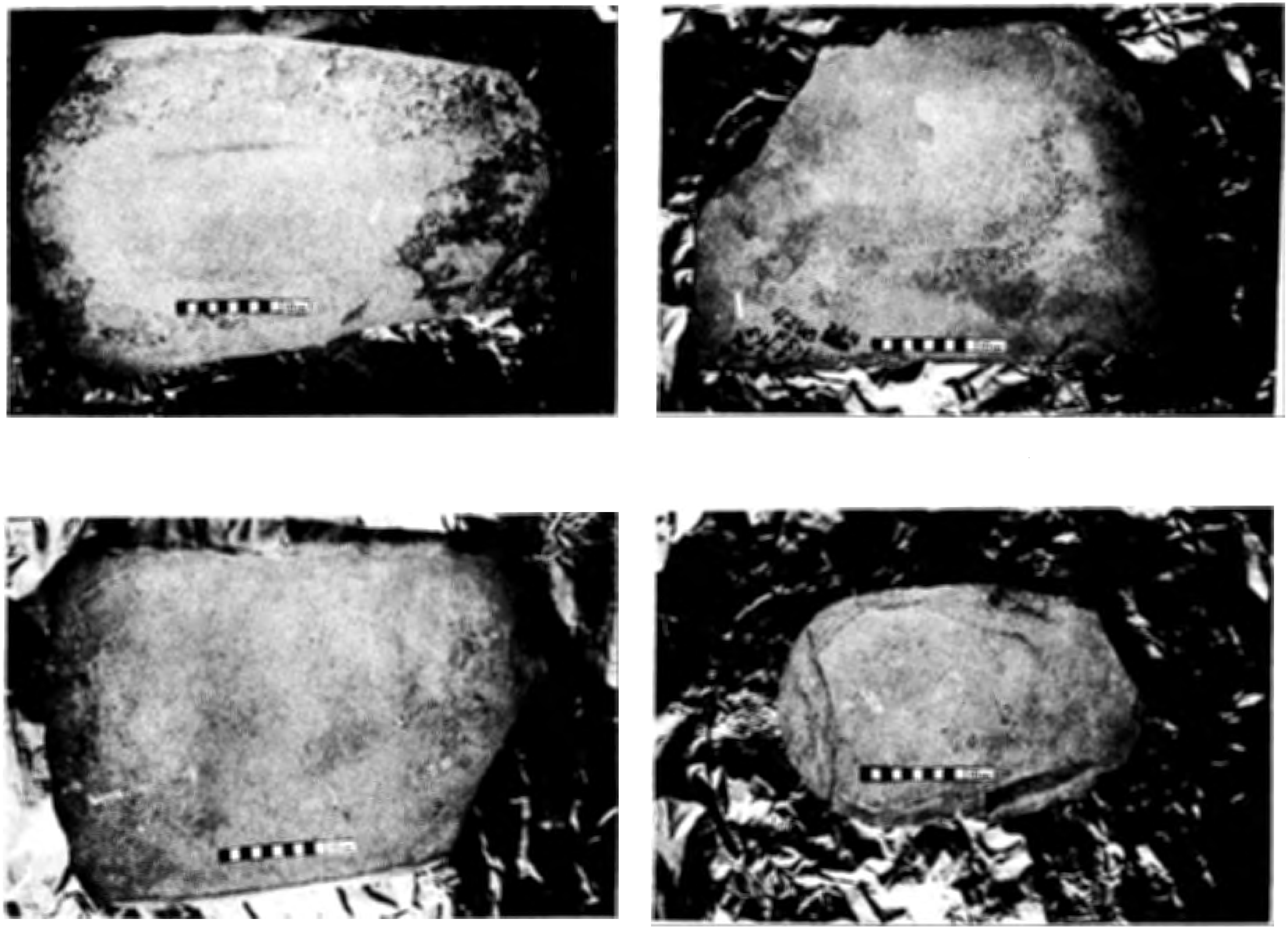

Figure 219. Slab metates: top left, 42Ws245; top right, 42Ws264; bottom left, 42Ws321; bottom right, 42Ws1208

Seven complete and five fragmentary metates of this type were recovered from five sites. Ten of these are composed of sandstone and basalt makes up the other two. All of the utilized slabs have been modified outside of the grinding areas, by pecking and grinding along the upper surface, the edges, and the bottom. In addition, the edges and corners have occasionally been modified by rough percussion flaking. All of them exhibit ovoid to rectangular basins which run parallel to the long axis of the slab. The basins have been ground quite smooth, although a few still exhibit evidence of pecking. On the complete specimens the grinding surface range is from 24 to 36 cm. long by 11.5 to 24.5 cm. wide and from .8 to 6.3 cm. deep. The metate slabs themselves range from 38.6 to 51.5 cm. long by 12 to 48.5 cm. wide and 4.5 to 14.5 cm. thick. One each of this type were recovered from 42Ws248, Ws269 and Ws390, two from Ws390 and seven from Ws395.

Basin Metate, One End Open. This type is distinguished by a scoop or shovel-shaped trough open at one end, although not necessarily adjacent to the far end of the utilized slab. The upper surface has frequently been modified by pecking and grinding, but there is no shelf adjacent to the near end of the trough, and the trough is occasionally skewed in relation to the long axis.

Five examples of the type were recovered from excavations at sites 42Ws268, Ws321, Ws392, and Ws395. Only one of these is complete, while the other four are fragmentary. The intact example is composed of a generally unmodified sandstone slab, with a natural slant to the upper surface. The grinding basin measure 22.5 cm. long by 18.5 cm. wide and 1.5 cm. deep, while the entire slab measures 41.7 cm. long by 33.6 cm. wide and from 8.3 to 12 cm. thick.

The four fragments are complete enough to determine that one end is enclosed. All four are made of modified sandstone slabs, with basins ranging from .4 to 3.8 cm. deep.

Basin Metate, Ends Closed. The third metate type is distinguished by the presence of a scoop-shaped basin which is entirely closed at both ends. Only three specimens of this type were identified. Two complete specimens were recovered from 42Ws395, and one almost complete one was from 42Ws263. All the utilized sandstone slabs have been modified and they range from 48.3 to 59.5 cm. long by 25.3 to 33.2 cm. wide and 2.9 to 15.5 cm. thick. The enclosed basins are generally oval in shape and they measure from 28 to 36.3 cm. long by 14 to 18.2 cm. wide and 1.6 to 5.5 cm. deep. In addition, the bottom surface of the fragmentary metate appears to have been used as a grinding slab.

Basin Metate Fragments, One End Open. Seven fragments of this type were recovered from 42Ws248, Ws251, Ws260 and Ws263. All are composed of modified sandstone slabs which measure from 2.89 to 6.8 cm. thick and exhibit shallow grinding basins which range from 2 to 3 mm. deep.

Basin Metate Fragments, One End Closed. Nine fragments of this variety, all which exhibit part of a closed basin, were recovered from 42Ws248, Ws257, Ws268, Ws388 and Ws392. All are made of modified tabular sandstone and measure from 1.59 to 12.5 cm. thick, while the basins vary from 0.3 to 3.0 cm. deep.

Basin Metate Fragments. Eight metate fragments, exhibiting some portion of the grinding basin, were identified in the collections from 42Ws248, Ws260, Ws390 and Ws395. Seven are made of modified tabular sandstone pieces which range from 1.47 to 8.34 cm. thick; only one has a measurable basin depth of 8 mm. The remaining fragment is composed of basalt, with a basin which measures a maximum of 2.7 cm. deep.

## Grinding Slabs

A total of eight complete slabs and 34 fragments were identified in this collection. Grinding slabs are defined as tabular rocks which exhibit grinding on a surface, but lack the pecking and repecking which forms the abrasive trough on metates. Consequently, a well-defined basin rarely forms on the use surface, although occasionally a slight concavity may exist. Grinding slabs are also distinguished by their relative thinness and more complete utilization of the upper surface. The lack of modification by pecking the use area suggests that a less abrasive surface was desired, possibly for crushing softer materials. Two of these specimens, both from 42Ws392, may be regarded as palettes. In all, the grinding slabs were recovered from 17 of the sites.

Of the eight complete specimens, five are made of sandstone and three are composed of basalt. Two of the basalt grinding slabs were unmodified, and all three vary from 32.5 to 50.4 cm. long by 22.4 to 33.4 cm. wide and 4.3 to 14 cm. thick. The modified basalt specimen exhibits a slight depression a maximum of 5 mm. deep on a naturally slanted surface. Three of the sandstone specimens vary from 36.8 to 52.2 cm. long by 24 to 33.3 cm. wide and 3.7 to 6.5 cm. thick. Two are composed of unmodified slabs and one has obviously been shaped. A very slight depression 1 mm. deep was noted on one of the unmodified slabs. The two smaller grinding slabs, or palettes, are both composed of modified fine-grained sandstone. Size range is from 10.7 to 17.5 cm. long by 19.5 to 13 cm. wide and from 2.5 to 6 cm. thick, respectively. One is thus nearly square and the other more rectangular. In each case, the majority of the upper surface has been utilized.

Fourteen of the fragments are made of modified sandstone slabs, two are of apparently unmodified sandstone, two are basalt, and one is quartzite. They range from 1.7 to 5.83 cm. thick, and one specimen exhibits bifacial use.

## Manos

Manos are defined as a generally tabular piece of stone which was held in the hand(s) and used in a reciprocal movement on a processing/preparation tool, such as a metate or grinding slab. Sixty-six complete manos and 80 fragments were placed in one of three distinguishable varieties: those with a convex use surface; those with an essentially flat use surface; and incomplete fragments which could not be assigned to either of the former categories.

Convex Use Surface. Manos with convex use surfaces are generally assumed to have been used in trough metates, resulting in an end-to-end convexity. These specimens range from oval to rectangular in shape, and they are composed of both modified and unmodified tabular stones and cobbles. In cross section they range from oval to rectangular, and some specimens are wedge shaped. This latter form appears to be the result of a specific grinding motion which forms an oblique wear pattern. The person using the mano raises the far edge on the beginning of the downstroke to allow the material being processed to gather under the mano. While doing this, additional pressure is applied to the near edge which causes beveling.

Seventy manos of this type, 34 fragments and 36 complete, were distinguished. Seventy percent, or 49 examples, are made of sandstone, with basalt, diorite, quartzite, and limestone, in decreasing order of frequency, making up the remainder. The majority of them have uptilted ends and 17 exhibit beveled widthwise cross sections. They range from 7.78 to 24.8 cm. long by 5.31 to 14.7 cm. wide and 1.3 to 8.16 cm. thick, with means of 17.5 cm., 10.3 cm. and 4.7 cm., respectively. Fifty-eight, or 83 percent, are modified and 12 are unmodified cobbles. These manos were recovered from 15 of the excavated sites.

Flat Use Surface. Manos exhibiting a flat use surface, on one or both sides, may have been used on grinding slabs and flat metates. In addition, some of these manos are small, unmodified cobbles which could have been used in trough metates, but due to their size, beveling on the ends does not occur.

Thirty complete and 29 fragments of this type were observed, 10 of which were used bifacially. Sandstone is the dominant material, making up 78 percent of this type, with basalt, diorite, and quartzite also occuring in decreasing order of frequency. The majority of the utilized stone, 75 percent, shows evidence of modification, in the form of pecking and grinding on the ends, laterals and unused surface. The complete specimens range in size from 8.69 to 29 cm. long by 6.64 to 14.47 cm. wide and 2.9 to 7.51 cm. thick, with respective means of 21.6 cm., 9.4 cm. and 4.8 cm. They were recovered from 13 prehistoric sites in the area.

Fragments. Seventeen unifacial fragments were recovered from eight prehistoric sites. Eleven are composed of sandstone, while the remaining six are made of basalt, diorite, and quartzite. In addition, 70 percent, or 12 specimens, exhibit some form of modification.

Polishing Stones

Twenty-seven polishing stones were recovered from 13 prehistoric sites in the project area. Woodbury (1954:96-97) defines these artifacts as generally small, water-worn pebbles with one or more nearly flat use surfaces which exhibit fine striations, or are highly polished. These stones are generally unmodified and the use motion appears to be perpendicular to the long axis. They are usually composed of quartzite and they appear to have been used to smooth pottery. They may also have been used to smooth clay floors and grind pigments.

The majority (26) of the polishing stones are composed of quartzite, with one basalt specimen making up the remainder of the collection. Twenty-five are complete and three of these appear to have been used as polishing platforms, rather than as polishing implements. The majority of the specimens are unmodified cobbles, but five exhibit slight modification in the form of grinding on the edges and laterals. The complete polishing stones, 22 in all, range from 4.76 to 11.5 cm. long by 2.25 to 9.43 cm. wide and 2.4 to 7.46 cm. thick, with means of 8.4 cm., 6 cm. and 4.2 cm., respectively.

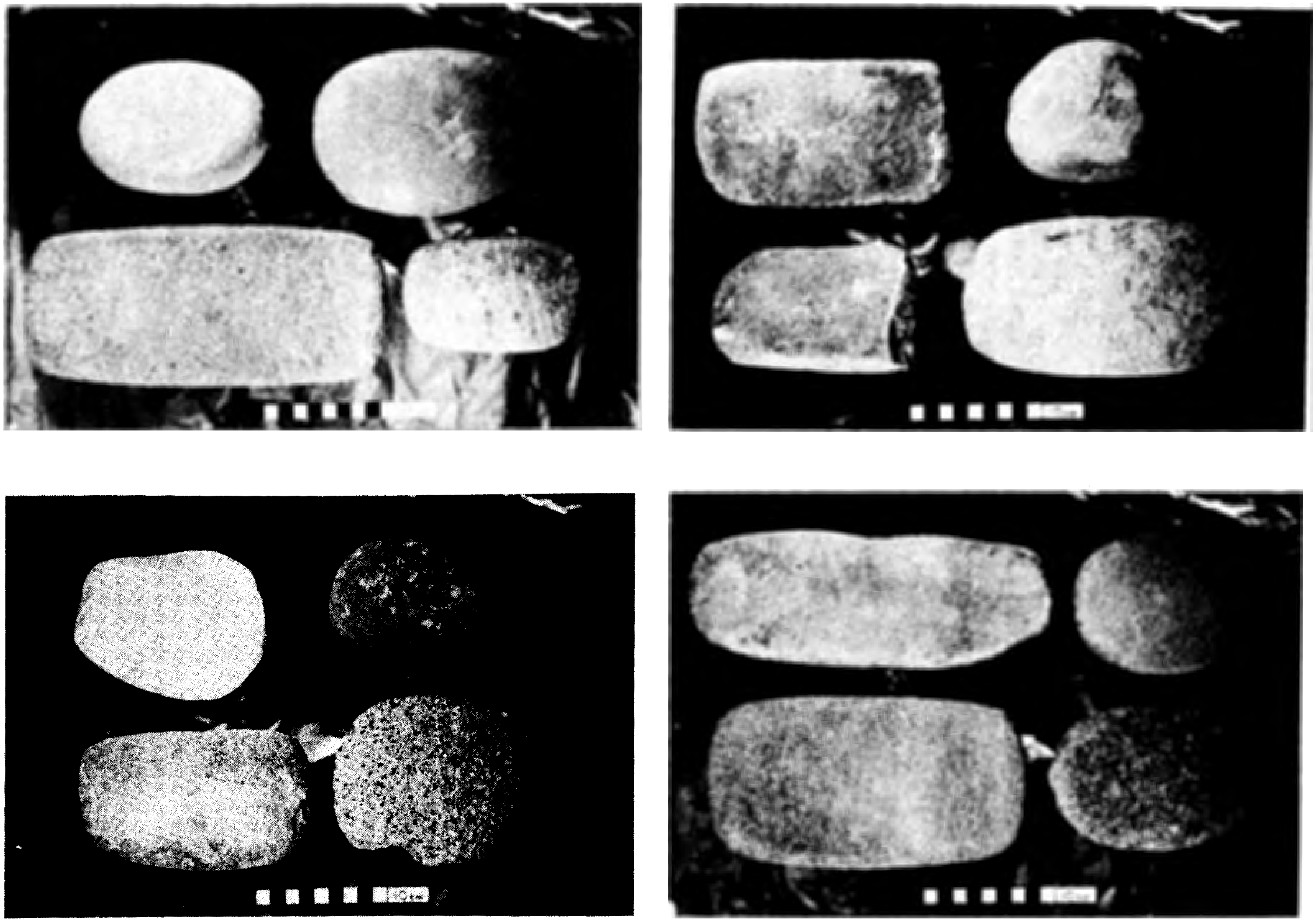

Figure 220. Representative shaped and cobble manos from the Quail Creek Sites.

## Abrading Stones

A total of 21 abrading or abraded stones were recovered from the project area. These artifacts are made of abrasive materials, mainly sandstone, which have been worn due to their use on materials, or as abrasive grinding platforms. In general they range in shape from flat, tabular pieces to irregular cobbles, and they have been worn on one or more contiguous surfaces. They may have been used for shaping wood, or bone, or for smoothing stone objects, such as axes, metates, hoes or building stone.

These artifacts were recovered from ten prehistoric Western Anasazi habitation and storage sites. Seventeen of them were used as abrading stones and four had served as abrading platforms. In all, 14 are made of sandstone, while basalt, diorite, and limestone are also represented, in decreasing order of frequency.

Ten of the sandstone specimens are composed of fairly thin pieces of tabular stone, while three exhibit some modification. Use surfaces range from flat to slightly convex and measurements vary from 5.7 to 17.1 cm. long by 4.24 to 10.86 cm. wide and 1.58 to 5.52 cm. thick. Two exhibit extensive grinding only along one lateral edge; these measure 10.05 to 7.36 cm. long by 1.84 to 4.9 cm. wide and .6 to .82 cm. thick. The remaining sandstone tool is cylindrical and it tapers toward one end. The surface exhibits both lengthwise and widthwise striations. It measures 10.5 cm. long by an average of 3.25 cm. wide and 2.51 cm. thick.

The three basalt specimens are unmodified cobbles which exhibit various stages of use. They are all hand size and they range from 8.24 to 14.6 cm. long by 4.84 to 5.1 cm. wide and 2.37 to 9.96 cm. thick, making them somewhat larger than the sandstone abraders. The diorite cobble is also unmodified and its use surface is slightly polished. It is roughly circular, measuring 9 cm. long by 8 cm. wide and 5.9 cm. thick. Lastly, the modified limestone tool has a single flat use surface and it measures 5.9 cm. long by 5 cm. wide and 2.08 cm. thick.

Of the four abrading platforms, three exhibit small use concavities on the upper surface. They are composed of unmodified sandstone, basalt, and diorite cobbles which exhibit utilized natural and pecked concavities which range from 6 to 9 mm. deep. The bottom surface of the diorite cobble has been roughly ground flat for stability, while the use area of the basalt cobble exhibits a slight polish. The final specimen is made of a piece of coarse tabular sandstone, which measures 7.5 cm. long by 6.8 cm. wide and 3.5 cm. thick. A concave groove averaging 7 mm. wide has been ground on the slanted upper surface.

## Edge Grinders

Edge grinders are generally cobbles small enough to be held in the hand, and which exhibit a distinctly flattened edge created by purposeful grinding. The nature of the ground edge indicates that these tools were used on a flat, abrasive surface, probably a metate. These artifacts could have been used for processing seeds, pigments, and/or pottery temper, but no evidence revealing specific usages was obtained.

A total of 112 edge grinders were recovered from both Anasazi and Southern Paiute sites. Like the edge pounders, these tools are primarily made of locally available alluvial quartzite cobbles (81 percent). The remainder of the specimens are also made of locally available materials. The working edges of 53 percent of the specimens were bifacially flaked with a hard hammer prior to use. A statistical comparison of the attrition width of both categories indicated that there is no difference between the flaked and unflaked specimens as far as the attrition width is concerned. The maximum and minimum attrition widths for both categories are shown in Table 47.

The data show the nearly identical values for the attrition widths on both categories of edge grinder. The similarity in these values probably indicates that the flaked specimens were modified in order to achieve a certain working wedge width.

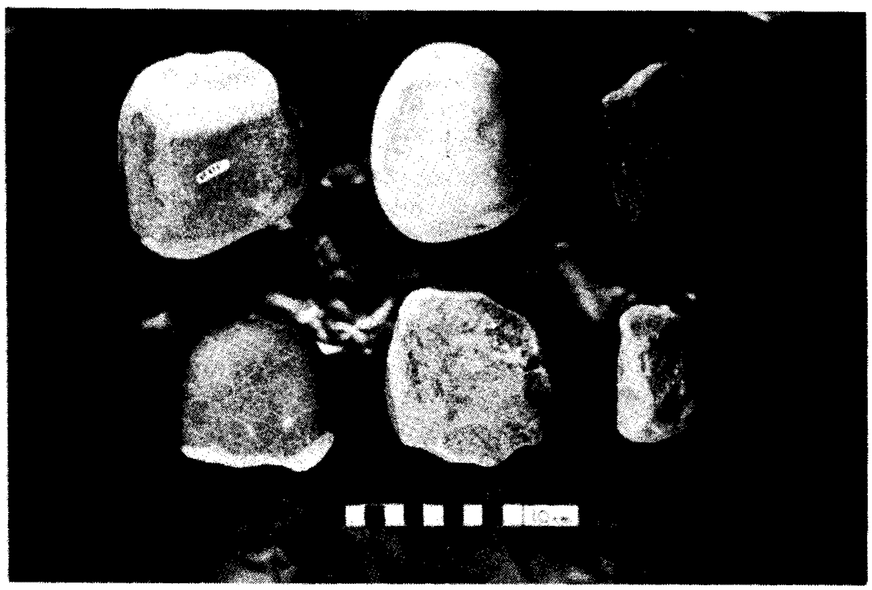

Figure 221. Representative edge grinders from the Quail Creek sites.

Table 47 also shows the overall size of the cobble from which the edge grinders were made. The size range exhibited is essentially the same as that of the edge pounders and can be conveniently held in one hand.

The function of the edge grinders is not known. The characteristics of the edge attrition indicates that it developed as a result of grinding on a relatively flat, abrasive surface, such as a metate. These tools could, therefore, have been used for a wide variety of activities, such as processing hard-shelled seeds and/or grinding pigments and pottery temper.

## Axes

Axes are defined as triangular to ovate artifacts which are shaped by percussion flaking, and further refined by varying amounts of pecking and grinding along the cutting edge (Woodbury 1954:37). These artifacts are notched on opposite lateral edges by flaking, and/or grinding. A third notch

TABLE 47

EDGE GRINDER MEASUREMENTS

| | Specimen | | | Attrition Width | | | |
|---|---|---|---|---|---|---|---|
| | | | | Natural Edge | | Flaked Edge | |
| (cm.) Length | | Width | Thickness | max. | min. | max. | min. |
| X | 8.7 | 7.0 | 4.6 | 0.63 | 0.37 | 0.64 | 0.32 |
| S | 1.8 | 1.6 | 1.4 | 0.37 | 0.21 | 0.36 | 0.14 |
| N | 112 | 112 | 112 | 58 | 58 | 53 | 53 |

was similarly worked into the center of the butt. The notches were used for hafting the ax head to a forked handle, which was parallel or perpendicular to the head. Axes were apparently used for cutting wood, and perhaps for shaping building stone, stone artifacts, and ceremonial objects by pecking (Woodbury, 1954:40-42).

Two axes were recovered from 42Ws395. One is composed of basalt and three hafting notches have been pecked on the edges; two opposite on the lateral edges and one on the butt. The lateral notches are concavities averaging 3 cm. deep by 3 to 4 cm. wide, while the one on the butt is barely noticeable. This specimen was originally rectangular in shape, tapering slightly toward the working end. The blade has been roughly flaked, but there is no obvious evidence of use. In all it measures 16.2 cm. long, and varies from 12.1 cm. wide at the back to 9.1 cm. wide at the notches, and it is a maximum of 3 cm. thick.

The other axe head is also made of basalt. Three hafting notches were pecked on the margins, two opposite on the lateral edges and one at the back. This axe was generally wedge shaped and due to modification the butt is earred. The working edge has been roughly flaked and ground, as was the surface. This artifact measures 15.2 cm. long and is 12.3 cm. wide at the butt, narrowing to 8.3 cm. wide at the notches. It measures a maximum of 3.5 cm. thick, but it thins considerably toward the working edge.

### Hoe

Woodbury (1954:166) defines hoes and tcamahias as tools shaped either partially or completely by grinding and used for hoeing, digging in the dirt, or in ritual activities. They generally exhibit broad working blades, are thin and sharp edged, and notched for hafting. They appear to have been hafted to a forked stick, so that the blade was either parallel or perpendicular to the handle. Hoes are not at all plentiful in the archeological record, and most planting and cultivating activities were probably accomplished using digging sticks. Woodbury (1954:170) suggests that artifacts defined as prehistoric hoes may have been digging implements, but they were probably not used in the same manner which we ascribe to them.

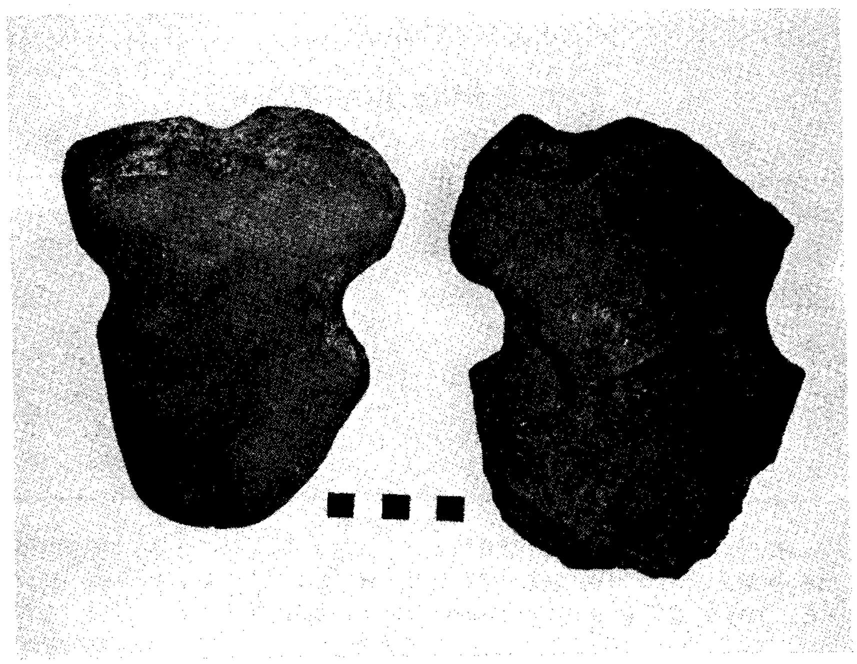

Figure 222. Basalt axes from 42Ws395.

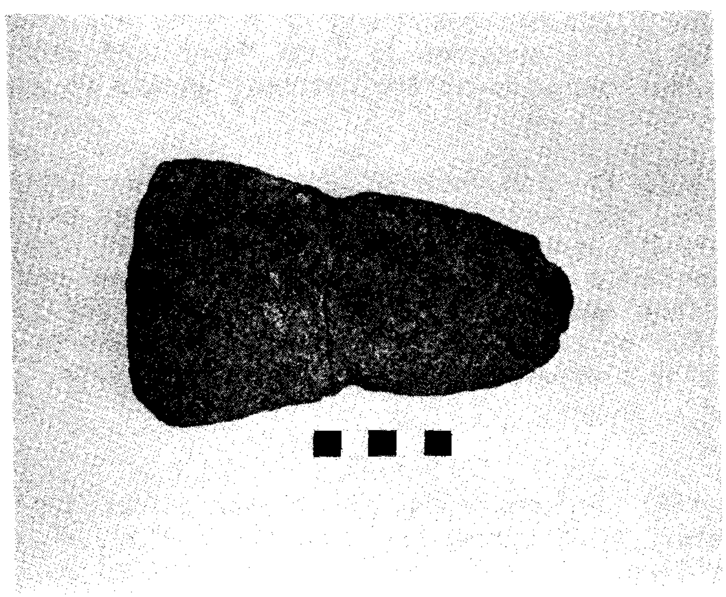

Figure 223. Sandstone hoe from 42Ws288.

A single artifact of this type was recovered from 42Ws288. It is triangular with rounded corners and shallow notches located approximately halfway down the sides. It is made of sandstone and it is ground on the surfaces and edges. It measures 15.8 cm. long by 9.6 cm. wide (maximum) and 6.6 cm. wide at the notches, and it tapers to a minimum of 2 cm. wide.

## Pestle

A pestle is a cylindrical piece of stone, frequently tapering toward one end. It is used in a rotary and pecking motion to crush and grind a variety of materials. Due to use, pestles are often smooth ground and exhibit evidence of pecking and crushing at the used end. Pestles are generally used in conjunction with mortars for grinding nuts, such as acorns or pinyons, or preparing pigments, seeds, or other hard-shelled food stuffs.

Two possible pestles were recovered from excavations at 42Ws288 and 42Ws395. The former site yielded a smoothly ground, cylindrical piece of sandstone which tapers towards one end. One side of this artifact has been ground flat and the larger end exhibits evidence of pecking. Striations are visible around the circumference of this tool, suggesting that it was used in a rotary motion. It measures 11.5 cm. long by 3.2 to 4.5 cm. wide and 3.1 cm. thick. The other pestle is a cylindrical fragment of tapered sandstone which exhibits widthwise striations. Although it is smoothly ground, there is no evidence of pecking on this, the narrower end. No mortars were recovered from either of these sites.

## Hatch Covers

A hatch cover is a generic term for designating generally circular to rectangular pieces of shaped, tabular stone used as covers for storage cists, and occasionally as room or pithouse entrance covers. Two artifacts of this type were collected from 42Ws388 and 42Ws395, and two others were left at 42Ws288. One was observed in situ at the latter site covering Cist 2 in Room 1 of the room block. It is a roughly circular-shaped piece of tabular sandstone with an average diameter of 33 cm. The other specimen was recovered from fill in the northeastern quadrant of the pithouse, in general association with the ladder holes noted in the clay floor. This hatch cover is roughly rectangular in shape, with pecked and rounded corners. It measures 54 cm. long by 44.5 cm. wide and an average of 3.5 cm. thick, and it is made of ripple-marked sandstone.

The specimen from 42Ws388 is generally round, modified by grinding, and composed of sheeted sandstone. It has an average diameter of 28.7 cm. and it measures 1.7 cm. thick. The final specimen is a fragment which represents about one-quarter of the total artifact. It has a radius of 22.5 cm. and it measures 1.81 cm. thick. It is made of sandstone and the edges and one surface have been modified and ground smooth.

## Miscellaneous

Three pieces of ground stone could not be assigned to any particular category. One is a tabular piece of limestone which has been bifacially modified and retouched along one lateral, while the other has been smoothly ground. It measures 7.1 cm. long by 3.96 cm. wide and 83 mm. thick. The other limestone specimen is roughly triangular, measuring 3.38 cm. long by an average of 1.97 cm. wide and 57 mm. thick. It is covered with calcium carbonate, so it is difficult to distinguish the degree of modification. The final specimen is round quartzite pebble which exhibits diagonal scratches on the sides, and scratches on the upper and lower surfaces. It measures 4.0 cm. long by 3.72 cm. wide and an average of 1.01 cm. thick. The ends have been pecked on this specimen. These pieces of ground stone were recovered from 42Ws387, Ws390 and Ws395.

Ground Stone Fragments

A total of 58 unidentifiable pieces of ground stone were recovered from excavations at 18 of the sites. These fragments may be portions of grinding slabs, abrading stones, building stone or a variety of these modified stone tools. The majority of these artifacts, 52 in all, are composed of sandstone, with basalt, quartzite, and limestone also occuring in decreasing order of frequency. In general, these fragments are ground smooth on one surface and they range from 31 mm. to 6.18 cm. thick.

Discussion

The ground stone from Quail Creek includes a fairly wide variety of tools which are dominated by processing equipment, principally manos and grinding platforms for the preparation of either wild or domesticated food materials. In all, the ground stone tools were largely composed of sandstone, 55 percent, with quartzite, diorite, limestone, lithographic limestone, silicified sandstone and silicified tuff also occurring, in decreasing order of frequency. Sandstone is available in local formations, diorite boulders are found in the project area and quartzite cobbles were probably recovered from the stream beds and local alluvial deposits, as was basalt.

A variety of utilized materials were probably used for different purposes. Diorite, vesicular basalt and coarse sandstone may have been used for the initial or coarse preparation of food or other materials, such as pigments or clay. Fine grained sandstone, non-vesicular basalt and quartzite, largely used for polishing stones and edge grinders, are less abrasive materials which may have been used in latter preparation steps, or for processes requiring less abrasion.

In general, the ground stone tool kits from the sites were similar throughout time. Tools found at the Pueblo I sites occur in similar numbers and proveniences as those found at sites occupied during the Pueblo II period. Both trough metates and flat grinding slabs are found throughout the Pueblo occupations in this area, contrary to Woodbury's hypothesis (1954:50) that flat grinding platforms begin to dominate during the Pueblo II period. In fact, at 42Ws395, in Pueblo II contexts, trough metates occur almost twice as often as grinding slabs. Metates also are dominant at 42Ws392 and 42Ws390. Both metate and grinding slab fragments are found in the Southern Paiute sites in the project area, suggesting a continued use of the Anasazi tool kit both intuitively and/or physically. A lack of change in the food processing tool kit is consistent with both the pollen and macrofossil analyses, which indicate no significant changes in either the wild or domesticated food resources through time.

It is possible that the various types of metates and grinding slabs were used for processing different materials, but that is impossible to determine at the present time. As mentioned above, the raw material and its natural abrasive qualities were probably an important trait of the grinding surfaces in determining when and how they were used. These tools also appear to have been important as a labor investment, because they seem to have been cached at both 42Ws395 and 42Ws269 when these sites were abandoned, so that they could be used at a later time.

Manos are composed of both shaped stones and unmodified cobbles, and both occur in one-hand and two-hand varieties, although in general the two-hand type predominates. In addition, complete manos and mano fragments are the most prevalent type of ground stone tool in the collection. As manos obviously occur more often than either metates or grinding slabs, it would seem that manos were an important factor in deciding what degree of abrasiveness or crushing power was desired by the person using them.

As might be expected, it is the larger habitation and storage sites which have the greater numbers and varieties of tools, implying that a wider range of activities were occurring at those sites. Included within the collections from the larger sites are abrading stones, polishing stones, edge grinders, pestles, axes and a possible hoe. The smaller, limited activity and storage, sites generally yielded food processing tools such as manos, metates and grinding slabs. In addition, polishing stones, abrading stones and edge grinders were also recovered from these sites.

In general, the ground stone tools were recovered from structure fill and arbitrary trench units. Occasionally, discarded metates, grinding slabs and manos were used in structure walls and floors at the larger, repeatedly occupied sites like 42Ws392 and 42Ws395. The only in situ artifacts observed during excavation were two metates found on exterior activity areas at 42Ws288 and 42Ws395, implying that food processing occurred, at least partially, outside of the domestic and storage structures. Also in situ were the cached metates, previously discussed, some manos recovered in association with the metates at 42Ws395, and a single mano found on the floor of Slab Surface 1 at 42Ws 269.

## Miscellaneous Artifacts

Included in this section are discussions of the various forms of jewelry, mineral specimens, heat-cracked cobbles and bone artifacts. The jewelry includes turquoise beads and pendants, shell pendants and a bracelet fragment, tiny hematite beads, and pendants of hematite and other materials. The mineral specimens are mainly malachite/azurite and ochre, although specimens of quartz and unworked turquoise were also recovered. Heat-cracked cobbles, generally indicative of stone boiling, were noted and a few were kept as representative examples. A limited number of bone implements were also recovered.

### Jewelry

Worked turquoise was found at two sites in the Quail Creek project area, 42Ws392 and 42Ws395. The turquoise from 42Ws392 was all found in Burial 1, while that from 42Ws395 was recovered primarily from disturbed contexts within a limited area.

The turquoise from Burial 1 at 42Ws392 (Fig. 224) consists of 67 flat beads of various shapes, all with off-center holes. The shapes of the beads include rectangular, round, oval, triangular, truncated triangular, and irregular; all, however, have rounded corners. The colors of the beads also vary, ranging from blue and pale blue to green and pale green. The beads are highly polished, generally requiring magnification to reveal the scratches remaining from the shaping process.

The holes are generally biconical, indicating that they were drilled as a two-step process. Typically, the hole was started by using a rotary drill to penetrate most of the way through the bead. The hole was then finished by drilling from the opposite face. Only ten of the specimens were subsequently reamed to form a cylindrical hole. One specimen has two different degrees of bevel, evidence of a change in drill bit while the primary hole was being drilled.

The size of each bead was measured and a summary of the results is shown in Table 48.

TABLE 48

TURQUOISE BEAD DIMENSIONS

| (cm.) | Length | Width | Thickness | Minimum Hole Diameter |
|---|---|---|---|---|
| X | 0.86 | 0.68 | 0.19 | 0.16 |
| S | 0.10 | 0.11 | 0.04 | 0.02 |
| N | 67 | 67 | 67 | 67 |

The source of the turquoise is not known. However, the Sullivan turquoise mines, located in the vicinity of Las Vegas, Nevada, are known to have been exploited as early as the Lost City Phase which is equivalent to Pueblo I period (Hauck, et al., 1979:57). The demand for turquoise was evidently great enough to warrant expeditions to eastern San Bernardino County, California where Anasazi ceramics have been found at camp sites and turquoise quarry sites (Rogers, 1929).

Turquoise was also recovered from disturbed contexts at 42Ws395. These specimens consist of five pendants (Fig. 224) and one irregular, unfinished piece similar to the poor quality pale green variety found in small quantities among the beads from the burial at 42Ws392.

Three of the pendants are flat, elongated triangles with rounded corners and off-center holes. Two of these specimens were drilled at the apex of the triangle and one at the base. The fourth pendant is roughly rectangular in outline, but triangular in cross section rather than flat. This specimen was drilled near the center of one of its edges. The fifth specimen is unfinished and roughly rectangular in shape. The grinding of the faces and edges had begun, but was not completed. In addition, the hole was drilled only on one face. The irregular, unfinished piece is roughly lunate and exhibits only preliminary grinding. The size data for the five pendants which were drilled are shown in Table 49.

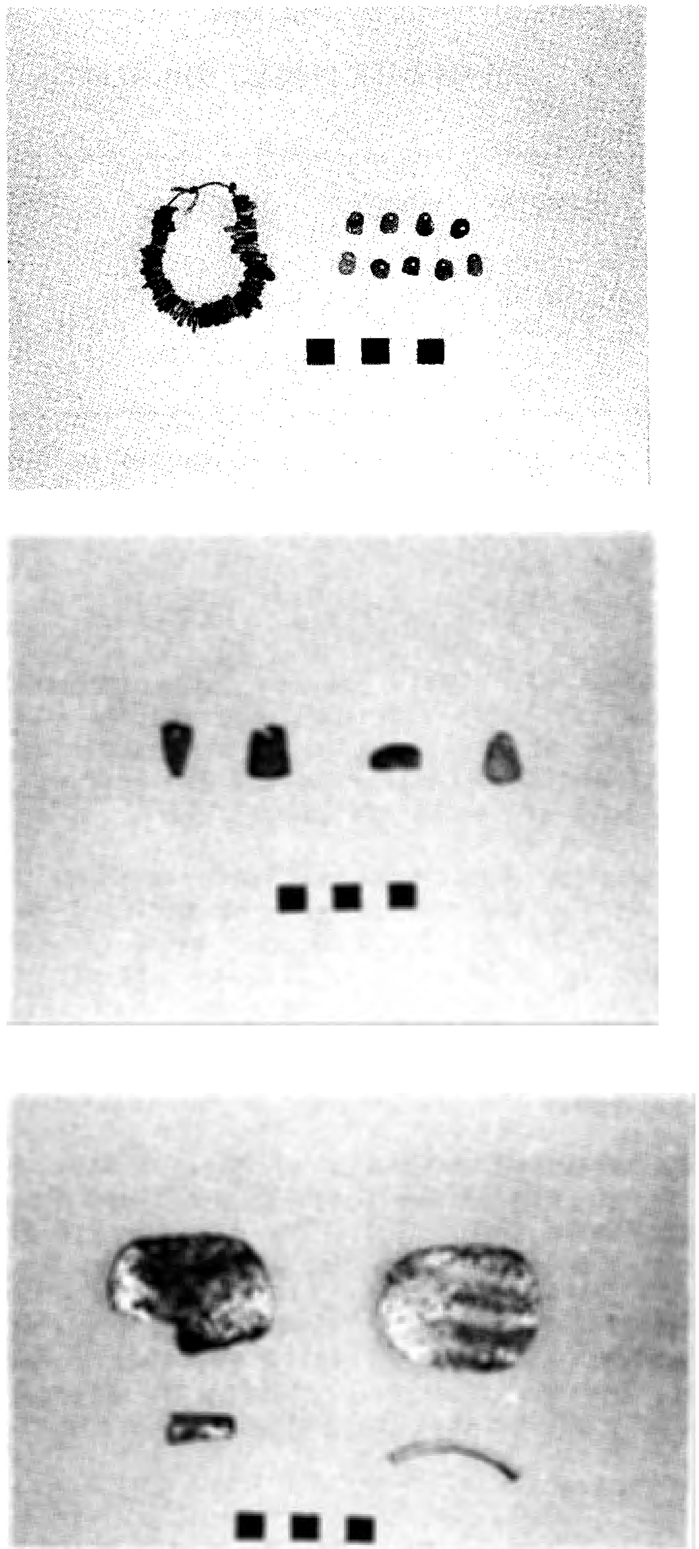

Figure 224. Jewelry and Shell. _Top_, turquoise beads from Burial 1, 42Ws392; _Center_, turquoise and pendants from 42Ws395; _Bottom_, _Haliotis_ pendant and fragment and _Glycymeris_ bracelet fragment.

TABLE 49

TURQUOISE PENDANT DIMENSIONS

| (cm.) | Length | Width | Thickness | Minimum Hole Diameter |
|---|---|---|---|---|
| X | 1.86 | 1.63 | 0.49 | 0.25 |
| S | 0.12 | 0.68 | 0.25 | 0.09 |
| N | 5 | 5 | 5 | 5 |

Three small fragments of pale green turquoise were also recovered from 42Ws395. These fragments and unfinished nature of several of the pendants discussed above indicate that the turquoise was imported as a raw material and worked at the site.

Shell

Five specimens of shell jewelry were recovered from the project excavations. Four of these specimens are abalone (*Haliotis* sp.) and one is *Glycymeris* sp. All of these artifacts were imported, the abalone probably from the coast of southern California and the *Glycymeris* most likely from the same area or the Gulf of California (Brand 1937).

Two of the abalone specimens are large pendants found together with the turquoise beads in the abdominal region of Burial 1 at 42Ws392. One of these pendants measures 5.72 cm. by 4.58 cm. by 0.27 cm. thick and the other measures 5.84 cm. by 4.38 cm. by 0.25 cm. thick. Both are approximately rectangular in shape with rounded edges and were drilled at the center and near the edge of the longer side (Fig. 224). The pendants are both slightly concave although the external surfaces of both shells were ground to flatten the pendants and expose the iridescence of the inner nacre.

Very poorly preserved fragments of abalone were recovered from 42Ws395. This specimen is the rim of the original shell and has two larger drill holes and a third, tiny hole (Fig. 224). The exterior surface of the shell was not ground and one of the larger holes was bisected when the artifact was broken.

The fifth shell artifact is a fragment of a *Glycymeris* bracelet (Fig. 224) from 42Ws395 which has been partially reworked. One end has been ground relatively flat, and the other end exhibits two coarsely bevelled areas which have not completely obliterated the jagged fracture surface.

Stone Beads and Pendants

A large number of tiny hematite beads were recovered from two of the burials and six pendants, mostly of hematite, were recovered from three different sites.

A total of 57 tiny, dark-red hematite beads were recovered from Burial 2 at 42Ws392 (Fig. 225). These beads were manufactured by an unknown process. The beads are short cylinders with flat ends, although, in a few rare instances, the ends have a slight convex bevel. The holes are all cylindrical with no evidence of biconical drilling. Many of the specimens from Burial 2 are blackened and a few are stained light gray as if they had been exposed to a fire at some time. There is, however, no corroborating evidence of cremation at this burial. Because of their small size and fragile nature, each bead was not measured individually. Instead, the largest and smallest specimens were selected visually and measured to determine the approximate minimum and maximum dimensions. The results of these measurements are bead maximum: 0.285 cm., minimum: 0.205 cm.; bead thickness maximum: 0.165 cm., minimum: 0.65 cm.; hole diameter maximum: 0.14 cm., minimum: 0.13 cm.

A set of similar beads was noted in the abdominal region of the burial at 42Ws395 (Fig. 225). A total of 380 complete and 22 fragmentary beads were painstakingly recovered. All of the beads are either pale red (hematite) or pale yellow (limonite) and are cylindrical with generally flat, although a few specimens have concave or convex, ends. The holes are all parallel sided and were drilled by some unknown means. The range of dimensions for this set of beads is: bead diameter maximum = 0.31 cm, minimum = 0.225 cm; bead thickness maximum = 0.145 cm, minimum = 0.065 cm; hole diameter maximum = 0.18 cm, minimum = 0.13 cm.

Six stone pendants were recovered from three of the larger sites in the Quail Creek project area, but only one is both finished and unbroken.

An unfinished, fine grained sandstone pendant was found at 42Ws388. This pendant is a truncated triangle with rounded ends. It has been well shaped, but the lack of any hole and the presence of scratches indicate that it is unfinished.

A very unusual specimen was found at 42Ws390. This pendant (Fig. 226) is a round, flat, stream-worn pebble of reddish-brown quartzite with a thin, natural coating of silicate. This coating was recognized only because a small oval area had broken away from the underlying quartzite. The pebble was not shaped, but does have numerous purposeful scratches, including notches on the sides and bottom and an engraved figure "8" which is centered on the upper edge. The hole was drilled nearly all the way through from one side and finished by minimal drilling from the opposite face. The drilling of this particular specimen was undoubtedly a very laborious process because of the hardness of the quartzite.

Four pendant fragments, all of dark red hematite, were found at 42Ws395. Three of the fragments (Fig. 226) are from finished specimens which were circular or oval and vary between 0.33 and 0.36 cm. in thickness. The fourth specimen has a biconical drill hole and finished faces, but only one edge had been ground. This pendant is 0.49 cm. thick with a hole diameter of 0.38 cm. and may be a broken pendant which was being worked when it was discarded.

The source of the hematite and limonite used to make the beads and pendants is unknown. Although a pale pink hematite is common, and limonite rare, in certain areas of the alluvium, none of the material found during the various excavations is hard enough to have served as either beads or pendants.

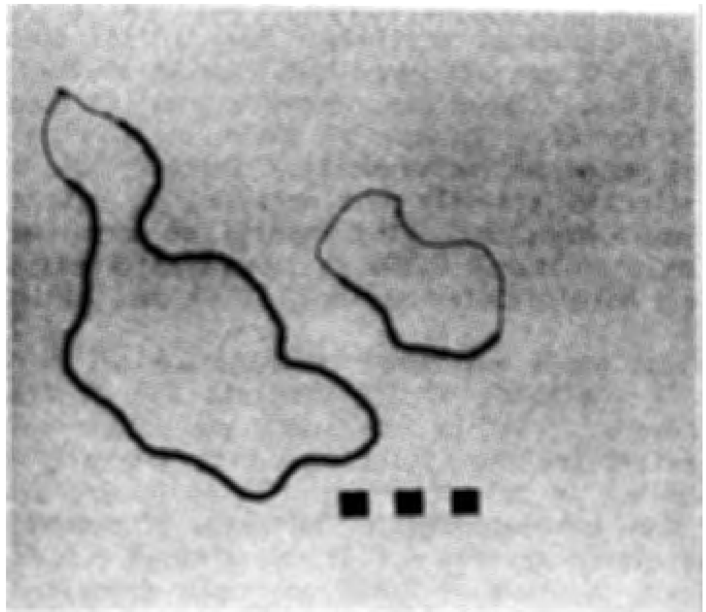

Figure 225. Hematite beads. <u>Left</u>, 42Ws395 burial; <u>right</u>, 42Ws392 burial.

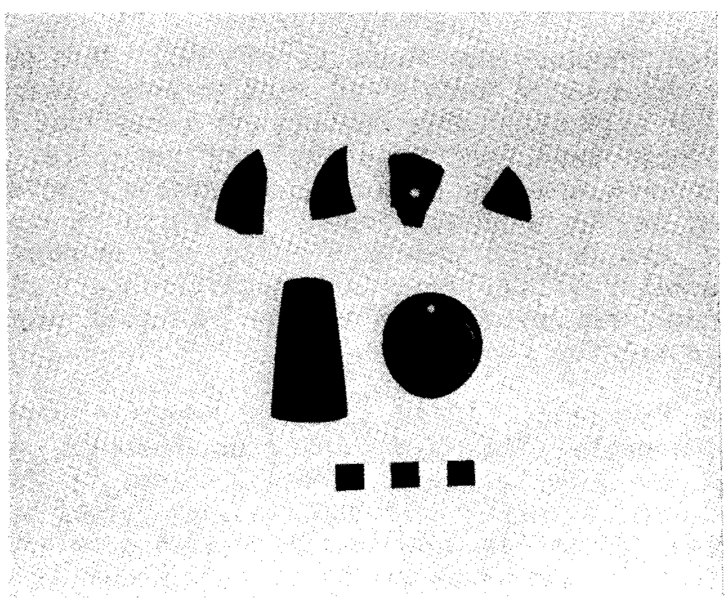

Figure 226. Miscellaneous; <u>Top</u>, fragments of worked hematite disks; <u>bottom left</u>, limestone pendant blank; <u>bottom right</u>, stream pebble pendant.

Two additional discs were recovered from the burial at 42Ws395. These discs are probably gypsum and, when excavated, were in very fragile condition. One partially crumbled when it was removed from the pot in which it was buried. The other remained somewhat intact and measures roughly 3 cm. in diameter and 0.5 cm. thick. The fragmentary specimen has a biconically drilled hole about 0.27 cm. in diameter and is about 0.42 cm. thick.

## Minerals

Various specimens of ochre, malachite, azurite, and other miscellaneous minerals were recovered from sites in the Quail Creek project area. A total of seventeen pieces of hematite were excavated from 42Ws392, Ws285, Ws288, Ws251 and Ws395; the majority (twelve) are from 42Ws395. These specimens are unworked except for a single piece from 42Ws392 which has four ground facets. These facets appear to be the result of pigment generation as the facets are large and are oriented at various angles to each other. In addition, three of the specimens from 42Ws395 seem to be a mixture of ground hematite and clay, with a little sand, which were roughly molded into nodules and allowed to dry. In this form, the hematite/clay mixture is still quite soft, like all the other hematite. This mixture of hematite and clay may have been prepared for subsequent shaping and firing to create the hard hematite which was used for the manufacture of the previously described beads and pendants.

Three pieces of soft limonite were recovered, one each from 42Ws245, Ws390 and Ws395. None of these specimens showed any evidence of grinding, but were all found in clearly cultural contexts.

Nine specimens of a white ochre were found at three sites, 42Ws392, Ws395 and Ws397. One of the specimens from 42Ws392 has a single facet indicating that it was probably ground as a source of white pigment.

Two specimens of a very light-blue, powdery mineral were found at 42Ws392 and Ws395. The identification and origin of this mineral is unknown although its blue color may indicate that it is a copper compound, possibly ground azurite.

The most common mineral found during the excavations was malachite/azurite, two different forms of copper often found in close association with each other. Malachite is light green, relatively soft and is the most prevalent. A total of forty-six specimens of malachite were recovered, one each from 42Ws288 and 42Ws289 and forty four from 42Ws395. None of these specimens show any evidence of having been worked, but all were deposited by cultural activities.

A total of twenty-four malachite/azurite specimens were found, one each from 42Ws272 and 42Ws293 and twenty-two from 42Ws395. These specimens are primarily malachite (indistinguishable from the malachite discussed above), with varying amounts of dark blue azurite crystallization. Azurite is harder than malachite, but soft enough to be easily ground by aboriginal techniques.

A source of malachite identical to that found during the excavations was located during the environmental survey of the project area. This source is situated on the ridge just east of the chert quarry designated 42Ws322. Examination of this ridge did not reveal any azurite, however, but the reconnaissance was admittedly cursory and may easily have missed a small, localized, azurite development. Azurite is present in a copper ore deposit in the Beaver Dam Mountains southwest of St. George (Apex Mine), but whether or not this source was known or used by aboriginal populations has not been determined. The azurite/malachite specimens collected from subsurface locations in the Apex Mine are visually different, however, and also have inclusions of other minerals not present in the specimens from either the excavated sites or the known local source. Visually, the malachite from the local source and the malachite portion of the excavated malachite/azurite specimens are identical.

Two other miscellaneous mineral specimens remain to be discussed. One is a lump of iron ore recovered from 42Ws388. This specimen was not worked, but was found in a cultural context. The final mineral specimen is a stream-tumbled quartz crystal which was included with other burial offerings in the small pot at 42Ws395.

Quartz crystals are relatively common in prehistoric contexts and have been closely associated with shamanism in the ethnographic literature (Harner 1980:109).

Heat-Cracked Cobbles

Although quantitative data was not consistently collected, heat cracked cobbles were noted at a number of sites, primarily associated with exterior hearths at limited activity sites. Heat-cracked cobbles are recognized by their distinctive crenmated fractures which are caused by rapid cooling of the heated rock. These fractures are most typically formed when a rock heated in a fire is quickly immersed in water. The presence of heat-cracked cobbles may indicate the use of stone boiling as a cooking technique. A possible alternate, but not mutually exclusive, use of heated rocks could have been for the generation of steam in a sweat lodge. The types of stone used are generally those prevalent, locally available materials, such as quartzite, lithographic limestone, limestone, silicified sandstone and diorite.

Worked Bone

Worked bone was recovered in very limited quantities from only two sites (42Ws388 and 42Ws395). These worked bone artifacts include several awls, a sickle and a few unidentifiable fragments.

The bone artifacts from 42Ws388 consist of three awls. All of these specimens were made by splitting a large mammal long bone longitudinally so that a segment of the bone's circumference was removed. Then the bit was formed by grinding with little additional effort devoted to shaping the remainder of the bone. Two of the awls are so heavily eroded by chemical attack that all manufacturing or use wear has been obliterated. One of the specimens, however, does exhibit small areas of polish on the bit and handle which appear to be the result of use.

The bone artifacts from 42Ws395 consist of two unidentifiable fragmentary specimens, a rib with possible butchering marks, and an unusual sickle. One of the fragmentary specimens is a calcined segment of a longitudinally split, large mammal long bone which exhibits substantial grinding of the concave side. Its function is unknown. The other fragmentary specimen is part of a large mammal long bone with a narrow, V-shaped, circumference notch. The nature of the fractures seems to indicate that the bone was originally whole and then broken accidentally after the notch was cut. The notch may have been made to weaken the bone so that it could be broken at the notch to produce a bone tube.

The rib specimen is from a large mammal, deer or mountain sheep, and has a few faint transverse scratches on both dorsal and ventral surfaces which may be butchering marks. No other purposeful manipulation was noted.

The bone sickle from 42Ws395 is a mountain sheep right scapula, most of which was removed to form a thin, serrated edge along the inner edge of the scapula. Unlike the majority of the bone recovered from the Quail Creek excavations, this specimen is very well preserved, probably because of its high degree of polish which inhibits the chemical corrosion suffered by the other bone specimens. This artifact is essentially complete except for a small segment of the cutting edge recently broken off, probably during excavation. The wear polish is particularly well developed along the thick spine which backs the cutting edge.

This wear was probably caused by friction with the hand during use and indicates that the tool was held in more than one manner during its utilization. The serrated working edge also has well-developed wear polish. The wear polish is located primarily on the edge itself and continues down one side of the blade. The other side of the blade has distinctly less polish. The polish on all parts of the tool is characterized by a very high sheen, indicating contact with soft materials.

The serrated edge and the unifacial nature of the blade wear polish seem to indicate that this artifact was probably used as a sickle. It is doubtful that this specimen was used to actually cut grass, but rather to strip the seeds from the stalk. This type of tool would have been quite effective for harvesting Oryzopsis seeds, for example. A comparable example was recovered from Chuckawalla Cave during the Lost City excavations (Shutler, 1961: Plate 94c). Although this particular specimen is not discussed in detail, the presence of well-developed wear polish on its body is readily apparent in the photograph.

## Adobe

Fragments of structural adobe were recovered from three sites: 42Ws256, Ws390 and Ws392.

A single specimen of adobe was found during the excavation of 42Ws256. This specimen has one flat, smoothed surface (probably external) but the opposite surface has been eroded. The adobe is about 6 cm. thick and consists of a simple mixture of clay and sand.

Twelve adobe fragments were taken from the roof-fall of the surface storage room at 42Ws390. This is a mixture of clay and sand, although one specimen also contains small pebbles. Six of the fragments exhibit stick impressions which vary between 0.08 cm. and 0.86 cm. in diameter. Most of the adobe specimens have only one or two impressions so they are probably not representative of wattle or even sticks which might have supported a clay roof. Two of the adobe fragments have impressions of what appears to be bulrush, and another two have vague leaf impressions which are unidentifiable due to the coarse nature of the adobe.

Seven adobe fragments were recovered from 42Ws392, all a mixture of sand and clay. Five of the specimens have narrow leaf impressions situated randomly throughout the fragments. In a few instances the leaf impressions are distinct enough to be identified as willow. One specimen exhibits a distinct impression of a woven grass mat. None of the adobe fragments from 42Ws392 have any stick or twig impressions.

With the exception of the grass mat, none of the stick or leaf impressions appear to be architectural in origin. Most likely the sticks and leaves were incorporated purposefully within the clay as a form of temper.

## Historic Artifacts

The majority of the historic artifacts were recovered from the flagstone pavement locus at 42Ws288. These artifacts include glass, ceramics, and a few pieces of metal. In addition, nine different types of barbed wire were noted in the Quail Creek Ranch vicinity.

The glass specimens from 42Ws288 are all fragments of uncertain origin, but appear to be from bottles. Excluding two, opaque-white, screw-top jar fragments, all of the glass is transparent including colorless, green, pale blue, olive-green, amber, and purple varieties. Because of the fragmentary nature of these glass specimens, their dating is not very precise. The purple glass can be dated to between A.D. 1880 and 1918 or slightly later, while the other transparent glass was manufactured sometime after A.D. 1880 (Newman, 1970; Hunt, 1959).

A total of 44 ceramic fragments were recovered from the historic locus at 42Ws288. These fragments can be subdivided into two categories, earthenware and stoneware. The earthenware category contains eight specimens. Earthenware is a very porous utility ware which requires a glaze to contain liquids. Four of the earthenware specimens are redware with an interior, clear lead glaze which date from A.D. 1750 to after 1900 (Berge, 1980:170). All of these fragments are too small to determine their original form. One slipped ware (exterior slip), crock rim fragment was also recovered which dates from A.D. 1860 to after 1900 (Berge, 1980:170). Two fragments of gray ware decorated with pink enamel abstract flowers, tendrils, stippling, parallel lines, and cross-hatching were found. Both of these specimens are from a plate or saucer and could not be dated. The final earthenware specimen is a fragment of biscuit ware which is defined by its complete lack of glazing. This type of earthenware cannot be closely dated.

Several varieties of stoneware comprise the major portion of the ceramics from the historic locus at 42Ws288. The most common variety of stoneware is the flown blue peasantware (16 specimens), a white, clear glazed ceramic with blue designs depicting flowers, tendrils and/or country scenes. Three additional flown variants with combinations of blue, green, and black were also recovered. Again, the fragments are all very fragmentary and only one bowl rim and three plate or saucer pieces could be distinguished. The flown peasant ware was relatively inexpensive and popular during the Victorian period between about A.D. 1840 and 1901 (Berge, 1980:203). Fifteen specimens of white, clear-glazed ceramic were found. These specimens are all very small and are probably undecorated fragments of the flown blue peasantware described above.

Two additional stoneware fragments were noted, one of banded ware with blue and gray on white glaze, and one with relief-molded floral designs and white glaze. The latter fragment is part of a saucer but neither can be dated. Two zinc strips of indeterminate function were also found at 42Ws288.

TABLE 50

QUAIL CREEK RANCH BARBED WIRE TYPES

| Name | Patent Date |
|---|---|
| Kelly's Thorny Fence | Feb. 11, 1868 |
| Kelly's Thorny Fence, mixed barb variation | Feb. 11, 1868 |
| Glidden's Barb, common variation | Nov. 24, 1874 |
| Burnell's Barb | June 19, 1877 |
| Kittleson's Half Hitch | May 7, 1878 |
| Brotherton's Barb, common variation | Sept. 3, 1878 |
| Ross' Four Point | June 10, 1879 |
| Curtis Cross Lock | Mar. 28, 1893 |

The artifact assemblage from the historic locus at 42Ws288 indicate an occupation after about A.D. 1880 and probably not later than 1920. The glass assemblage defines the early end of the occupation. The upper end of the occupation period cannot be exactly defined since it is difficult to define the longevity of the artifacts recovered. It should be noted, however, that the majority of the assemblage consists of relatively fragile ceramic table wares which would indicate that the locus was a habitation area of some type. However, no evidence of a structure, besides the flagstone pavement, was found.

Additional evidence of a late nineteenth century occupation at the Quail Creek Ranch is present in the form of several types of early barbed wire. A total of nine different styles of barbed wire were noted, including several early varieties (Table 50).

The temporal implications of the barbed wire assemblage corroborate the dating of the historic locus at 42Ws288. In spite of their early patent date, both of the Kelly's Thorny Fence varieties were not produced for public consumption before 1876, the same year that the Glidden common variation was first produced commercially (McCallum 1965:45, 58). The Glidden common variety quickly dominated the market and has remained the predominant type of barbed wire to the present day. The Baker's Barb, perfect variation, was the second most popular type overall (McCallum 1965:221). The other types of barbed wire were all produced in significantly smaller quantities.

The presence of these less popular varieties at the Quail Creek Ranch indicate that the fences were being repaired or extended actively during the 1880s and 1890s when the available choices of different barbed wire types was at its peak. The longevity of the Glidden design unfortunately masks the termination of the early historic occupation.

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## APPENDIX I

### RADIOCARBON DETERMINATIONS FOR THE QUAIL CREEK SITES

| SITE | DATE B.P. | SAMPLE TYPE | CULTURAL AFFILIATION |
|---|---|---|---|
| 42Ws251 | Modern | Hearth | Southern Paiute |
| 42Ws263 | Modern | Hearth 1 | Southern Paiute |
| 42Ws267 | Modern | Hearth 2 | Southern Paiute |
| 42Ws274 | Modern | Charcoal stratum | Unknown |
| 42Ws275 | Modern | Hearth | Southern Paiute (?) |
| 42Ws389 | Modern | Hearth 1 | Southern Paiute (?) |
| 42Ws250 | 110±50 | Charcoal lens | Southern Paiute |
| 42Ws280 | 200±50 | Hearth 1 | Southern Paiute |
| 42Ws390 | 570±60 | Pithouse, burnt beam | Aberrant Date |
| 42Ws260 | 670±50 | Hearth | Southern Paiute |
| 42Ws395 | 680±80 | Roomblock 1, Room 2, ash deposit | Late Pueblo II |
| 42Ws268 | 730±50 | Pithouse, Fill 1 | Anasazi/Aberrant Date |
| 42Ws392 | 730±60 | Isolated Hearth 2 | Late Pueblo II |
| 42Ws288 | 750±60 | Room 6, Fill 1 | Late Pueblo II |
| 42Ws395 | 780±50 | Rockshelter 2, Hearth 6 | Late Pueblo II |
| 42Ws395 | 780±50 | Roomblock 1, Room 2, Fill 1 | Late Pueblo II |
| 42Ws392 | 840±50 | Structure 2, burnt beam | Late Pueblo II |
| 42Ws288 | 890±50 | Roasting Pit, fill | Mid-Late Pueblo II |
| 42Ws395 | 920±50 | Roomblock 1, Room 1, Fill 1 | Mid-Late Pueblo II |
| 42Ws387 | 980±50 | Pithouse, use deposit, hearth area | Anasazi |
| 42Ws268 | 1010±70 | Cist 2, floor | Late Pueblo I/ Early Pueblo II (?) |
| 42Ws288 | 1020±50 | Room 1, Fill 1 | Late Pueblo I (?)/ Early Pueblo II |
| 42Ws395 | 1050±60 | Pithouse 1, floor | Late Pueblo I/ Early Pueblo II |
| 42Ws386 | 1050±70 | Roasting Pit, fill | late Pueblo I/ Early Pueblo II |
| 42Ws392 | 1070±60 | Pithouse, Floor 1, slab vault | Pueblo I |
| 42Ws288 | 1090±50 | Pithouse, Fill 1 | Pueblo I (?) |
| 42Ws388 | 1140±60 | Pithouse 2, burnt beam | Pueblo I |
| 42Ws387 | 1160±60 | Pithouse, floor | Basketmaker III/ Pueblo I |
| 42Ws388 | 1170±60 | Cist 4, beam | Pueblo I |
| 42Ws385 | 1240±60 | Cist 3, fill | Aberrant Date |
| 42Ws387 | 1310±60 | Pithouse, use deposit | Basketmaker III (?) |
| 42Ws392 | 1340±60 | Pithouse, Fill 1 | Aberrant Date |
| 42Ws388 | 1630±130 | Pithouse 2, burnt beam | Aberrant Date |
| 42Ws390 | 1800±330 | Storage Room, Fill 1 | Aberrant Date |
| 42Ws321 | 1870±60 | Locus 4 hearth | Basketmaker II (?) |
| 42Ws388 | 1870±60 | Roasting Pit, fill | Aberrant Date |
| 42Ws388 | 2690±280 | Cist 5, burnt beam | Aberrant Date |

APPENDIX II

# QUAIL CREEK ARCHEOLOGY: THE POLLEN STUDY

BY La Mar W. Lindsay

## INTRODUCTION

A number of soil samples were collected by International Learning and Research of Cedar City, Utah during the Quail Creek archeological excavations in southwestern Utah. Sixty-five of the samples, obtained during the lengthy 1983 field season, were selected for pollen analysis. A number of archeological sites are represented. These include both Southern Paiute and Virgin Branch or Western Anasazi. Samples from the ca. A.D. 700 to 1150 Pueblo I and II periods, as well as late Southern Paiute, are the most heavily represented. Others are from less well defined or transitional contexts such as Basketmaker III/Pueblo I and Pueblo I/II. Samples were also obtained from the modern surface.

The extensive sampling for pollen (and macrofossils) of a large number of sites covering a substantial number of cultural developments represents an inaugral attempt to reconstruct past local environments of and subsistence in the Lower Sonoran of the St. George Basin of southwestern Utah. Archeological excavations in this zone have been very limited (Aikens 1965; Pendergast 1962; Day 1966; Dalley and McFadden 1985). Pollen studies are nonexistent.

Elsewhere in the Western Anasazi area, Madsen (1972, 1973) conducted pollens studies in the Meadow Valley Wash area of southeastern Nevada, and another (Madsen 1982) from a site on the Paria River east of the town of Kanab. Lindsay (1985) conducted a limited sampling of Mountain Meadow alluvial stratigraphy (see Isgreen 1985), and Lindsay and Fountain (1985) sampled several archeological sites north of and above the St. George Basin. Additionally, Lindsay (n.d.a) sampled a small site north of the town of Kanab. Scott (1981, 1985) has sampled several sites, including one in Kanab and several others in the vicinity, along the Vermilion Cliffs.

Sampling in many of these studies is somewhat limited and most are not well enough dated, or at least not dated in fine enough increments, to discuss changes in Anasazi subsistence, or in environmental change. Such research in the Western Anasazi area lags far behind that of the Mesa Verde area of southeastern Utah and southwestern Colorado where synthetic treatment, although yet a potentially perilous venture (Kay 1982), of an expanded data base may now be possible (eg. Euler et al., 1979; Lindsay 1981, n.d.b).

Quail Creek, and its better watered tributary, Leeds Creek, originate in the approximately 10,300 ft. high Pine Valley Mountains, about 15 miles northwest of the project area. Quail Creek flows generally southeastward to the Virgin River. The project area is at the confluence of the two water courses at elevations between 2,800 ft. and 3,200 ft. It is essentially in a riparian setting in Mojavean vegetation of the northern portion of the St. George Basin. Quail Creek water is potable, while the Virgin River is presently too saline for use at this location owing to input from a thermal spring near Hurricane, some 6 miles to the east.

The climate of the project area is extremely dry with precipitation averaging less than 10 in. per year. Moisture falls almost exclusively in the form of rain, principally during the winter and early spring months, although additional precipitation also occurs as summer thundershowers, mostly during the month of August. Temperatures are mild during the winter, but reach extreme highs of greater than 110° F. during the summer months. Climate and soils of the project area (see Walling et al., Environment, this volume) contribute to well-defined vegetation patterns consisting of four plant communities (to simplify): 1) Mormon tea, 2) shadscale, 3) creosote, and 4) riparian. Eriogonum inflatum (desert trumpet) is a dominant component with Ephedra torreyana and E. viridis of the first community and with Atriplex confertifolia of the second. Dominant components with Larrea tridentata (creosote), include Bromus tectorum (Cheatgrass), Krameria parvifolia (range ratany), and Dalea fremonitii (indigo bush). The riparian community consists of a number of abundant plant species including Populus fremontii (cottonwood), Salix sp. (willow), Tamarix pentandra (salt cedar), Bromus tectorum (cheatgrass), Chilopsis linearis (desert willow), Helianthus annuus (sunflower), Trifolium repens (white clover), Datura meteloides (jimson weed), and Scirpus spp. (bulrush).

The numerous plant species of the project area vary considerably in terms of abundance (after Walling et al., Environment, this volume):

| | | |
|---|---|---|
| ASCLEPIADACEAE | | |
| Aesclepias sp. (milkweed) | forb | rare |
| BIGNONIACEAE | | |
| Chilopsis linearis (desert willow) | tree | |
| CAPPARIDACEAE | | |
| Cleome lutea (beeweed) | forb | rare |
| CHENOPODIACEAE | | |
| Atriplex canescens (four-wing saltbush) | forb | rare |
| A. confertifolia (shadscale) | shrub | |
| Chenopodium sp. (goosefoot) | forb | sparse |
| Eurotia lanta (winterfat) | shrub | rare |
| COMPOSITAE | | |
| Artemisia filifolia (sand sage) | shrub | |
| Baileya multiradiata (desert marigold) | forb | |
| Circium sp. (desert thistle) | forb | |
| Encelia farinosa (brittlebush) | shrub | |
| Gutierrezia sarothrae (snakeweed) | shrub | |
| Helianthus annus (sunflower) | forb | |
| Lactuca scariola (wild lettuce) | forb | |
| Tetradymia glabra (horsebush) | shrub | rare |
| Xanthium sp. (cocklebur) | forb | rare |
| CRUCIFERAE | | |
| Descurainia sp. (tansy mustard) | forb | |
| Lepidium sp. (peppergrass) | forb | |
| Stanleya pinnata (princes plume) | forb | rare |

| | | |
|---|---|---|
| CUCURBITACEAE | | |
| _Cucurbita_ _foetidissima_ (buffalo gourd) | forb | rare |
| CUPRESSACEAE | | |
| _Juniperus_ _osteosperma_ (Utah juniper) | tree | rare |
| CYPERACEAE | | |
| _Scirpus_ sp. (bullrush) | | |
| CACTACEA | | |
| _Opuntia_ _imbricata_ (prickly pear) | cactus | |
| _O. macrorhiza_ (prickly pear) | cactus | |
| _O. Polycantha_ (prickly pear) | cactus | |
| ELAEGNACEAE | | |
| _Eleagnus_ _angustifolia_ (Russian olive) | tree | |
| EPHEDRACEAE | | |
| _Ephedra_ sp (Mormon tea) | shrub | |
| EQUISETACEAE | | |
| _Equisetum_ sp. (horsetail) | shrub | |
| EUPHORBIACEAE | | |
| _Croton_ _texensis_ (croton) | forb | |
| FAGACEAE | | |
| _Quercus_ _turbinella_ (Turbin oak) | tree | |
| GRAMINEAE | | |
| _Bromus_ _tectorum_ (cheat grass) | grass | |
| _Elymus_ sp. (wild rye grass) | grass | |
| _Orizopsis_ _hymenoides_ (Indian rice) | grass | |
| _Phragmites_ _communis_ (Common reed) | reed | |
| HYDROPHYLLACEAE | | |
| _Phacelia_ _crenulata_ (scorpion weed) | forb | |
| LEGUMINOSAE | | |
| _Kameria_ _parvifolia_ (little leaved ratany) | forb | |
| _Dalea_ _fremontii_ (Fremont dalea) | shrub | |
| _Prosopis_ _juliflora_ (mesquite) | tree | |
| _Prosopis_ _pubescens_ | | |
| _Trifolium_ sp. (clover) | | rare |
| LILIACEAE | | |
| _Calochortus_ _flexuosus_ (mariposa lily) | forb | |
| _Yucca_ _angustissima_ (narrow leaf yucca) | | |
| _Y. baccata_ (banana yucca) | | |
| MALVACEAE | | |
| _Sphaeralcea_ _munroana_ (globemallow) | forb | |
| ONAGRACEAE | | |
| _Oenothera_ _caespitosa_ (evening primrose) | forb | |
| _O. hookerii_ (primrose) | forb | |
| POLYGONACEAE | | |
| _Eriogonum_ _inflatum_ (desert trumpet) | forb | sparse |
| _Rumex_ sp. (dock) | forb | |
| ROSACEAE | | |
| _Coleogyne_ _ramossissima_ (blackbrush) | shrub | |
| SALICACEAE | | |
| _Populus_ _fremontii_ (cottonwood) | tree | |
| _Salix_ sp. (willow) | tree | |
| SCROPHULRIACEAE | | |
| _Castilleja_ sp. (Indian paintbrush) | forb | rare |
| _Penstemon_ sp. (beardstongue) | forb | |
| _Verbascum_ _thapsus_ (mullein) | forb | rare |

| | | |
|---|---|---|
| SOLANACEAE | | |
| Datura meteloides (jimsonweed) | forb | |
| Lycium sp. (wolfberry) | shrub | |
| Nicotiana trogonophylla (desert tobacco) | forb | rare |
| VITACEAE | | |
| Vitis arizonica (wild grape) | tree | rare |
| TAMARICACEAE | | |
| Tamarix pentandra (salt cedar) | tree | |
| ZYGOPHYLLACEAE | | |
| Larrea tridentata (or L. divaricata?) (creosote bush) | shrub | |

Goals of the pollen study are two fold: to reconstruct past environments; and to reconstruct the subsistence practices of past inhabitants. Unfortunately, the two kinds of evidence, from archeological contexts, are nearly inextricably intertwined and clues to each are difficult to sort. Ideally, well-dated pollen data from natural deposits should be available to provide a framework to evaluate that from cultural contexts. However, such a luxury is rare. The Quail Creek pollen study must necessarily rely on extant paleoenvironmental data, including regional reconstructions far removed from the project area, comparisons with similar data from other archeological studies, and the use of ethnographic analogues of modern plant usage. However, the several advantages of the study, including corresponding macrofossil data, reasonably well dated contexts, and a large number of samples, are ordinarily rare as well.

Corresponding macrofossil data is useful because the pollen of many plant species can only be identified to family with a few to the more specific levels of genus and species. Also, it is apparent that macrofossil data, when available, provides the better definition of plant utilization. Such data contrasts with that of pollen, which may tend to be introduced more easily and casually to cultural contexts. On the other hand, pollen grains seem to survive even the most seemingly inhospitable environments and the data is more easily quantified. The challenge, then, is interpretation. The large number of samples from several of the cultural components allows some averaging which should somewhat reduce sampling/dating errors. Most of the archeological sites are fairly well placed in time. The late Southern Paiute components are well dated and the Anasazi site components represent relatively brief time periods. As a result, any changes that may have actually occurred should be quite evident in the pollen record.

## METHODS

The sixty-five pollen samples were obtained from 29 archeological sites. Five modern surface samples are variously from two of the sites. The prehistoric samples are from a variety of cultural contexts and the dating of several additional are uncertain. These include (as listed in Tables 1 - 5 in which the raw pollen data is represented):

| Table | Site Number | Dating | No. of Samples |
|---|---|---|---|
| I | 42Ws392 | Modern | 4 |
| | 42Ws256 | Modern | 1 |
| | 42Ws274 | Unknown | 1 |
| | 42WS259 | Unknown | 1 |
| | 42Ws251 | Southern Paiute | 1 |
| | 42Ws267 | Southern Paiute | 1 |
| | 42Ws275 | Southern Paiute | 1 |
| | 42Ws263 | Southern Paiute | 1 |
| | 42Ws250 | Southern Paiute | 1 |
| | 42Ws260 | Southern Paiute | 1 |
| | 42Ws280 | Southern Paiute | 1 |
| | 42Ws391 | S. Paiute/Anasazi | 1 |
| II | 42Ws256 | Late Pueblo II | 1 |
| | 42Ws258 | Pueblo II | 1 |
| | 42Ws245 | Pueblo II | 1 |
| | 42Ws288 | Pueblo II | 4 |
| | 42Ws269 | Early Pueblo II | 1 |
| | 42Ws385 | Early Pueblo II | 1 |
| | 42Ws397 | Early Pueblo II/ Late Pueblo I | 1 |
| | 42Ws263 | Early Pueblo II/ Late Pueblo I | 1 |
| | 42Ws389 | Pueblo I/II | 1 |
| | 42Ws272 | Pueblo I/II | 1 |
| | 42Ws284 | Pueblo I/II | 1 |
| III | 42Ws395 | Mid-Late Pueblo II | 4 |
| | | Pueblo II | 4 |
| | | Early Pueblo II | 2 |
| | | Pueblo I | 2 |
| IV | 42Ws392 | Mid-Late Pueblo II | 1 |
| | | Pueblo II | 5 |
| | | Pueblo I | 3 |
| | 42Ws390 | Pueblo II | 1 |
| | | Pueblo I/II | 1 |
| | | Pueblo I/ Basketmaker III | 1 |
| V | 42Ws388 | Pueblo I | 6 |
| | 42Ws268 | Pueblo I | 2 |
| | 42Ws386 | Pueblo I | 2 |
| | 42Ws257 | Pueblo I/ Basketmaker III | 1 |
| | 42Ws387 | Pueblo I/ Basketmaker III | 1 |

The components and the number of samples obtained are tabulated:

| | |
|---|---|
| Modern | 5 |
| Unknown | 2 |
| Southern Paiute/Anasazi | 1 |
| Southern Paiute | 7 |
| Late Pueblo II | 1 |
| Mid- Late Pueblo II | 5 |

| | |
|---|---|
| Pueblo II | 16 |
| Early Pueblo II | 4 |
| Late Pueblo I/Early Pueblo II | 2 |
| Pueblo I/II | 4 |
| Pueblo I | 15 |
| Late Basketmaker III/Pueblo I | 3 |

Samples of unknown or uncertain provenience (unknown, Southern Paiute/Anasazi, and Pueblo I/II) were not used in averaging to obtain pollen summaries for each component (Figs. 1 and 2).

The components are roughly dated:

| | | |
|---|---|---|
| Late Southern Paiute | 650 B.P. - Present | (A.D. 1300-Present) |
| Pueblo II | 1100 - 800 B.P. | (A.D. 850 - 1150) |
| Pueblo I | 1250 - 1100 (1050) B.P. | (A.D. 700 - 850 (900)) |
| Basketmaker III | 1450 - 1250 (1200) B.P. | (A.D. 500 - 700 (750)) |

Samples were obtained from a variety of modern and cultural contexts. Those from the modern surface were obtained from near juniper and from creosote, shadscale, and riparian plant communities. Cultural samples were taken variously from cultural deposits, hearths, surface masonry and storage room floors, pithouse floors, storage cists and bins, ceramic vessels, metates, a burial pit, and from the plaster of a granary wall.

The pollen was extracted at Brigham Young University following a procedure modified from Faegri and Iverson (1975). This involved a series of soaks in acids and basic agents (HCL, HF, and KOH) and water baths, water washes, sieving with 150 and 7 micron screens, and acetolosis (Deborah Newman 1985, personal communication). The samples were stained with basic fuschin, mounted in glycerol, and counted under 600 X magnification. Pollen was identified using reference materials of the University of Utah Herbarium. Counts of at least 200 grains were obtained for each sample. Preservation was quite variable and many grains were quite poorly preserved, making identification difficult. No doubt representations of some plant species in the pollen record, particularly _Populus_ and _Salix_, are distorted because of differential pollen preservation (Havinga 1967).

## RESULTS

Sufficient pollen counts of 200 or more grains were obtained from all samples, although they varied considerably in terms of pollen abundance and preservation, charring of pollen, and extraneous plant matter and siliceous detritus. Pollen from the modern samples was, by far, the better preserved. Grains from prehistoric contexts were considerably less well preserved; although, pollen from the late Southern Paiute samples tended to fare better than those from Anasazi contexts. No patterned differences were detected among the latter samples. Unidentified pollen, which varies from 1 to 9.5% and averages about 4.5%, includes grains too poorly preserved to identify as well as a few which were without references for comparison.

### Modern Surface Samples

Five modern surface samples (Table 1) were obtained in proximity to two archeological sites. Four samples are variously from near site 42Ws392, from riparian, shadscale, and creosote plant communities and, additionally, from near a single juniper tree growing in otherwise predominantly creosote vegetation in the center of the reservoir basin. The remaining sample is from a predominantly creosote location near site 42Ws256.

Expectedly, pollen percentages tend to reflect the plant communities from which they were obtained. Juniper (30%) is highest in the sample from near the juniper tree. One of the two samples from the creosote area (19%) reflects from where that sample was obtained. Creosote is low (4.5%) in the other sample, partly because of the high *Ephedra* (14.5%). Shadscale (reflected as part of the Cheno-ams) is fairly well represented (10.5%), but with very high (34%) *Ambrosia*-type composite pollen (cf. bursage). Pollen was most abundant in the sample from the riparian zone where *Salix* (5.5%) and *Tamarix* (3.5%-an introduced species) are best represented.

Pine pollen, which averages about 7.5% in the modern samples, is a principal component of the pollen rain. Juniper (X=21%) and *Ephedra* (X=5.7%) are components of the rain as well, although the latter species is also locally abundant. The range of variation (4.5 to 10.5%) of pine pollen, and perhaps to an extent juniper (11 to 30%), in the modern samples gives some measure of the degree to which local species (mostly nonarboreal) may influence the relative percentages of the pollen rain. Except for the sample near the single juniper (30%), the representations of juniper and pine should be relatively uniform in all of the modern samples. The major influences on the representations of pine and juniper in the pollen rain are *Ambrosia*-type composites (X=16.5%), Cheno-ams (X=9%), creosote (X=8%), and to a lesser extent, *Ephedra* (X=5.5%) and grasses (X=5%). Pollen from utilized plants, in samples from cultural contexts, will distort further the representation of the pollen rain.

Additional local pollen types in the modern samples include *Salix* (X=2%), *Quercus* (X=2%), *Artemisia* (X=2%), high-spine composites (X=8%), legumes (X=2%), and traces (less than 1%) of mesquite, *Eriogonum*, cactus, *Lycium*, evening primrose, rose (cf. blackbrush), saxifrages, and sedges. Trace occurrences of Douglas fir and spruce pollen are expected in the pollen rain. Pollen from several introduced species, which occur only in the modern record, include *Tamarix* and *Carya* (pecan). *Bromus tectorum* (cheatgrass), although indistinguishable from other grasses, is, no doubt, a contributor to the modern pollen record as well. The occurrence of *Carya* indicates that the tree is growing near the project area. Pecans are, today, growing in the Hurricane and St. George areas.

### Unknown Cultural Samples

Two samples were obtained from archeological sites (42Ws274 and 42Ws259) in which cultural affiliation is not understood (Table 1). A "modern" radiocarbon date was obtained from site 42Ws274. Site 42Ws259 is undated. *Zea* pollen occurs in both samples.

Table 1

Relative Pollen Percentages of Quail Creek Modern & Southern Paiute Samples

| | | | AP | | | | | | | | | | | NAP | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | COMPOSITAE | | | |
| DATING | SITE | PROVENIENCE | Acer | Pseudotsuga | Picea | Pinus | Juniperus | Prosopis | Larrea | Carya | Quercus | Populus | Salix | Zea | GRAMINEAE | Cheno-Ams | Sarcobatus | Ambrosia type | Artemisia | High Spines | Cirsium |
| Modern Surface | 392 | Surface-Juniper | | | | 10.5 | 30 | | 7 | .5 | 1 | | .5 | | 5 | 11.5 | | 11 | 2.5 | 9 | |
| | | Surface-Creosote | .5 | | | 5 | 22 | .5 | 19 | .5 | 2 | | | | 7 | 9.5 | | 11 | 1.5 | 3 | |
| | 256 | Surface-Creosote | | | .5 | 8 | 22.5 | | 4.5 | | 2 | | 5 | | 3.5 | 5 | | 13.5 | 2 | 12 | |
| | 392 | Surface-Shadscale | | | | 10.5 | 19 | | .5 | | 3 | .5 | .5 | | 2 | 10.5 | | 34 | 3 | 3.5 | |
| | | Surface-Riparian | .5 | | | 4.5 | 11 | | 9.5 | | 3 | 3 | 5.5 | | 8 | 7.5 | .5 | 13.5 | 4.5 | 12 | |
| Unknown Cultural | 274 | Unknown-Ash | | | | 7 | 1 | 2.5 | 3.5 | | .5 | .5 | 1.5 | .5 | 7 | 14 | | 6.5 | .5 | 39.5 | |
| | 259 | Unknown-Hearth | | | | 3.5 | 4 | 2.5 | 7.5 | | 2 | | | 1 | 6.5 | 36.5 | | 1.5 | | 20.5 | |
| Modern/ Late Southern Paiute | 251 | Hearth 1 | | | | 1 | 2 | 1.5 | 7.5 | | 3 | | | | 6.5 | 22.5 | | .5 | 1 | 42 | .5 |
| | 267 | Hearth 4 | | | | 3.5 | 1.5 | | 15 | | | | .5 | | 1.5 | 38.5 | | 1.5 | 1 | 26.5 | |
| | 275 | Hearth | | | | .5 | 1 | 3.5 | 6 | | 2 | | .5 | .5 | 3 | 47 | | 5 | 1 | 18.5 | |
| | 263 | Hearth Area 1 | | | | 11 | .5 | 1.5 | .5 | | 2 | .5 | .5 | | 4.5 | 28 | | 3.5 | .5 | 29 | |
| | 250 | Hearth 1 | | | | 2.5 | .5 | | 14.5 | | 4.5 | | | | 7.5 | 36.5 | | 7.5 | 2.5 | 11.5 | |
| | 260 | Hearth 1 | | | | 4 | 5.5 | | 2.5 | | 1.5 | 1 | 2.5 | | 1.5 | 34.5 | | 6 | 1.5 | 20.5 | |
| | 280 | Hearth 1 | | .5 | | 3.5 | 3 | 1 | 13 | | .5 | | .5 | | 12 | 30.5 | | 3.5 | .5 | 19 | |
| Southern Paiute/ Anasazi | 391 | Stratum 2 | | | | 2 | 1.5 | 1.5 | 6.5 | | | | 1 | | 5.5 | 45 | | 5.5 | | 10 | |

Table 1 (continued)

| | | | NAP | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DATING | SITE | PROVENIENCE | Sphaeralcea | cf. Cleome | CRUCIFERAE | Ephedra | Eriogonum | EUPHORBIACEAE | CACTACEAE | CAPRIFOLIACEAE | SOLANACEAE | Lycium | LEGUMINOSAE | LILIACEAE | ONAGRACEAE | ROSACEAE | SAXIFRAGACEAE | CYPERACEAE | Scirpus | Tamarix | UMBELLIFERAE | Unidentified | N |
| Modern Surface | 392 | Surface-Juniper | | | | 3.5 | | | | .5 | | | 1.5 | | | .5 | .5 | | | | | 4 | 235 |
| | | Surface-Creosote | | | | 4.5 | 1 | .5 | | | | * | 4 | | | | 1 | | | 2 | | 5 | 209 |
| | 256 | Surface-Creosote | | | | 13.5 | | | | | | .5 | 3 | | | | | | | | | 4.5 | 200 |
| | 392 | Surface-Shadscale | | | | 5.5 | | | | | .5 | | .5 | | | | | .5 | | | | 3.5 | 244 |
| | | Surface-Riparian | | .5 | .5 | 1.5 | | | | | | | 3.5 | | | 1 | 1 | | | 3.5 | | 5.5 | 231 |
| Unknown Cultural | 274 | Unknown-Ash | | 2 | | 6 | | | 1 | | | | 1.5 | | .5 | | .5 | .5 | | | | 4 | 217 |
| | 259 | Unknown-Hearth | 1 | 1.5 | | 4.5 | | | | | | | 2 | | | .5 | | | | | | 5 | 211 |
| Modern/ Late Southern Paiute | 251 | Hearth 1 | | | | 6 | | | | | | | 1 | | | .5 | | | | | | 2.5 | 203 |
| | 267 | Hearth 4 | | 1 | | 4.5 | | | | | | | 1 | | | .5 | | | | | | 3 | 217 |
| | 275 | Hearth | | 1.5 | | 3 | | | | | | | 4 | .5 | | | | | | | | 3.5 | 209 |
| | 263 | Hearth Area 1 | | | | 3 | 1 | | .5 | | | | 2 | | | 2 | | | | | | 5 | 200 |
| | 250 | Hearth 1 | | 1 | 1 | 2.5 | | | | 2.5 | | | .5 | .5 | | | | | | | | 5.5 | 209 |
| | 260 | Hearth 1 | | | .5 | 4 | .5 | | .5 | | .5 | | 3.5 | .5 | | | .5 | 1.5 | | | .5 | 5 | 210 |
| | 280 | Hearth 1 | | | | 3.5 | | | | | | | 2 | 1 | | | | | | | .5 | 6 | 208 |
| Southern Paiute/ Anasazi | 391 | Stratum 2 | | | | 6 | 1.5 | | | | | | 2 | | | | | | 6.5 | | | 6.5 | 206 |

Pollen percentages from the modern ash sample (42Ws274) generally conform to those from prehistoric contexts rather than the modern surface samples. Juniper is low (1%), as are the Ambrosia-type composites (6.5%) while the high-spine composites are quite high (39.5%). However, Cheno-ams (14%) are quite low, as they are in the modern surface samples. Tamarix was not identified in the sample.

Pollen percentages from the unknown/undated hearth sample (42Ws259) also generally better conform to those of the prehistoric record. Juniper is low (4%), Ambrosia-type composites are low (1.5%), and high-spine composites are relatively high (20.5%). Also, Cheno-ams are high (36.5%), as they are in most prehistoric samples.

The pollen evidence suggests that both samples are more nearly like those of the prehistoric record rather than the samples from the modern surface. This is principally based on the contrasting evidence of the low juniper pollen percentages of the prehistoric record and an apparent increase in pollen of the species in the modern samples. Although not precisely dated, the increased juniper pollen of the modern samples is probably, in part, related to the well-known late nineteenth century overgrazing by cattle, subsequent arroyo down cutting, and the replacement of sage by juniper at the higher elevations of the Upper Sonoran (Cottam and Stewart 1961). Additionally, substantial percentages of the high-spine composites at both sites are suggestive of occupations antedating the late nineteenth century.

Trace occurrences of Zea pollen may indicate the nearby presence of farm plots; however, the pollen could be nothing more than a few relict grains which have survived from the much earlier, intense Anasazi occupation of the area. The high Cheno-am pollen percentages from site 42Ws259 may further suggest the presence of horticulture, but just as likely is the use of Chenopodium (Bye 1972), particularly.

Modern/Late Southern Paiute Samples

Seven samples were obtained from Southern Paiute contexts (42Ws251, Ws267, Ws275, Ws263, Ws250, Ws260, and Ws280) (Table 1). "Modern" radiocarbon dates were obtained from archeological sites 42Ws251, Ws267, Ws275, and Ws263. The remaining sites are radiocarbon dated:

42Ws250: 100±50 B.P. (ca. A.D. 1840)
42Ws260: 670±50 B.P. (ca. A.D. 1280)
42Ws280: 200±50 B.P. (ca. A.D. 1750)

All are samples from fire hearths.

Pine ($\bar{X}$=3.5%) and juniper ($\bar{X}$=2%) pollen percentages are low, but similar to the modern surface samples, Larrea (creosote) is relatively high ($\bar{X}$=8.5%). Ambrosia-type composites are considerably lower ($\bar{X}$=4%) than in the modern surface samples ($\bar{X}$=16.5%), while high-spine composites ($\bar{X}$=24%) are much higher ($\bar{X}$=8%). Grasses are about the same as the modern surface samples. Other pollen types are generally uninformative. Prosopis (mesquite) is represented in many of the samples, whereas the modern surface samples were virtually devoid of the pollen type. Minor percentages of Populus and Salix pollen occur in most of the samples. Ephedra pollen percentages are similar to those from the modern surface. Zea pollen (0.5%) occurs only in the hearth sample from 42Ws275.

All of the late Southern Paiute samples suggest that they were derived from contexts antedating the late nineteenth century (Cottam and Stewart 1961) as all are more nearly like the dated samples of the prehistoric record. The one earlier 670±50 B.P. (A.D. 1280) sample from site 42Ws260 is very similar to those from much later Southern Paiute contexts. The samples are not particularly informative except that the trace of Zea at site 42Ws275 may indicate the presence of horticulture, but the pollen could just as likely be a product of the earlier Anasazi. Both high-spine composite and Cheno-am pollen percentages are quite high in many or most of the samples, possibly indicating nearby farm plots, but also that various composites and likely Chenopodium and/or Atriplex were utilized (Bye 1972). The slightly higher (3.5%) mesquite pollen from site 42Ws275 may indicate the nearby occurrence of the tree, its use as firewood (Bye 1972), or that the fruit of the plant was utilized (Bye 1972). Several samples (42Ws267, Ws250, and Ws280) provided fairly high creosote pollen percentages suggesting medicinal or other domestic use of the species (Bye, 1972). Pollen from other species indicate the availability and possible use of Quercus at 42Ws250, Salix at 42Ws260, grasses at 42Ws280, Ephedra at 42Ws251, and sedges at 42Ws260 (Chamberlain 1911; Whiting 1930; Kelly 1964; Harrington 1967; Bye 1972).

## Southern Paiute/Anasazi Sample

One sample was obtained from archeological site 42Ws391 (Table 1). The sample is from Stratum 2, an undated, mixed Southern Paiute/Anasazi deposit. The sample is essentially similar to other prehistoric samples. Pine (2%) and juniper (1.5%) pollen are very low, while Cheno-ams are high (40%). Also, Ambrosia-type composites are low (5.5%), but high spines are low as well. The latter better conforms to the (X=8%) average of the pollen type in the modern samples, but it is still within the range of those from prehistoric contexts. Scirpus pollen (6.5%) is one of the highest of any of the sample.

The sample is generally uninformative except for the very high pollen percentages of Cheno-ams and relatively high Scirpus. Zea pollen was not identified in the sample. The high Cheno-am pollen percentage may suggest that Chenopodium and/or Atriplex were utilized (Bye 1972). Scirpus was heavily used in the ethnographic record (Harrington 1967; Bye 1972).

## Anasazi - Late Pueblo II Sample

One sample was obtained from the floor of Pit Structure 2 at 42Ws256, indicating a late Pueblo II Anasazi context (Table 2). The sample only marginally differs from many of the somewhat later Southern Paiute samples. Cresote pollen (5.5%) is slightly less than the (X=8.5%) average of the latter samples. Pine and juniper percentages are extremely low while Cheno-am pollen (45.5%) is very high. Also, Ephedra (7%) is relatively high. Zea was not identified in the sample.

The late Pueblo II sample is rather similar to other Anasazi samples. Pine pollen is noticeably low, but then the pollen type is also low in a

Table 2
Relative Pollen Percentages of Quail Creek Pueblo I & Pueblo II Anasazi Samples

| DATING | SITE | PROVENIENCE | AP: *Picea* | AP: *Pinus* | AP: *Juniperus* | AP: *Prosopis* | AP: *Larrea* | AP: *Quercus* | AP: *Populus* | AP: *Salix* | NAP: *Cucurbita* | NAP: *Zea* | NAP: GRAMINEAE | NAP: Cheno-Ams | NAP: *Sarcobatus* | NAP: COMPOSITAE: *Ambrosia* type | NAP: COMPOSITAE: *Artemisia* | NAP: COMPOSITAE: High Spines |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Late Pueblo II | 256 | Pithouse, Floor 2 | | 1 | 2.5 | 1.5 | 5.5 | | | | | | 6.5 | 45.5 | | 4 | | 20.5 |
| Pueblo II | 258 | Stratum 5 | | 1 | 1 | | 7.5 | | | | .5 | | 3 | 52.5 | | 5.5 | 1 | 16.5 |
| | 245 | Cist Floor, St George B/G Bowl | | 3 | 1 | .5 | 12 | | | | | 5.5 | 1.5 | 45 | | 2 | 3.5 | 10.5 |
| | 266 | Room 1, Floor | | 1 | 5,5 | | 5.5 | .5 | .5 | | | | 9.5 | 30 | | 32 | .5 | 5 |
| | | Room 4, Floor | | 1 | .5 | | 5.5 | | | | | | 5 | 50.5 | | 8.5 | | 18.5 |
| | | Pithouse, Eastern Basin Set 2 | | 8 | 9.5 | | | | | | | .5 | 15.5 | 24.5 | | 12.5 | | 21 |
| | | Pithouse, Hearth | | 1.5 | 1.5 | .5 | 4 | 1 | | .5 | | .5 | 6 | 62.5 | | 9 | | 12 |
| Early Pueblo II | 259 | Stratum 2, Metate | | 10 | 2.5 | | 6 | | | | | | 10.5 | 27 | | 2.5 | 1 | 26 |
| | 355 | Cist 3, Floor | | 4.5 | 2.5 | 4 | 8.5 | 1 | | | | 1 | 11 | 36.5 | 1 | 7 | 1 | 3 |
| Early Pueblo II/ Late Pueblo I | 397 | Cist 1, Floor | | 6 | 4 | .5 | 1 | | 1 | | | 1 | 14 | 34 | | | | 29.5 |
| | 263 | Pithouse, Floor | | 1.5 | .5 | 2 | 4 | 1 | | | | | 3 | 55.5 | | 1 | .5 | 19 |
| Pueblo I/ Pueblo II | 389 | Hearth | .5 | 9 | 5.5 | 2 | 6.5 | .5 | | 1.5 | | | 5 | 31 | | 9.5 | 3 | 6 |
| | 272 | Locus 1, Hearth 1 | .5 | | 3.5 | .5 | 3 | | | 2.5 | | | 3.5 | 33 | | 4 | .5 | 40.5 |
| | 284 | Granary Wall Plaster | | 6 | 2.5 | 5 | 7 | 1 | | .5 | | 2 | 21.5 | 15.4 | .5 | 4 | 2.5 | 8.5 |

Table 2 (continued)

| DATING | SITE | PROVENIENCE | NAP: *Sphaeralcea* | NAP: cf. *Cleome* | NAP: CYPERACEAE | NAP: *Ephedra* | NAP: RANUNCULACEAE | NAP: CACTACEAE | NAP: CAPRIFOLIACEAE | NAP: LEGUMINOSAE | NAP: LILIACEAE | NAP: POLYGONACEAE | NAP: *Eriogonum* | NAP: ROSACEAE | NAP: SAXIFRAGACEAE | NAP: UMBELLIFERAE | Unidentified | N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Late Pueblo II | 256 | Pithouse, Floor 2 | | | | 7 | | .5 | | | | | | | .5 | | 4.5 | 222 |
| Pueblo II | 258 | Stratum 5 | | .5 | | 2.5 | | | .5 | 1.5 | .5 | | | | | | 6 | 200 |
| | 245 | Cist Floor, St George B/G Bowl | | | | 2.5 | | | | 3.5 | 1 | | | | | | 6 | 206 |
| | 266 | Room 1, Floor | | | | 1.5 | | | | 2.5 | | | | | | .5 | 5 | 215 |
| | | Room 4, Floor | | .5 | | 4.5 | | | | .5 | | | .5 | | | | 4 | 216 |
| | | Pithouse, Eastern Basin Set 2 | | | | 4.5 | | | | 2.5 | | | | | | | 1.5 | 216 |
| | | Pithouse, Hearth | | | | 4 | | | | 1 | | | .5 | | | | 5.5 | 209 |
| Early Pueblo II | 259 | Stratum 2, Metate | | 1 | | 8.5 | | | | | 1 | | | | | | 6 | 216 |
| | 355 | Cist 3, Floor | | 1.5 | | 4.5 | | | | 3 | | | .5 | | | 1 | 7.5 | 216 |
| Early Pueblo II/ Late Pueblo I | 397 | Cist 1, Floor | | | | 5 | | 1 | | 1 | | | | 2 | | | 2.5 | 221 |
| | 263 | Pithouse, Floor | .5 | .5 | | 4.5 | | .5 | | 1 | | 1 | | .5 | | | 4 | 223 |
| Pueblo I/ Pueblo II | 389 | Hearth | | .5 | 3 | 6.5 | | | | .5 | | | .5 | 1 | .5 | 1 | 3.5 | 243 |
| | 272 | Locus 1, Hearth 1 | | 1 | | 3 | | | | | | | 1 | | | .5 | 3.5 | 207 |
| | 284 | Granary Wall Plaster | | | | 6 | .5 | | | 2.5 | | | 1 | | | | 6.5 | 217 |

Table 3

Relative Pollen Percentages of Quail Creek Pueblo I & Pueblo II Anasazi Samples

| | | | AP | | | | | | | | | NAP | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | COMPOSITAE | | |
| DATING | SITE | PROVENIENCE | *Abies* | *Picea* | *Pinus* | *Juniperus* | *Prosopis* | *Larrea* | *Quercus* | *Populus* | *Salix* | *Cucurbita* | *Zea* | GRAMINEAE | Cheno-Ams | *Sarcobatus* | *Ambrosia* type | *Artemisia* | High Spines |
| Mid-Late Pueblo II | 395 | Roomblock 1, Room 1 Floor | | | 1 | 2.5 | .5 | 5.5 | | .5 | .5 | | | 11 | 37 | | 17 | 1 | 13.5 |
| | | Roomblock 1, Room 3 Floor | | | 10.5 | 1.5 | 2 | .5 | | | 1.5 | | .5 | 10.5 | 23.5 | | 10 | 2 | 26.5 |
| | | Roomblock 1, Room 2 Floor, Metate | | | 3 | .5 | | 4 | | | .5 | | .5 | 3.5 | 56.5 | | 3 | .5 | 27 |
| | | Roomblock 1, Room 2 Floor, Beneath Metate | | | | 1.5 | .5 | 7.5 | 1.5 | | .5 | | | 3.5 | 40 | | 5.5 | | 29 |
| Pueblo II | 395 | Rockshelter 2, Fill 1 | | | 9 | 2 | 1.5 | 5 | | .5 | 1 | | .5 | 12 | 23.5 | | 5 | 1.5 | 16 |
| | | Rockshelter 2, Fill 1, Metate | | | 6.5 | 2.5 | 1.5 | 3.5 | .5 | | | | | 32.5 | 16.5 | | 4.5 | | 9 |
| | | Rockshelter 2, Floor | .5 | | 12 | .5 | 1 | 6.5 | .5 | | 2.5 | .5 | 1 | 6.5 | 27 | | 4 | | 16.5 |
| | | Burial, North Creek Gray Vessel | | .5 | 8 | .5 | 1 | 4.5 | | | 6.5 | | | 5 | 11.5 | | 2 | | 39.5 |
| Early Pueblo II | 395 | Pithouse 1, Floor-Center | | | 9.5 | 2 | .5 | 3 | | | 1 | | | 11 | 31 | | 13.5 | 1 | 15 |
| | | Pithouse 1, Floor E 1/4 | | | 14 | 1 | 1 | 4 | | | | | | 5 | 50 | | .5 | | 15 |
| Pueblo I | 395 | Cist 1, Floor | .5 | | 3.5 | 1.5 | | 7 | | | | | .5 | 5 | 38 | | 12.5 | .5 | 17.5 |
| | | Cist 3, Floor | | | 5 | | | 2 | | | | | | 7 | 63 | .5 | 1.5 | | 14 |

Table 3 (continued)

| | | | NAP | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DATING | SITE | PROVENIENCE | *Sphaeralcea* | cf. *Cleome* | *Ephedra* | *Eriogonum* | EUPHORBIACEAE | CACTACEAE | *Opuntia* | CRUCIFERAE | LEGUMINOSAE | LILIACEAE | RANUNCULACEAE | ROSACEAE | *Scirpus* | SOLANACEAE | *Typha* | Unidentified | N |
| Mid-Late Pueblo II | 395 | Roomblock 1, Room 1 Floor | | | 1 | .5 | | | | | 2 | .5 | | | | | | 8 | 215 |
| | | Roomblock 1, Room 3 Floor | | .5 | 6 | | | | .5 | | | | | | | | | 5 | 223 |
| | | Roomblock 1, Room 2 Floor Metate | | | | | | .5 | | | | | | .5 | | | | 1 | 200 |
| | | Roomblock 1, Room 2 Floor, Beneath Metate | .5 | 1 | 1.5 | | .5 | | | .5 | 1 | | .5 | | | | | 5.5 | 219 |
| Pueblo II | 395 | Rockshelter 2, Fill 1 | | 1 | 12 | 1 | | | | | 1 | | .5 | | | 1 | | 5 | 236 |
| | | Rockshelter 2, Fill 1, Metate | | 1 | 14 | | | 1.5 | | | .5 | | | | | .5 | | 3.5 | 226 |
| | | Rockshelter 2, Floor | | | 17.5 | | | | | | | .5 | | | | | | 3.5 | 235 |
| | | Burial, North Creek Gray Vessel | 1.5 | | 4.5 | | | 1 | | | 2 | .5 | | | 11.5 | | 1 | 2 | 230 |
| Early Pueblo II | 395 | Pithouse 1, Floor-Center | | .5 | 2.5 | .5 | | 1 | | | | | | | | | | 6 | 208 |
| | | Pithouse 1, Floor E 1/4 | | | 7.5 | | | | | | | | | | | | | 1.5 | 210 |
| Pueblo I | 395 | Cist 1, Floor | | .5 | 1 | | | 4.5 | .5 | | 1.5 | | | | | | | 5 | 295 |
| | | Cist 3, Floor | | | 4.5 | | | .5 | | | | | | | | | | 2 | 201 |

number of other samples. Cheno-am pollen is particularly abundant suggesting that *Chenopodium* and/or *Atriplex* were utilized (Bye 1972). *Ephedra* was likely utilized as well (Bye 1972; Harrington 1967).

## Anasazi - Mid to Late Pueblo II Samples

Five samples were obtained from mid to late Pueblo II contexts. They are from the floors of Rooms 1, 2 (two samples, including one from a metate), and 3 of Room Block 1 at site 42Ws395 (Table 3), and from the pit of Burial 1, below the pelvis, at site 42Ws392 (Table 4).

Pine (X=4%), juniper (X=1%), and creosote (X=5%) pollen percentages in five of the samples are, together, about average of all of those from prehistoric contexts. Mesquite pollen is quite high (12.5%) in the Burial 1 sample from site 42Ws392. Both Cheno-am (X=35%) and high-spine composite (X=25%) pollen are well represented in most of the samples. Cheno-am pollen is well represented in most of the samples. Cheno-am pollen is particularly high (58.5%) in the metate sample from the floor of Room 2, Room Block 1 at site 42Ws395. Grasses (X=6%) are fairly well represented while *Ephedra* pollen, on the average (X=2%), is quite low. Traces of *Zea* pollen occur in two of the samples from site 42Ws395, as well as Burial 1 at site 42Ws392. The particularly high (12%) *Salix* and well-represented Onagraceae (evening primrose) pollen (4%) from the burial are especially intriguing.

Several samples from the two sites may be somewhat informative about both middle to late Pueblo II subsistence and burial practices. The high (58.5%) Cheno-am percentage from the Room 2 metate at 42Ws395 is one of the highest percentages of all of the samples. This suggests that *Chenopodium* and/or *Atriplex* were likely utilized at the site (Bye 1972). The relatively high (40%) Cheno-am pollen from the floor sample below the metate is expected. Traces of *Zea* pollen in several of the samples indicate that horticulture was practiced as well.

The high *Salix* pollen from the burial pit probably indicates the use of willow in pit construction and it may also indicate the approximate (April) time of interment when willow was pollenating. The occurrence of relatively abundant primrose pollen, a fairly early flowering plant, further supports the notion of a spring interment and may suggest the use of the flower as a mortuary offering.

## Anasazi - Pueblo II Samples

Sixteen samples were obtained from Pueblo II contexts. They are from: Stratum 5 at site 42Ws258; a St. George Black-on-gray bowl on the floor of a cist at site 42Ws245; the floors of Rooms 1 and 4 and the eastern-most basin of set 2 plus the fill of the hearth in the pithouse at site 42Ws288 (Table 2); Fill 1 (including a sample from Metate B), the floor of Rockshelter 2, and a North Creek Gray pottery vessel from a burial at site 42Ws395 (Table 3); the Floor 3 hearth, Fills 3 and 4, the Floor 5 hearth of the pithouse and Isolated Floor 2 at site 42Ws392; and Area 1 of the floor of the storage room at site 42Ws390 (Table 4).

Pollen percentages from Pueblo II contexts, including those from the pollen rain, are extremely variable. Pine pollen percentages vary from 1 to 12% (X=5%), while juniper percentage, with the exception (9.5%) of the basin

Table 4

Relative Pollen Percentages of Quail Creek Pueblo I & Pueblo II Anasazi Samples

| DATING | SITE | PROVENIENCE | AP: *Pinus* | *Juniperus* | *Prosopis* | *Larrea* | *Quercus* | *Populus* | *Salix* | NAP: *Cucurbita* | *Zea* | GRAMINEAE | Cheno-Ams | *Sarcobatus* | COMPOSITAE: *Ambrosia* type | *Artemisia* | High Spines | Liguliflorae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mid-Late Pueblo II | 392 | Burial 1, Beneath Pelvis | 5 | | 12.5 | 8.5 | 6 | | 12 | | 1 | 2 | 17 | | 1 | | 27 | |
| Pueblo II | 392 | Isolated Floor 2 | 11 | 2.5 | 1.5 | 10.5 | 1 | | | | | 10.5 | 24.5 | | 1.5 | .5 | 21.5 | |
| | | Pithouse, Floor 5 Hearth | 1.5 | 1.5 | 1 | 3.5 | | | .5 | | | 4 | 35 | | 11 | .5 | 28 | |
| | | Pithouse, Fill 4 | 2.5 | 4 | | .5 | | | | | | 7.5 | 46.5 | 2 | 5 | | 18 | 1.5 |
| | | Pithouse, Fill 3 | 5.5 | 3 | 1 | 2.5 | | | 2.5 | | | 6 | 34 | | 3 | | 26 | |
| | | Pithouse, Floor 3 Hearth | 2.5 | 1 | | 8 | | | .5 | | | 4 | 37 | | 7 | .5 | 28.5 | |
| Pueblo I | 392 | Pithouse, Floor 1 | 6.5 | 3.5 | | 1.5 | 1.5 | | | | | 2.5 | 27.5 | | 7 | | 40 | |
| | | Pithouse Floor 1 Slab Vault | 2 | 4 | | 2 | 1 | | | | | 1.5 | 41 | | 10 | | 6 | |
| | | Cist 2, Floor | 2.5 | | 2.5 | 41 | | .5 | | | | 4 | 31.5 | | 3 | | 8 | |
| Pueblo II | 390 | Storage Room, Floor | 2.5 | 1 | .5 | 6 | | | .5 | .5 | | 1.5 | 54 | .5 | 4 | .5 | 20.5 | |
| Pueblo I/ Pueblo II | 390 | Cist 6, Floor | .5 | | 1 | 9.5 | 1.5 | .5 | | | | 3 | 45.5 | | 4 | | 24 | |
| Pueblo I/ Basketmaker III | 390 | Cist 4, Floor | 1 | 1 | .5 | 12 | | | 1 | | | 2 | 38 | | 3.5 | | 30 | |

Table 4 (continued)

| DATING | SITE | PROVENIENCE | NAP: cf. *Cleome* | ROSACEAE | *Ephedra* | *Eriogonum* | CACTACEAE | *Opuntia* | LEGUMINOSAE | LILIACEAE | ONAGRACEAE | CYPERACEAE | *Scirpus* | SCROPHULARIACEAE | SOLANACEAE | *Typha* | UMBELLIFERAE | Unidentified | N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mid-Late Pueblo II | 392 | Burial 1, Beneath Pelvis | | .5 | 2 | | .5 | | | | 4 | | | | .5 | | | 1.5 | 216 |
| Pueblo II | 392 | Isolated Floor 2 | | | 6.5 | | 1.5 | | | .5 | .5 | | | | | | | 4 | 227 |
| | | Pithouse, Floor 5 Hearth | .5 | .5 | 5 | .5 | .5 | .5 | | | | | | .5 | | | | 5 | 223 |
| | | Pithouse, Fill 4 | | | 5.5 | | .5 | | | | | | | | .5 | .5 | | 1 | 200 |
| | | Pithouse, Fill 3 | .5 | | 4.5 | 1 | 1 | | 2.5 | | | 1 | | | | | | 5.5 | 207 |
| | | Pithouse, Floor 3 Hearth 1 | .5 | | 3 | | | | 2 | | | | | | | | | 5.5 | 205 |
| Pueblo I | 392 | Pithouse, Floor 1 | | | 3.5 | | | | 1.5 | | | | | | | | .5 | 4 | 215 |
| | | Pithouse, Floor 1 Slab Vault | | | 22.5 | .5 | | | 3 | .5 | | | | | | | | 5 | 214 |
| | | Cist 2, Floor | | | 2 | | | .5 | 1.5 | | .5 | | | | | | | 2 | 206 |
| Pueblo II | 390 | Storage Room, Floor | .5 | .5 | 2.5 | | | 2 | | | | | | | | | | 3.5 | 217 |
| Pueblo I/ Pueblo II | 390 | Cist 6, Floor | .5 | | 2 | | 2.5 | .5 | | | | | | | | | | 6 | 227 |
| Pueblo I/ Basketmaker III | 390 | Cist 4, Floor | .5 | .5 | 4 | | 1 | .5 | | | | | .5 | | | | | 6 | 236 |

sample in the pithouse at 42Ws288, are consistently low (X=2.5%). Locally, creosote pollen percentages vary from 0.5 to 12% (X=5%) with traces only of mesquite pollen, or similar to the modern samples. Cheno-am pollen percentages vary from 11.5 to 54% (X=32%). High-spine composite pollen varies from 5 to 39.5% (X=19%) and Ambrosia-type composites average about 7%. Grass pollen is quite variable, ranging from 1.5 to 32/5% (X=8%), as is Ephedra, at 1.5 to 17.5% (X=6%). Traces of Zea occur in several samples and Cucurbita pollen was identified on the floor of Rockshelter 2 at site 42Ws395 and the storage Room floor at 42Ws390.

Percentages of several pollen types tend to contrast between sites 42Ws395 and 42Ws392, and others, rather markedly which may suggest somewhat different site functions and possibly something about the seasonality of occupations. Pine pollen percentages from 42Ws395 average about 9.5% while those from 42Ws392 are about 4.5%. The latter are more similar to the pine pollen percentages (X=2.5%) from sites 42Ws258, Ws245, Ws288, and Ws390. Cheno-am percentages are relatively low (X=20%) from 42Ws395 while those from other Pueblo II contexts average 44.5%. Ephedra is relatively high (X=10%) in the samples from 42Ws395. Site 42Ws395 is a complex habitation and storage site which includes three rockshelters that appear to have been a part of the site complex.

The extremely high grass percentage (32.5%) from the metate from Level 1 of Rockshelter 2 (42Ws395) suggests that grasses were harvested and processed at the site. The higher pine pollen percentages from 42Ws395 and the evidence of grass utilization tends to argue for at least a late spring/early summer occupation of the shelter.

High Scirpus and relatively high Salix pollen from the North Creek Gray vessel from the burial at 42Ws395 may suggest a spring, but more likely summer interment and the use of both plants in preparation or covering of the pit or possibly use as a body wrap. Pollen of the two riparian species, and additionally the trace of Typha, in the vessel may also indicate the vessel's use as a water container. The speculation that water might have been provided as part of the mortuary offering in the context of the extremely dry locale is particularly intriguing. Abundant high-spine composite pollen (35.%5) associated with the burial may suggest a somewhat later, possibly mid- to late summer interment.

Traces of Zea and Cucurbita pollen on the basal floor of the 42Ws395 Rockshelter 2 indicates that cultigens were likely processed at the site. This would, of course, occur during the middle to late summer/early fall months.

The contrasting low pine pollen percentages in most of the samples from sites 42Ws392, Ws258, Ws245, Ws288, and Ws390 are suggestive of much later, possibly fall/winter occupations. Most of the samples are from pithouses which, if temporarily abandoned and sealed during the late spring and summer months, would exhibit somewhat less pollen from plants that flower during the late spring and early to midsummer months.

In contrast to the rockshelter samples, the very high Cheno-am pollen percentages (X=44.5%) from the habitation sites suggests use of Chenopodium and/or Atriplex seeds and probably late summer/fall occupations. The high (54%) Cheno-am pollen from the floor of the storage room at 42Ws390 is particularly revealing, suggesting that *Chenopodium* and/or *Atriplex* were stored at the site. A trace of *Cucurbita* pollen occurs as well on the storage room floor. Elsewhere, *Cucurbita* pollen was identified in the Stratum 5 sample from 42Ws258, which is actually assessed as a limited activity site. The pollen type occurs only in the Pueblo II samples.

Trace amounts of *Zea* pollen occur in a number of samples from both the rockshelter and the habitation sites. The relatively high 5.5% *Zea* pollen from the bowl in the cist at site 42Ws245 suggests corn was stored and/or processed at the assessed storage site. Legume pollen is fairly well represented at several sites including 42Ws258, Ws245, Ws288, Ws392, and Ws390. Some of the pollen could be from *Phaseolus*, indicating that domestic beans were present, but the pollen could also be from any of the various legumes present today such as *Kameria* (ratany) or *Dalea*. Legume pollen is noticeably more limited in the rockshelter samples.

In sum, the Pueblo II samples suggest a fairly broad-based subsistence of both wild and domestic plant foods including corn, squash, and possibly beans. Wild plants likely included *Chenopodium* and/or *Atriplex*, grass seeds, cactus, *Ephedra*, *Scirpus* seeds, and possibly *Typha*, as well as a number of other species (Chamberlain 1911; Kelly 1964; Harrington 1967; Bye 1972).

The pollen evidence suggests that habitation sites with pithouses *may* have been periodically or seasonally abandoned during the late spring/early summer months. Possibly this occurred following the planting of domestic crops, when stored foods were at low ebb, and as edible wild plants were appearing. The appearance of such plants would have occurred successively with increasing elevations thus, possibly, for a time, taking populations further and further from winter habitats. Such a scenario must be further tested.

## Anasazi - Early Pueblo II Samples

Four samples were obtained from early Pueblo II contexts. They are from a metate from Stratum 2 at site 42Ws269, the floor of Cist 3 at 42Ws385 (Table 2), and two from the floor of Pithouse 1 at 42Ws395 (Table 3).

Pine pollen percentages (X=9.5%) are the highest of any of the samples, including those from the modern surface. Similarly, grasses (X=9.5%) are highest as well. The combination of high grass and pine pollen *may* suggest an early Pueblo II period of more mesic conditions. While the high pine pollen is owed to the pollen rain, grasses occur locally. Such an interpretation is made more plausible considering that none of the samples, individually, are excessively high, such as the 32.5% grass pollen from the metate from the Pueblo II context in the rockshelter at 42Ws395, hence none of the early Pueblo II samples suggest the utilization of grasses.

*Zea* occurs only in the Cist 3 floor sample from 42Ws385 and only the 50% Cheno-am pollen from the Pithouse 1 floor at 42Ws395 provides compelling evidence of plant utilization. The relatively high (2 and 3%) legume pollen from the pithouse floor at site 42Ws395 and Cist 3 at 42Ws385 *may* include that from *Phaseolus*. Mesquite pollen is slightly higher (4%) in the Cist 3 floor sample, which may suggest the plant was utilized (Bye 1972). The 7.5 and 8.5% *Ephedra* pollen from the pithouse at 42Ws395 and the metate from Stratum 2 at 42Ws269 may suggest use of the plant. Otherwise, the pollen data from early Pueblo II contexts is not particularly informative.

In sum, the high pine pollen and generally high grasses may indicate more mesic conditions at the ca. A.D. 850 to 950 periods. Horticulture was evidently practiced, Chenopodium and/or Atriplex, and Ephedra were likely utilized, and grass seeds and mesquite beans may have been harvested (Chamberlain 1911; Kelly 1964; Harrington 1967; Bye 1972).

## Anasazi - Late Pueblo I/Early Pueblo II Samples

Two samples were obtained from late Pueblo I/early Pueblo II contexts. They are from the floors of Cist 1 at site 42Ws397 and the pithouse at site 42Ws263 (Table 2).

The two samples are quite variable and together differ significantly from the early Pueblo II samples with the lower (X=4%) pine and (X=2.5%) creosote pollen. Grass pollen is fairly high (14%) in the Cist 1 floor sample from site 42Ws397, while the Cheno-am percentage from the pit structure floor at 42Ws263 is high (55.5%). Little or no Ambrosia-type composite pollen was identified in the two samples and Ephedra is quite low.

The samples are really rather uninformative, but in some ways they are intermediate between the earlier Pueblo I samples and those from subsequent Pueblo II contexts. For example, pine pollen percentages vary (X=2.5%, 4%, and 9.5%) for the three (Pueblo I, late Pueblo I/early Pueblo II. and early Pueblo II) sets of samples. Similarly, creosote pollen varies from X=1, 2.5%, and 5%; grasses are from X=7%, 8.5%, and 9.5%; and Ephedra varies from X=4%, 5%, and 6% for the three sets of samples.

Although none of the changes in pollen percentages are dramatic, all are gradual, and consistent. Such variations, particularly the increasing pine and grass pollen, may suggest increasingly more mesic conditions through the Pueblo I and II transition, culminating in what may have been generally optimal conditions of Pueblo II. Otherwise, the samples are not particularly informative.

In sum, Zea pollen on the Cist 1 floor at site 42Ws397 suggests horticulture was practiced, and the moderately high grass pollen from the cist may indicate that grass seeds were stored (Chamberlain 1911; Bye 1972). In contrast, the extremely high Cheno-am pollen on the floor of the pit house at 42Ws263 likely indicates Chenopodium and/or Atriplex were used at the site (Bye 1972). Contrasts between the two samples, high pine and grass pollen from site 42Ws397, and the low pine and high Cheno-am pollen from 42Ws263, may indicate seasonal differences in the two occupations. Similar to the comparison of the rockshelter at 42Ws395 and the habitation structures of the same Pueblo II period, the low pine and high Cheno-am pollen from the pithouse at 42Ws263 may suggest the structure was abandoned during the late spring/early to midsummer months and reoccupied later in the year when Chenopodium and Atriplex seeds became available. The higher pine and grass pollen may suggest that Cist 1 at 42Ws397 was in use earlier during the late spring and early to midsummer months.

## Anasazi - Pueblo I/II Samples

Four samples were obtained from Pueblo I/II contexts. These are either transitional or they are ill-defined, occurring during both periods. They are from the hearth at site 42Ws389, Hearth 1 in Locus 1 at 42Ws272, plaster from the granary wall at 42Ws284 (Table 2), and from the floor of Cist 6 at site 42Ws390 (Table 4).

Pollen percentages are essentially similar to those from the late Pueblo I/early Pueblo II samples, which may argue that they are transitional. Pine pollen percentages are fairly high in the two samples from 42Ws389 and 42Ws284, but curiously, pollen of the species is absent in the hearth sample from 42Ws390. Grass pollen is very low in all samples except for the quite high (21.5%) count from the granary wall plaster at 42Ws284. The only Zea from the Pueblo I/II samples was identified from the same granary sample. It is uncertain if the Zea pollen is due to storage of the cultigen or if the soil obtained for the plaster was from a nearby cornfield. The high grass pollen argues for storage of grass seeds in the cist and may suggest that corn was also stored. Curiously, Salix pollen occurs in three of the Pueblo I/II samples possibly indicating middle to late spring/early summer occupations at sites 42Ws389, Ws272, and Ws284. The relatively high pine percentages at 42Ws389 and 42Ws284 provide additional support for the early seasonal occupations. The absence of pine pollen in the hearth sample from 42Ws272 is not understood. However, the extremely abundant (40.5%) high-spine composite pollen in the same sample may suggest a much later seasonal occupation at the site.

In sum, the samples are only marginally informative, partly because of ambiguous dating, but also because the pollen data provides only limited information. Zea pollen at 42Ws284 indicates that corn was either stored in the granary at the site or that soil used for plaster was obtained from a nearby cornfield. The high grass pollen probably suggests that seeds were stored in the granary (Chamberlain 1911; Bye 1972). The representation of Salix in three of the samples (42Ws389, Ws272, and Ws284) may indicate middle to late spring/early summer occupations, but the abundant high-spine composites from 42Ws272 suggest a mid to late summer occupation at the site as well. Ephedra may have been utilized at sites 42Ws389 and 42Ws284 (Harrington 1967; Bye 1972) and Chenopodium and/or Atriplex were apparently in use at 42Ws390 (Bye 1972). The cactus pollen from 42Ws390 suggest use of the plant (Kelly 1964).

## Anasazi - Pueblo I Samples

Fifteen samples were obtained from Pueblo I contexts. They are from the floors of Cists 1 and 3 at site 42Ws395 (Table 3); two from the pithouse floor, including one from a slab feature, and one from Cist 2 at site 42Ws392 (Table 4); three from pithouse floor features and from the floors of Cists 6, 7, and 8 at site 42Ws388; Cists 1 and 3 at site 42Ws268; and two from the Cist 1 floor, including a North Creek Gray vessel, at site 42Ws386 (Table 5).

Pollen percentages from the samples are quite variable. Pine percentages are quite low, ranging from 0.5% to 6% (X=2.5%). Creosote pollen varies from 0.5% to 41% (X=7%). Grass pollen varies from 1.5% to 28.5% (X=7%). Cheno-am pollen varies 8.5% to 63% (X=6.5%). Ambrosia-type composite pollen varies from 0.5% to 31% (X=6.5%). High-spine composite pollen varies 6% to 40% (X=20.5%). Ephedra pollen varies 0.5% to 22.5% (X=4%). Other pollen types generally occur in minor percentages.

Table 5

**Relative Pollen Percentages of Quail Creek Pueblo I Anasazi Samples**

| DATING | SITE | PROVENIENCE | AP | | | | | | | NAP | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | COMPOSITAE | | | |
| | | | *Pinus* | *Juniperus* | *Prosopis* | *Larrea* | *Quercus* | *Populus* | *Salix* | *Zea* | GRAMINEAE | Cheno-Ams | *Sarcobatus* | *Ambrosia* type | *Artemisia* | High Spines | *Liguliflorae* |
| Pueblo I | 388 | Pithouse 2, Slab Feature | 3.5 | 3.5 | 1.5 | 10 | | | .5 | | 6.5 | 40.5 | | 3.5 | .5 | 20 | |
| | | Pithouse 2, Basin 1 | .5 | 1.5 | .5 | 6 | | 1 | 1.5 | | 9 | 45 | | 6 | .5 | 18.5 | |
| | | Pithouse 2, Basin 2 | 1 | 2.5 | 1 | 2 | 1 | | | | 7.5 | 43 | | 6.5 | | 27.5 | |
| | | Cist 8, Floor | 2.5 | 2.5 | 3 | 6 | | | .5 | .5 | 7.5 | 39 | | 3.5 | | 17.5 | |
| | | Cist 7, Floor | 4.5 | 1.5 | 1 | 9 | | | | | 4.5 | 53 | | 2.5 | .5 | 16.5 | |
| | | Cist 6, Floor | .5 | 5 | 4 | 1 | | | | .5 | 28.5 | 8.5 | | 11 | | 15 | |
| | 268 | Cist 1, Fill | .5 | 1 | 1 | 4.5 | | | | | 5 | 44.5 | | .5 | 1 | 35.5 | |
| | | Cist 3, Floor | 1.5 | 4 | .5 | 3.5 | | | | | 5.5 | 49.5 | | 1.5 | .5 | 27.5 | |
| | 386 | Cist, Floor | 5 | | 2 | 1.5 | .5 | | | 1 | 4.5 | 23.5 | .5 | 31 | | 21.5 | |
| | | Cist, Floor North Creek Gray Vessel | 1 | 1.5 | 1 | 6 | 1.5 | | .5 | 1 | 3 | 62 | | 1 | .5 | 19.5 | .5 |
| Pueblo I/ Basketmaker III | 257 | Pithouse, Floor 1 | 3 | .5 | | 16 | | | .5 | | 3 | 46.5 | | 3 | .5 | 11 | |
| | 387 | Pithouse, Floor | 6 | 1 | .5 | 4 | | | | | 8.5 | 29 | | .5 | | 37 | |

Table 5 (continued)

| DATING | SITE | PROVENIENCE | NAP | | | | | | | | | | | | | | Unidentified | N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | MALVACEAE | cf. *Cleome* | *Ephedra* | ROSACEAE | CACTACEAE | CAPRIFOLIACEAE | CRUCIFERAE | LEGUMINOSAE | LILACEAE | ONAGRACEAE | POLYGONACEAE | *Eriogonum* | SAXIFRAGACEAE | SCROPHULARIACEAE | | |
| Pueblo I | 388 | Pithouse 2, Slab Feature | | 1.5 | 3 | | .5 | | | .5 | .5 | | | | | | 5.5 | 238 |
| | | Pithouse 2, Basin 1 | | 1.5 | .5 | 1 | | | .5 | .5 | | | | | | | 6.5 | 226 |
| | | Pithouse 2, Basin 2 | | 1.5 | 2 | 1 | | .5 | | .5 | | | | | .5 | | 3 | 217 |
| | | Cist 8, Floor | | 1.5 | 8 | 4 | .5 | | | 1 | | | | 1 | .5 | .5 | 6.5 | 212 |
| | | Cist 7, Floor | | | 2 | | | | | .5 | 1 | | | | | | 3 | 220 |
| | | Cist 6, Floor | 1.5 | | 6 | | | 1 | | 8.5 | | | 1 | | | | 9.5 | 201 |
| | 268 | Cist 1, Fill | | | 1.5 | | | | | .5 | 1.5 | | | | | | 3.5 | 206 |
| | | Cist 3, Floor | | 1 | 3 | | | | | .5 | | | | | | | 1.5 | 203 |
| | 386 | Cist, Floor | | | 1 | .5 | 9.5 | | | .5 | | | | | | | 4 | 222 |
| | | Cist, North Creek Gray Vessel | | | 4 | .5 | | | .5 | 2 | | | | | | | 4.5 | 210 |
| Pueblo I/ Basketmaker III | 257 | Pithouse, Floor 1 | | 2 | 7 | | | | | 1.5 | | | | 1 | | | 4.5 | 248 |
| | 387 | Pithouse, Floor | | | 3 | | | | | | .5 | .5 | | | | | 6 | 208 |

In general, pine and creosote pollen percentages are the lowest of all the samples except for the low pine in the late Pueblo II sample. Grass and Cheno-am pollen is at or slightly above the average of all the samples. Similarly, composite pollen, of both types, is about average and Ephedra is slightly below the average of all the samples.

A number of individual samples suggests plant use. Grass pollen is extremely high (28.5%) in a single sample from the floor of Cist 6 at site 42Ws388; this may suggest the storage of grass seeds (Chamberlain 1911; Bye 1972). Cheno-am pollen is exceptionally high, suggesting the use of Chenopodium and/or Atriplex (Bye 1972) at a number of sites, including: Cist 3 floor (63%) at 42Ws395; the slab feature in the pithouse floor (41%) at 42Ws392; the slab feature and Basins 1 and 2 (40.5%, 45%, and 43%) in Pithouse 2 plus the Cist 7 floor (53%), at 42Ws388; Cist 1 fill (44.5%) and Cist 3 floor (49.5%) at 42Ws268; and the North Creek Gray vessel (52%) from the floor of Cist 1 at site 42Ws386. Several of the high-spine composite percentages are unusually high, including: the pithouse floor (40%) at site 42Ws392, Basin 2 (27.5%) in Pithouse 2 at 42Ws388, and Cist 1 fill (35.5%) and Cist 3 floor (27.5%) at 42Ws268. The high spines may include Helianthus (sunflower) which were too poorly preserve to identify as species. Otherwise, specific utilized composites are not identified in the pollen record.

The few other plants which, from the pollen record, were likely utilized include cactus from the Cist 1 floor sample (4.5%) from 42Ws395 and from the Cist 1 floor (3.5%) from 42Ws386, and Ephedra in the pithouse slab feature (22.5%) from 42Ws392. The rather high (41%) creosote pollen percentage on the floor of Cist 2 from site 42Ws392 may indicate use of the plant in cist construction. Trace amounts of Zea were identified in only four samples (42Ws388, Ws268, and Ws386). The high (8.5%) legume pollen from the floor of Cist 6 at 42Ws388 may include Phaseolus.

Again, similar to other sets of Anasazi samples, the pollen evidence points to a broad-based subsistence consisting of both domestic and wild plant foods. The high Cheno-am pollen in many of the samples suggests the probable use of both Chenopodium and Atriplex. The general lack of evidence of grass usage in the component is particularly surprising considering the substantial evidence from subsequent periods. The generally low pine pollen, the relative lack of grass, and the very few samples with Salix may suggest that many of the Pueblo I habitation sites were abandoned or at least unoccupied during the middle to late spring and early summer months. The relative lack of these species, as well as pine, could also be interpreted to indicate a period of more xeric conditions.

## Anasazi - Pueblo I/Basketmaker III Samples

Three samples were obtained from Pueblo I/Basketmaker III contexts. These may be either transitional or they are temporally ill-defined. They are from the fill of Cist 4 at 42Ws390 (Table 4), Floor 1 of the pithouse at 42Ws257, and the pithouse floor at 42Ws387 (Table 5).

The samples are rather uninformative except that cresote pollen is relatively more abundant (X=10.5%), as are the high-spine composites (X=26%), than in the other sets of samples, including those from the modern surface. This could be nothing more than the lessening of constraints imposed on the two pollen types as a result of lower pollen percentages of other species. Indeed, grass and _Ambrosia_-type composite pollen are low, while pine, Cheno-ams, and _Ephedra_ are about average. Also, similar to other sets of samples including late Pueblo II, fewer species are represented. Curiously, no cultigen pollen was identified.

Only the sample from Floor 1 of the pithouse at site 42Ws257 provides some indication of plant utilization. This includes the 16% creosote pollen (probably used in pit structure construction), 46.5% Cheno-ams, and 7% _Ephedra_. Other pollen percentages are not particularly meaningful beyond the identification of the various species.

## SUMMARY AND DISCUSSION

The Quail Creek Project pollen data is relatively complacent except for marked differences between the sets of modern and cultural samples and the several minor variations in the prehistoric record. However, the averaging of samples for each cultural component, including subcomponents (Fig. 1) suggests some general trends of changing pollen percentages of various plant taxa and that several such trends are fairly gradual and consistent. Further, the combining and averaging of various pollen types by period (Fig. 2) may suggest several points in the record when economic pollen types were most abundant. Economic types include taxa both directly (cultigens) and _potentially_ utilized (such as possible cultivars). Many of the latter species are ever-present invaders of horticultural plots as well as of other disturbed soils.

Grass pollen percentages gradually increase from 4.5% in Basketmaker III/Pueblo I times (ca. A.D. 600 to 950), to 9.5% in early Pueblo II (ca. A.D. 850 to 950) and then gradually diminish to 5% in the ca. A.D. 1600 - 1800 late Southern Paiute samples. _Ephedra_ pollen percentages gradually increase from 4 to 4.5%, to 6% over the same period, but culminate in the highest percentage (7%) by late Pueblo II times (ca. A.D. 1100 to 1150), and then decrease to 4% in the late Southern Paiute samples. _Ambrosia_-type composites are highest (6.5% to 7.5%), with the exception of only traces in the two late Pueblo I/early Pueblo II samples, from Pueblo I to middle to late Pueblo II (ca. A.D. 700 to 1150). Pine pollen percentages are quite low in all samples, but are highest (9.5%) during early Pueblo II times (ca. A.D. 850 to 950). Cheno-am and high-spine composite percentages are very high in all of the prehistoric samples, as compared to those from the modern surface. Cheno-ams are highest (45%) during late Pueblo I/early Pueblo (ca. A.D. 700 to 850), and again (45.5%) in the late Pueblo II sample (ca. A.D. 1100 to 1150). Creosote pollen percentages are highest both early and late over the prehistoric temporal spectrum.

The high grass and pine pollen, of which most of the latter is pinyon, during early Pueblo II (ca. A.D. 850 to 950) times may suggest a period of more mesic conditions, particularly of greater summer rainfall. Such an interpretation is consistent with Petersen's (1981:105) observations in the La Plata Mountains where increases in pinyon pine pollen are interpreted as indicating increased summer rainfall. Greater horticultural success might be predicted for the time. Cheno-am pollen, highest during both late Pueblo I/early Pueblo II (ca. A.D. 700 to 850), and again in late Pueblo II (ca. A.D.

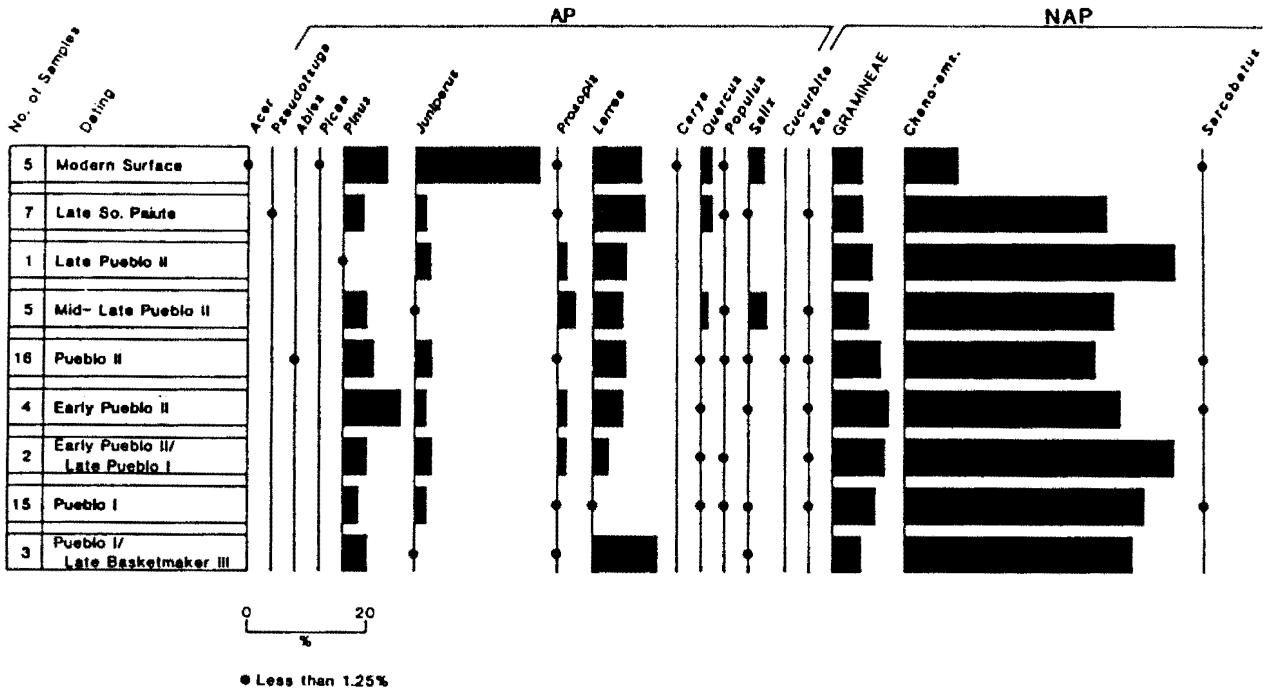


Figure 1 (continued)

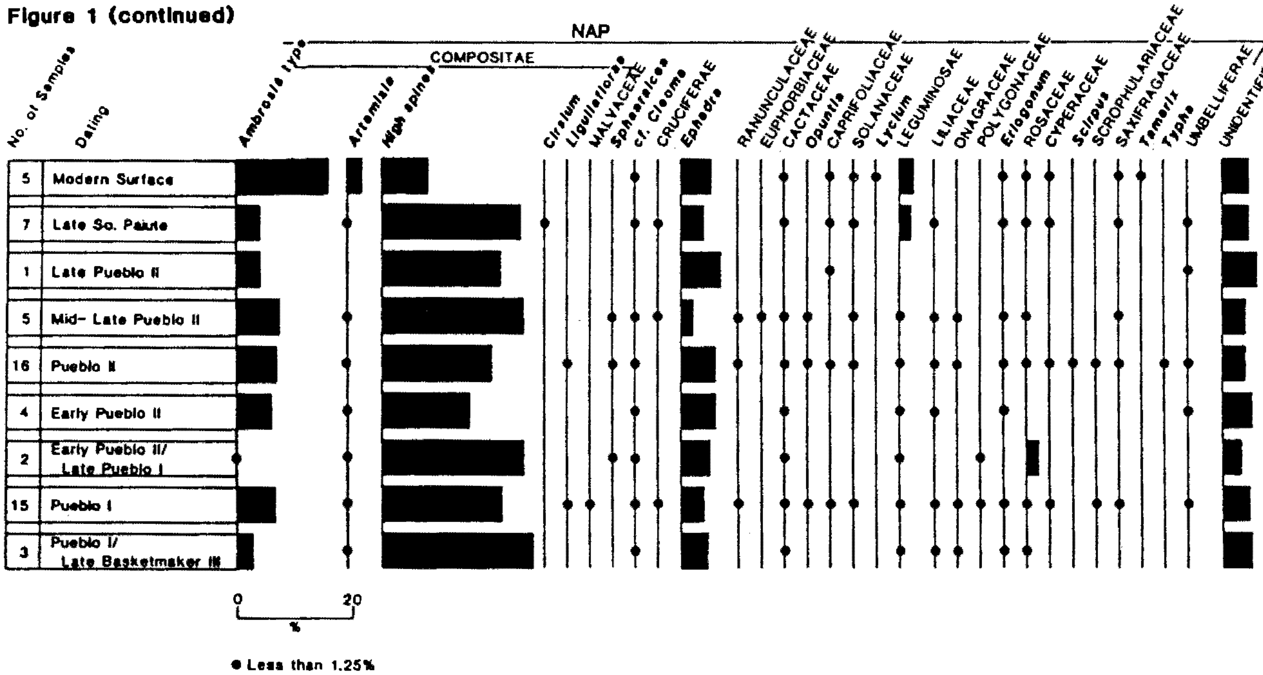


Figure 1. Pollen diagram of mean relative percentages of modern and cultural samples.

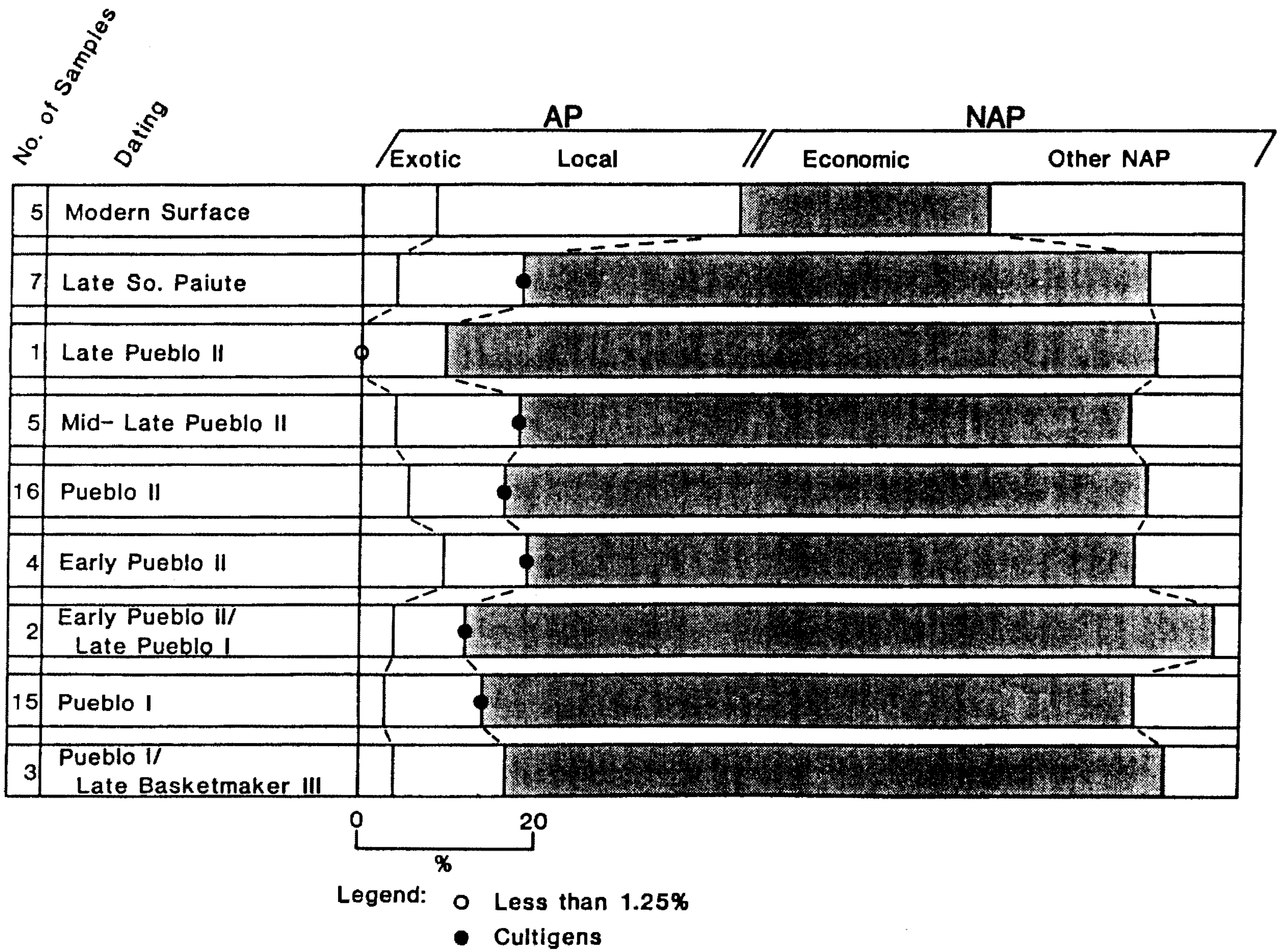


Figure 2. AP/NAP. Summary of selected modern and cultural samples.

1100 to 1150), may indicate a heavier direct use of such species during the two periods. Cheno-am pollen traditionally occurs in considerable abundance in many or most samples from Western (or Virgin) Anasazi sites (Scott 1981:103, 1985:182; Lindsay 1986; Lindsay and Fountain 1985:237), as well as numerous other Anasazi sites commonly associated with horticulture. The high Cheno-am pollen percentages contrast markedly with the modern samples suggesting that far different conditions from those of prehistoric times obtain for today. Trace amounts of corn pollen occur in both the late Pueblo I/early Pueblo II and early Pueblo II samples, as well as in samples of other periods, but not in the late Pueblo II sample. The absence of corn from the latter is probably because the final period of Quail Creek Anasazi occupation is represented only by a single sample.

Overall, during Anasazi times, economic pollen types occur in extremely high percentages with peaks during late Pueblo I/early Pueblo II and again during late Pueblo II, while more mesic conditions (based on high grass and pine) occur during late Pueblo I/early Pueblo II and in the early Pueblo II samples. The reduction of pine pollen (an exotic aboreal type) to a trace amount in the late Pueblo II sample could mean a reduction in either annual or summer moisture (or both) and, if so, this certainly may have implications for subsistence and possibly settlement. Caution is warranted, however, in part because of the limited sampling. The two lines of evidence (increased moisture and the representation of economic pollen types), taken together, may be interpreted as indicating a potentially more productive period of subsistence, whether horticulture or plant collecting, during late Pueblo I and early Pueblo II. Noticeably, the large majority of samples are from Pueblo I and Pueblo II contexts.

The low pine pollen on the floors of Anasazi pithouses, while the type occurs in substantially greater amounts in the rockshelters, may suggest that by roughly June of at least some years, houses were abandoned and sealed for a time in favor of other habitats. Possibly, once cultigens were planted at Quail Creek, other forms of subsistence were sought at the higher elevations of the scrub oak chaparral some 10 to 20 miles to the north, as well as in the Pine Valley Mountains. Such seemingly plausible propositions, however, need to be extensively tested.

The high _Salix_ pollen associated with the middle to late Pueblo II sample and from the vessel from the Pueblo II burial probably suggest either that willow was used in burial pit construction and/or that interment occurred in the spring during that time when surplus foods were likely at a minimum and before other foodstuffs were yet available. That _Typha_ and _Scirpus_ pollen also occur in the latter sample may also suggest that water may have been part of the mortuary offering in this extremely dry and seemingly inhospitable environment. The high evening primrose pollen from the middle to late Pueblo II burial may well suggest that flowers of the plant were included as a part of the mortuary offering. Sampling of other Anasazi burials in the lower Sonoran is absolutely necessary to obtain an adequate understanding of such possible burial practices.

Little difference is obtained between the late Southern Paiute samples and those, on the average, from Anasazi contexts. Southern Paiute subsistence may have essentially been little modified from that of their Anasazi predecessors given the similarities of pollen percentages and that corn pollen, albiet a single grain, was identified from a Paiute context. Apparently, principal environmental change occurred quite late in the region. Such change, principally in the forms of considerably increased juniper and low-spine composites and a marked reduction of Cheno-ams, as well as diminished high-spine composites, is probably associated with the middle to late nineteenth century overgrazing and consequent arroyo cutting (Cottam and Stewart 1961). The pollen data from Quail Creek, somewhat removed from the actual locales where this occurred, seems to provide an indication of just how intense was the cause and how dramatic were the effects of these phenomena.

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## APPENDIX III

## SEEDS OF CHANGE? MACROFOSSIL ANALYSIS AND INTERPRETATION FROM QUAIL CREEK.

By Kathleen M. Heath

## INTRODUCTION

The macrofossil remains recovered from twenty-six sites are an integral part of the Quail Creek Archeological Project. Until now, few flotation samples have been collected and analyzed within the Western Anasazi region (see Newman, 1986 for report). For this reason, the initial goal was to determine the preservation and possible usefulness of pursuing macrofossil analysis in this area. Setting this problem aside, the primary objectives for this research are threefold: 1) document the taxa and frequency of botanical remains recovered from prehistoric features, 2) tease apart the relationship between wild and domesticated plant resources through time, and 3) begin to understand the array of subsistence activities occurring within sites as well as between sites.

### Methodology

The sampling strategy involves the recovery of bulk soil samples collected from inferable archeological features such as hearths, roasting pits, floors, cists, vessels and burials. Other samples were also collected from ash layers within stratified levels. The bulk samples (approximately 1 liter) were collected from 50 cm. square units, or entirely collected from features of lesser dimensions. The samples were then returned to the International Learning and Research laboratory of Southern Utah State College for processing. A total of sixty samples from twenty-six sites were selected for analysis. A complete list of the site number, sample number, code, feature and associated dating of these samples is compiled in Table I.

The samples were processed in the laboratory by means of a mechanical froth flotation device similar to that developed by Clements (1982) at the University of Utah Archeological Center. The bulk sample was initially sifted through a 2.38 mm. geological screen. The material not passing the screen (the dry fraction) was not processed through the flotation device, but rather bagged and set aside for future examination. The remainder of the material was systematically processed by the froth flotation technique as described by Jarmen, Legge and Charles (1982). The result was the recovery of 1) the light fraction which is the buoyant material that floats to the top of the chamber, and 2) the heavy fraction or the material which sinks to the bottom. Each fraction was then individually passed through a 0.3 mm. screen, emptied onto a newspaper, and allowed to dry for several days. The light fraction was then examined using a binocular dissecting microscope equipped with a 15-45 X variable power gauge. The macrofossils were hand-picked from the light fraction and placed in vials for identification. Due to time and financial constraints, the dry and heavy fractions were not examined.

TABLE I

PROCESSED MACROFOSSIL SAMPLES

| SITE # | SAMPLE# | CODE | PROVENIENCE | DATING |
|---|---|---|---|---|
| 42Ws245 | 1947-15 | 1 | Storage Cist/Floor | Early Pueblo II |
| 42Ws256 | 1968-24 | 2 | Pithouse/Floor 1/Ash | Western Anasazi/Southern Paiute |
| 42Ws257 | 1969-31 | 3 | Pithouse/Use level 1/Ash | Pueblo I |
| | 1969-42 | 4 | Pithouse/Floor 1/Ash | Pueblo I |
| 42Ws258 | 1970-23 | 5 | Stratum 5/Ash | Mid-late Pueblo II |
| 42Ws260 | 1974-13 | 6 | Trench 2/Hearth | Southern Paiute |
| 42Ws263 | 1956-32 | 7 | Hearth Area 1 | Pueblo/Western Anasazi |
| | 1956-46 | 8 | Pithouse/Fill 1 | Pueblo/Western Anasazi |
| | 1956-47 | 9 | Hearth 2/Fill | Pueblo/Western Anasazi |
| | 1956-59 | 10 | Hearth 1/Fill | Pueblo/Western Anasazi |
| 42Ws267 | 1977-18 | 11 | Trench 2/Hearth | Southern Paiute |
| 42Ws268 | 1978-28 | 12 | Cist 2/Floor | Pueblo I |
| | 1978-70 | 13 | Cist 3/Floor | Pueblo I |
| | 1978-76 | 14 | Cist 3/Floor/Ash | Pueblo I |
| | 1978-82 | 15 | Cist 1/Intrusive pit fill | Pueblo I |
| | 1978-128 | 16 | Pithouse/Hearth | Pueblo I |
| | 1978-129 | 17 | Roasting pit fill | Pueblo I |
| 42Ws269 | 1981-25 | 18 | Slab Surface 2/Fill 1 | Early Pueblo II |
| 42Ws272 | 1962-27 | 19 | Locus 1/Ash | Pueblo I/II |
| 42Ws274 | 1964-4 | 20 | Locus 1/Charcoal | Prehistoric |
| 42Ws280 | 1946-10 | 21 | Hearth Area 1/Fill | Southern Paiute |
| 42Ws284 | 1967-2 | 22 | Granary/Plaster | Western Anasazi |
| 42Ws288 | 1951-36 | 23 | Hearth Area 1/Fill | Mid-late Pueblo II |
| | 1951-141 | 24 | Room 1/Floor | Mid-late Pueble II |
| | 1951-155 | 25 | Roasting pit/Fill 1 | Mid-late Pueblo II |
| | 1951-270 | 26 | Room 2/Hearth | Mid-late Pueblo II |
| | 1951-415 | 27 | Pithouse/Hearth | Mid-late Pueblo II |
| 42Ws289 | 1963-13 | 28 | Pithouse/Floor | Western Anasazi |
| 42Ws318 | 1985-2 | 29 | Roasting pit/Fill | Pueblo I |
| 42Ws319 | 1988-5 | 30 | Hearth/Fill | Southern Paiute |
| 42Ws385 | 1959-22 | 31 | Cist 3/Floor | Western Anasazi |
| | 1959-24 | 32 | Cist 2/Floor | Western Anasazi |
| 42Ws386 | 1960-6 | 33 | Roasting pit/Fill | Late Pueblo I/Early Pueblo II |
| | 1960-11 | 34 | Cist/Floor | Late Pueblo I/Early Pueblo II |
| 42Ws387 | 1984-60 | 35 | Pithouse/Floor | Basketmaker III |
| 42Ws388 | 1983-151 | 36 | Cist 5/Floor | Pueblo I |
| | 1983-196 | 37 | Pithouse 2/Hearth | Pueblo I |
| | 1983-275 | 38 | Pithouse 2/Floor | Pueblo I |
| | 1983-160 | 39 | Roasting pit/Fill | Pueblo I |
| | 1983-45 | 39.1 | Roasting pit/Fill | Pueblo I |
| | 1983-162 | 39.2 | Roasting pit/Fill | Pueblo I |
| | 1983-158 | 39.3 | Roasting pit/Fill | Pueblo I |
| 42Ws389 | 1949-8 | 40 | Hearth 1/Fill | Western Anasazi/Southern Paiute |
| 42Ws390 | 1945-120 | 41 | Cist 4/Fill 1 | Mid-late Pueblo II |
| | 1945-163 | 42 | Pithouse/Fill 1 | Mid-late Pueblo II |
| | 1945-177 | 43 | Pithouse/Use deposit 1 | Mid-late Pueblo II |
| 42Ws392 | 1941-202 | 44 | Isolated Hearth 1/Ash | Pueblo II |
| | 1941-240 | 45 | Refuse pit 2/Fill | Late Pueblo II |
| | 1941-290 | 46 | Pithouse/Floor 3/Hearth | Pueblo II |
| | 1941-482 | 47 | Pithouse/Floor 1/Use deposit | Pueblo I |
| | 1941-570 | 48 | Burial 1/Below intestinal area | Late Pueblo II |
| | 1941-588 | 49 | Burial 1/No. Creek Corrugated Vessel | Late Pueblo II |
| 42Ws395 | 1979-270 | 50 | Cist 1/Floor | Pueblo I |
| | 1979-366 | 51 | Roomblock 1/Room 3/Floor | Mid-late Pueblo II |
| | 1979-549 | 52 | Rockshelter 2/Hearth 5 | Mid-late Pueblo II |
| | 1979-711 | 53 | Burial/Below Intestinal area | Mid-late Pueblo II |
| | 1979-865 | 54 | Pithouse 1/Hearth | Pueblo I/II |
| 42Ws397 | 1987-29 | 55 | Cist 1/Floor | Pueblo I |
| | 1987-40 | 56 | Cist 2/Floor | Pueblo I |
| 42Ws1208 | 1978-91 | 57 | Rock Ring | Southern Paiute |

The recovered macrofossils consisted primarily of seeds, but also included Zea mays cob fragments, Cucurbita spp. fruit and stem fragments, florets and Juniperus spp. terminal budscale. The identification process was initiated by consulting seed identification manuals (Albee 1980; Arnow, Albee and Wycoff 1980; Martin and Barkley 1961). Seed manuals, however, only direct one to a limited number of possible plant species while eliminating several others. At this point, a comparative seed collection was employed to qualify the identification (see Heath 1986, the author compiled this seed collection throughout the State of Utah during the summer and fall of 1983). A seed collection accummulated by project personnel during the Quail Creek excavations was also utilized for comparative purposes. A portion of the modern seeds were charred as an aid in the identification of the charred specimens recovered from the archeological record.

## Results

A total of fifteen samples (25%) of the sixty samples selected for processing were barren of seeds or other identifiable macrofossil remains. These fifteen samples were collected from seven cists, four pithouse ash deposits or fills, two from a roasting pit, one hearth and one slab surface. This reduced the productive samples to forty-five recovered from twenty-two sites.

The forty-five productive samples produced 491 botanical remains. Table II lists a complete taxanomic affiliation of the identifiable remains including family, botanical name (genera/species) and common name. Due to the morphological condition of the specimens, identification to the level of species (and in some cases genera) was not always possible. The identified macrofossils are members of twenty-one families and twenty-six different taxa. As Table II indicates, twelve taxa were recovered in charred and unburned form, six were charred, while eight were present as unburned specimens only.

The types, provinence, and frequencies of the charred macrofossils remains are listed in Table III while the unburned remains are listed in Table IV. The taxa in both tables are categorized as whole or fragmented. Samples which were barren of botanical remains are marked by an asterisk and are left void.

The charred botanical remains total 302 specimens and are dominated by ninety-three Zea mays (corn) cob fragments recovered from twelve samples from eight sites. Amaranthus spp. (pigweed) has the second highest frequency among the charred remains and all were recovered from Hearth 5 located in Rockshelter 2 at site 42Ws395. Seven of the forty-five samples producing macrofossils did not contain charred remains.

A total of 189 botanical remains were recovered in unburned form and are dominated by forty-nine specimens of Chenopodium spp. (goosefoot). All of the unburned Chenopodium spp. seeds were recovered from features not containing copious quantities of ash or charcoal. However, sixty-one specimens were recovered in unburned form from nine different charred or ashy contexts (see samples 2, 5, 17, 20, 21, 30, 31, 41 and 50) and should be viewed as contamination.

TABLE II

IDENTIFIED MACROFOSSILS FROM QUAIL CREEK

| Family | Botanical Name | Common Name |
|---|---|---|
| AMARANTHACEAE | *Amaranthus spp. | Pigweed |
| ANACARDIACEAE | -Rhus c.f. trilobata | Sumac |
| APIACEAE | *Genera/species unknown | Umbel |
| ASTERACEAE | -Genera/species unknown<br>-Ambrosia spp.<br>*Helianthus annuus | Achene<br>Ragweed<br>Sunflower |
| BRASSICACEAE | *Lepidium spp. | Peppergrass |
| CACTACEAE | +Echinocereus spp. | Cactus |
| CHENOPODIACEAE | *Chenopodium spp. | Goosefoot |
| CUCURBITACEAE | *Cucurbita spp. | Squash |
| CUPRESSACEAE | -Juniperus spp. | Juniper |
| CYPERACEAE | *Scirpus spp. | Bulrush |
| EUPHORBIACEAE | *Euphorbia spp. | Spurge |
| FABACEAE | +Phaseolus vulgaris | Bean |
| FAGACEAE | +Quercus spp. | Oak |
| MALVACEAE | *Sphaeralcea spp. | Globemallow |
| OROBANCHACEAE | +c.f. Genera/species unknown | Broomrape |
| POACEAE | *Genera/species unknown<br>-Bromus tectorum<br>*Zea mays | Grass<br>Cheatgrass§<br>Corn |
| POLYGONACEAE | -Eriogonum spp. | Buckwheat |
| PORTULLACACEAE | *Portulaca oleracea | Purslane |
| RUBIACEAE | +Galium c.f. trifidum | Bedstraw |
| SOLANACEAE | +Nicotiana spp.<br>-Physalis spp. | Tobacco<br>Groundcherry |
| ZYGOPHYLLACEAE | -Larrea tridentata | Creosote |

* = Charred and unburned present
+ = Charred only present
- = Unburned only present
§ = Introduced species

TABLE III

PROVENIENCE OF THE CHARRED MACROFOSSILS

| | | *Zea mays* cob (f) | *Zea mays* kernels (f) | *Phaseolus vulgaris* (f) | *Cucurbita* spp. stem (f) | *Nicotina* spp. (w) | *Amaranthus* spp. (w) | *Amaranthus* spp. (f) | *Chenopodium* spp. (w) | *Chenopodium* spp. (f) | *Helianthus annuus* (w) | *Portulaca oleracea* (w) | *Lepidium* spp. (w) | *Galium* c.f. *trifidum* (w) | *Sphaeralcea* spp. (w) | *Echinocreus* spp. (w) | *Euphorbia* spp. (w) | *Quercus* spp. (f) | *Scirpus* spp. (w) | APIACEAE (w) | OROBANCHACEAE (w) | POACEAE (f) | Unidentifiable | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 42Ws245 | 1* | | | | | | | | | | | | | | | | | | | | | | | |
| 42Ws256 | 2 | 10 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 10 |
| 42Ws257 | 3* | | | | | | | | | | | | | | | | | | | | | | | |
| | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | 1 |
| 42Ws258 | 5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 |
| 42Ws260 | 6 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | 5 |
| 42Ws263 | 7 | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | 1 |
| | 8* | | | | | | | | | | | | | | | | | | | | | | | |
| | 9 | - | - | - | - | - | - | - | - | - | 1 | 2 | - | - | - | - | - | - | - | - | - | - | - | 3 |
| | 10 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 2 | - | - | 2 |
| 42Ws267 | 11 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | 1 | - | 2 |
| 42Ws268 | 12* | | | | | | | | | | | | | | | | | | | | | | | |
| | 13* | | | | | | | | | | | | | | | | | | | | | | | |
| | 14* | | | | | | | | | | | | | | | | | | | | | | | |
| | 15* | | | | | | | | | | | | | | | | | | | | | | | |
| | 16 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 |
| | 17 | 10 | 1 | - | - | - | - | - | - | - | - | - | 2 | - | - | - | - | - | - | - | - | - | - | 13 |
| 42Ws269 | 18* | | | | | | | | | | | | | | | | | | | | | | | |
| 42Ws272 | 19 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 |
| 42Ws274 | 20 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 |
| 42Ws280 | 21* | | | | | | | | | | | | | | | | | | | | | | | |
| 42Ws284 | 22 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 |
| 42Ws288 | 23 | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 |
| | 24 | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | 4 | 5 |
| | 25 | 15 | 5 | - | - | - | - | - | - | - | - | 2 | - | - | - | - | - | - | - | - | - | - | - | 22 |
| | 26 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 3 | - | - | - | - | - | - | - | 3 |
| | 27 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 2 | 2 |
| 42Ws289 | 28* | | | | | | | | | | | | | | | | | | | | | | | |
| 42Ws318 | 29 | - | - | - | - | - | - | - | - | - | - | 2 | - | - | - | - | - | - | - | - | - | - | - | 2 |
| 42Ws319 | 30 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 2 | - | - | - | - | - | - | 2 |
| 42Ws385 | 31 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 |
| | 32 | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 |
| 42Ws386 | 33 | 4 | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | 5 |
| | 34 | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 |
| 42Ws387 | 35 | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 |
| 42Ws388 | 36* | | | | | | | | | | | | | | | | | | | | | | | |
| | 37 | - | - | - | - | - | - | - | 3 | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | 4 |
| | 38 | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 |
| | 39 | - | - | - | - | - | - | - | - | - | - | - | - | 4 | - | - | - | - | - | - | - | - | - | 4 |
| | 39.1* | | | | | | | | | | | | | | | | | | | | | | | |
| | 39.2* | | | | | | | | | | | | | | | | | | | | | | | |
| | 39.3 | 3 | - | - | - | - | - | - | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 5 |
| | 40 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | 1 | 2 |
| 42Ws390 | 41 | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 |
| | 42* | | | | | | | | | | | | | | | | | | | | | | | |
| | 43 | - | - | - | - | - | - | - | - | 1 | - | - | - | 1 | - | - | - | - | - | - | - | - | - | 2 |
| 42Ws392 | 44 | - | 7 | - | - | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 9 |
| | 45 | 24 | - | 1 | 7 | - | - | - | 5 | 2 | - | - | - | - | - | - | - | - | - | - | - | - | 13 | 52 |
| | 46 | 15 | 2 | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 19 |
| | 47 | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 10 | - | 1 | 12 |
| | 48 | - | - | - | - | - | - | - | 2 | 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | 5 |
| | 49 | - | - | - | - | - | - | - | 4 | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | 6 |
| 42Ws395 | 50 | - | - | - | - | - | - | - | 1 | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | 2 |
| | 51 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 |
| | 52 | - | - | - | - | - | 53 | 19 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 3 | 75 |
| | 53 | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 |
| | 54 | 5 | - | - | - | - | - | - | 6 | - | - | - | 2 | - | - | - | - | - | - | - | - | - | - | 13 |
| 42Ws397 | 55 | - | - | - | - | - | - | - | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 2 |
| | 56* | | | | | | | | | | | | | | | | | | | | | | | |
| 42Ws1208 | 57 | - | - | - | - | - | - | - | 1 | - | - | 3 | - | - | - | - | - | - | - | 1 | - | - | - | 5 |
| TOTAL | | 93 | 15 | 3 | 7 | 2 | 53 | 19 | 30 | 10 | 2 | 10 | 6 | 5 | 1 | 3 | 2 | 2 | 1 | 1 | 12 | 1 | 24 | 302 |

* = indicates no macrofossils recovered from sample
(f) = fragment
(w) = whole

## Discussion

The initial purpose for collecting and analyzing macrofossils from Quail Creek was to address the issue of preservation. Only one other macrofossil study has been undertaken within the Western Anasazi region. This study was from South Creek, a single site, and had only nine samples collected. As Newman (1986) reported, the preservation was poor producing virtually no data for interpretation. Partly for this reason, the decision was made to pursue macrofossil analysis from the Quail Creek complex. Financial and time constraints limited the ability to extensively collect samples from each site; nevertheless, a general interpretation is possible based on the material recovered from the area. These interpretations should be viewed cautiously because of the limited number of samples analyzed per site and the lack of other macrofossil collections in this region.

### CHARRED VERSUS UNBURNED SEEDS FROM THE ARCHEOLOGICAL RECORD

The major problem with interpreting plant macrofossils is the difficulty in identifying remains introduced by aboriginal human behavior versus those introduced into the site by noncultural processes (see Keepax 1977, Minnis 1981). In order to reduce this problem, macrofossil analysts have generally followed Minnis' (1981:147) approach: only charred remains should be considered prehistoric.

This is sound advice to follow; however, approximately half of the macrofossils recovered from archeological sites are unburned and should not be totally discounted. More research is needed to better understand the processes responsible for seed rain, but even without this desperately needed research, some tentative clues are available from the archeological data and environment.

First, sixty species of plants were identified in the project area (see Walling et al., Environment, this report) while only twenty-six different taxa were recovered from the macrofossil analysis. Admittedly, the modern environment is different from the prehistoric environment, but as past research has shown (see Lindsay, Appendix II, this report), this is primarily due to mid to late nineteenth century overgrazing (Cottam and Stewart 1961). Nevertheless, the modern environment can aid archeologists in interpreting unburned macrofossils, as indicated by the following considerations:

1. A total of twelve taxa (two domesticates and ten wild plants) present in the macrofossils are not present in the modern flora. The two domesticates definitely represent prehistoric aboriginal usage. The ten wild taxa, not presently located in the area, may have occurred in the area prior to Indo-European occupation of the land, but also may have been a product of prehistoric aboriginal activity.

2. The fact that only 23 percent of the available modern flora was recovered from the archeological record may indicate that seed rain is not as drastic a problem as initially thought. One would expect the greatest amount of seed rain to be from the immediate environment, and that this seed rain should be random rather than species specific. Research needs to be undertaken on seed preservation to clarify this dilemma.

TABLE IV

PROVENIENCE OF THE UNBURNED MACROFOSSILS

| | | *Zea mays* cob (f) | *Cucurbita* spp. (f) | *Cucurbita* spp. fruit (f) | *Amaranthus* spp. (w) | *Amaranthus* spp. (f) | *Chenopodium* spp. (w) | *Helianthus annuus* (w) | *Helianthus annuus* (f) | *Portulaca oleracea* (w) | *Sphaeralcea* spp. (w) | *Euphorbia* spp. (w) | *Scirpus* spp. (w) | *Rhus trilobata* (w) | *Ambrosia* spp. (f) | *Eriogonum* spp. (w) | *Physalis* spp. (w) | *Lepidium* spp. (w) | *Bromus tectorum* (f) | *Larrea tridentata* (w) | *Juniperus* spp. budscales (f) | POACEAE floret (w) | APIACEAE (f) | ASTERACEAE (f) | Unidentifiable | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 42Ws245 | 1* | | | | | | | | | | | | | | | | | | | | | | | | | |
| 42Ws256 | 2 | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | 2 |
| 42Ws257 | 3* | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 |
| 42Ws258 | 5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - | 1 |
| 42Ws260 | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 |
| 42Ws263 | 7 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 |
| | 8* | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 9 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 |
| | 10 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 |
| 42Ws267 | 11 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 |
| 42Ws268 | 12* | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 13* | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 14* | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 15* | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 16 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 6 | - | 6 |
| | 17 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 |
| 42Ws269 | 18* | | | | | | | | | | | | | | | | | | | | | | | | | |
| 42Ws272 | 19 | - | - | - | - | - | - | - | - | - | - | 1 | 1 | 1 | - | 1 | - | - | - | - | - | - | - | - | 1 | 5 |
| 42Ws274 | 20 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - | 1 | - | - | - | 2 |
| 42Ws280 | 21* | | | | | | | | | | | | | | | | | | | | | | | | | |
| 42Ws284 | 22 | - | - | - | - | - | - | - | - | 2 | - | - | - | - | 2 | - | - | - | - | - | 1 | 5 | - | - | - | 10 |
| 42Ws288 | 23 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 |
| | 24 | - | - | - | - | - | 12 | - | - | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 16 |
| | 25 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 |
| | 26 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 |
| | 27 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 |
| 42Ws289 | 28* | | | | | | | | | | | | | | | | | | | | | | | | | |
| 42Ws318 | 29 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | 1 | - | - | 8 | - | - | 10 |
| 42Ws319 | 30 | - | - | - | - | - | - | - | - | - | - | 13 | 3 | - | - | - | - | - | - | - | - | - | - | - | - | 16 |
| 42Ws385 | 31 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | 1 |
| | 32 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 2 | 2 |
| 42Ws386 | 33 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 |
| | 34 | - | - | - | - | - | 6 | 4 | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 16 |
| 42Ws387 | 35 | 2 | - | - | - | - | 11 | - | - | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 17 |
| 42Ws388 | 36* | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 37 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 |
| | 38 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 |
| | 39 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 |
| | 39.1* | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 39.2* | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 39.3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 |
| 42Ws389 | 40 | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 |
| 42Ws390 | 41 | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 |
| | 42* | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 43 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 |
| 42Ws392 | 44 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 |
| | 45 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 |
| | 46 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 |
| | 47 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 |
| | 48 | - | - | - | - | - | 2 | - | 4 | - | - | - | 1 | - | - | - | 2 | - | - | - | - | - | - | - | - | 9 |
| | 49 | - | 3 | - | - | - | 9 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 12 |
| 42Ws395 | 50 | 1 | 4 | - | - | - | 4 | - | - | 3 | 2 | - | - | - | - | - | 3 | - | - | - | - | - | - | - | - | 17 |
| | 51 | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 |
| | 52 | - | - | - | 11 | 7 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 18 |
| | 53 | - | - | 1 | - | - | 1 | - | - | - | - | - | - | - | - | 1 | 3 | - | - | - | - | 1 | - | - | - | 7 |
| | 54 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 |
| 42Ws397 | 55 | - | - | - | - | - | - | - | - | 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 3 |
| | 56* | | | | | | | | | | | | | | | | | | | | | | | | | |
| 42Ws1208 | 57 | - | - | - | - | - | 3 | - | - | - | - | - | - | - | - | - | - | - | 8 | - | - | 5 | - | - | - | 16 |
| TOTAL | | 4 | 7 | 1 | 11 | 7 | 49 | 5 | 10 | 17 | 2 | 14 | 5 | 1 | 2 | 2 | 8 | 1 | 9 | 1 | 1 | 13 | 9 | 6 | 4 | 189 |

* = indicates no macrofossils recovered from sample
(f) = fragment
(w) = whole

3. Introduced rather than indigenous species can be unequivocally considered intrusive. These species, such as Bromus tectorum, can be eliminated from the discussion on prehistoric activities, but should not be eliminated from the data set since it is indicative of disturbance.

Second, unburned plant macrofossils retrieved from various archeological contexts may indicate if they are prehistoric. Botanical remains recovered from a closed vessel must be viewed as prehistoric and, in all probability, represents a resource used in the diet. One can infer from this data that the same taxa found in different contexts are also related to prehistoric activities.

Unburned seeds found in burned or charred features obviously represent contamination, yet they still may be associated with past human behavior. For example, a Zea mays (corn) unburned cob fragment was found in an ashy deposit on the floor of a pithouse at site 42Ws256. This definitely reflects disturbance but not necessarily post abandonment intrusion.

Inference can be made that unburned seeds which are the product of seed rain are dispersed randomly rather than systematically from archeological features. Unburned Chenopodium spp. seeds are found in the majority of the samples analyzed from the Quail Creek area, but none of these seeds were recovered from a burned or ashy feature. If Chenopodium seeds were simply the product of seed rain one would expect to find unburned specimens in at least some burned context. This along with the fact that Chenopodium seeds were the only wild resource recovered from a vessel indicates that it was utilized by the prehistoric inhabitants, most likely as a dietary supplement.

Botanical remains recovered only in an unburned form should generally, but not always, be viewed as intrusive. For example, fruits and berries are usually consumed fresh or dried, but are not parched and therefore unlikely to become charred. Physalis spp. seeds are found in several samples from Quail Creek but are only represented in an unburned form. As Hough (1898) states, the Hopi ate the fresh fruit of Physalis and the Zuni dried the fruit. Hough (1897) also reports that the twigs of Rhus trilobata were used in the construction of basketry. In such a case the fruit of the plant would be a by-product of an activity and may not necessarily appear in the archeological record as charred. These examples are not given to indicate that the prehistoric inhabitants at Quail Creek used these resources in the same way, but rather to document the problems faced by archeologists in interpreting macrofossil remains. Future research needs to be undertaken and, until that time, unburned seeds should be viewed cautiously but not entirely avoided.

## PLANT REMAINS RECOVERED FROM ARCHEOLOGICAL FEATURES

A total of twenty-seven taxa (including unidentifiables) were recovered from thirteen different major feature types throughout the Quail Creek area and are listed in Table V. Each plant taxon was listed simply as present or absent in any given feature. The first number indicates the number of features in which the taxon occurred as charred, while the second number indicates unburned. For example, Chenopodium sp. occurred in two hearths as charred, but in no hearths in unburned form.

TABLE V

TAXA RECOVERED FROM PREHISTORIC FEATURES

| | HEARTHS | CIST FLOOR | FLOOR | ROASTING PIT | BURIAL | LOCUS | ROCK RING | REFUSE PIT | USE DEPOSITS | GRANARY PLASTER | VESSEL | CIST FILL | STRATUM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Chenopodium* spp. | 2/0 | 4/2 | 2/3 | 1/0 | 2/2 | - | 1/1 | 1/0 | 1/0 | - | 1/1 | 1/0 | - |
| *Zea mays* | 5/0 | 0/1 | 2/2 | 3/0 | - | - | - | 1/0 | 1/0 | - | - | - | - |
| *Portulaca oleracea* | 1/0 | 1/2 | 0/2 | 2/0 | - | - | 1/0 | - | - | 0/1 | - | 0/1 | - |
| Unidentifiable | 3/0 | 0/2 | 1/0 | - | - | 0/1 | - | 1/0 | 1/0 | - | - | - | - |
| *Helianthus annuus* | 2/1 | 0/1 | - | - | 0/1 | - | - | - | - | - | - | - | - |
| *Lepidium* spp. | 2/1 | - | - | 2/1 | - | - | - | - | - | - | - | - | - |
| POACEAE | 1/0 | - | - | - | 0/1 | 0/1 | 0/1 | - | - | 0/1 | - | - | - |
| *Scirpus* spp. | 1/1 | - | - | - | 0/1 | 0/1 | - | - | - | - | - | - | - |
| APIACEAE | - | - | - | 0/1 | - | - | 1/0 | - | - | - | - | - | 0/1 |
| *Cucurbita* spp. | - | - | - | - | 0/1 | - | - | 1/0 | - | - | 0/1 | - | - |
| *Phaseolus vulgaris* | 1/0 | - | - | - | - | - | - | 1/0 | - | - | - | - | - |
| *Amaranthus* spp. | 1/1 | - | - | - | - | - | - | - | - | - | - | - | - |
| *Euphorbia* spp. | 1/1 | - | - | - | - | 0/1 | - | - | - | - | - | - | - |
| *Quercus* spp. | 2/0 | - | - | - | - | - | - | - | - | - | - | - | - |
| *Sphaeralcea* spp. | - | 0/1 | 1/0 | - | - | - | - | - | - | - | - | - | - |
| OROBANCHACEAE | 1/0 | - | - | - | - | - | - | - | 1/0 | - | - | - | - |
| *Bromus tectorum* | - | - | - | - | - | 0/1 | 0/1 | - | - | - | - | - | - |
| *Eriogonum* spp. | - | - | - | - | 0/1 | 0/1 | - | - | - | - | - | - | - |
| *Galium trifidum* | - | - | - | 1/0 | - | - | - | - | 1/0 | - | - | - | - |
| *Physalis* spp. | - | 0/1 | - | - | 0/1 | - | - | - | - | - | - | - | - |
| *Rhus trilobata* | - | - | - | - | - | 0/1 | - | - | - | - | - | - | - |
| ASTERACEAE | 0/1 | - | - | - | - | - | - | - | - | - | - | - | - |
| *Ambrosia* spp. | - | - | - | - | - | - | - | - | - | 0/1 | - | - | - |
| *Echinocereus* spp. | 1/0 | - | - | - | - | - | - | - | - | - | - | - | - |
| *Juniperus* spp. | - | - | - | - | - | - | - | - | - | 0/1 | - | - | - |
| *Nicotiana* spp. | 1/0 | - | - | - | - | - | - | - | - | - | - | - | - |
| *Larrea tridentata* | - | - | - | 0/1 | - | - | - | - | - | - | - | - | - |

First number indicates charred/second number indicates unburned.

The purpose of this section is to explore the various plant taxa recovered from identifiable feature types. First, however, a discussion is necessary on the problems with using only a present-or-absent chart in interpreting macrofossil remains. Granted, the raw numbers, in and of themselves, are not very informative, but if the number of remains recovered from each sample are not counted, then the samples are biased by assuming that each taxon has a equal value.

This can be illustrated from the Quail Creek data. *Amaranthus* sp. is only present in one hearth as charred and unburned while *Quercus* sp. is present in two hearths as charred. Thus, inference may be made that *Quercus* sp. is more important than *Amaranthus* sp., or that neither are important because they are only present twice. Both interpretations are incorrect. Only one *Quercus* sp. nut fragment was recovered from a hearth in Trench 2 at site 42Ws267 and only one nut fragment was recovered from the fill of a hearth at site 42Ws389. On the other hand, *Amaranthus* sp. occurred only in Hearth 5, Rockshelter 2 at site 42Ws395, but seventy-two whole and fragmented charred specimens were recovered as well as eighteen whole and fragmented unburned specimens.

Interpretations are limited on the importance of *Quercus* sp. to the local aboriginals, but this is not so for *Amaranthus* sp. First, *Amaranthus* sp. occurs only in one of the five samples analyzed from site 42Ws395 reflecting non-random distribution. Second, aside from three unidentifiable specimens, only *Amaranthus* sp. seeds were recovered from the sample. Third, ninety specimens were recovered: 80 percent were charred and 71 percent were whole. The 20 percent unburned specimens indicates that the hearth had undergone disturbance after the coals had cooled, but how long afterwards cannot be determined. The above data indicates that *Amaranthus* sp. was utilized by the inhabitants of site 42Ws395.

Another problem with the present-or-absent chart is the unequal number of samples collected from each feature type. The Quail Creek project produced 17 samples from hearths; 11 from cist floors; eight from roasting pits; seven from floors; three from use levels or use deposits; two each from burials, locus, and cist fill; and one each from a granary plaster, a vessel, a stratum, a rock ring, and a refuse pit. It is not surprising, then, that the first four features listed above contained the greatest variety of botanical remains.

This is not to say that present-or-absent lists are useless, but rather it is indicated they should not be the sole means for macrofossil interpretation. In this report the present-or-absent list is used to streamline the data in order to identify if patterns occur. The following discussion of taxa within feature types will utilize Tables III and IV as well as Table V.

## Hearths

Samples analyzed from hearths provide two major pieces of information. First, unburned botanical remains recovered from hearths reflects post-abandonment disturbance as discussed previously. Second, hearths represent the last events occurring at the site prior to abandonment. Hearths must be periodically cleaned-out and as Russel and Simms (personal communication, 1986) observed while they were studying site formation among the Bedul Bedouins in Petra Jordan, hearths were cleaned-out approximately every other day. For these reasons, remains recovered from hearths can be very informative. One problem with hearth samples is that the remains may be disintegrated by the intense heat or may be so severely charred that identification is impossible.

Five sites had only one sample collected for analysis and these were from hearths. The hearth sample from site 42Ws260 produced four charred Zea mays cob fragments and one charred Scirpus sp. seed. The only inference that can be made about this site is that domesticates were in the diet. Site 42Ws267 produced one charred Quercus sp. fragment and one unidentifiable charred seed was recovered along with one unburned Helianthus Annuus seed. No botanical remains were recovered from site 42Ws280. Recovery was too low for an interpretation to be made, but it is interesting to note that no domesticates were recovered. Site 42Ws319 produced two charred and 13 unburned Euphorbia sp. seeds along with three unburned Scirpus sp. seeds. The high percentage of unburned seeds indicate post-abandonment disturbance, but since Euphorbia sp. seeds were also recovered in charred form and since Euphorbia sp. seeds were not recovered from any other feature at this site, it can be inferred that these seeds were part of a prehistoric activity around the hearth prior to abandonment.

Site 42Ws268 had six samples analyzed and one was from a pithouse hearth. No charred remains were recovered, but six unburned fragments from the Asteraceae Family were identified and probably represent post-abandonment intrusion.

A sample each from three hearths were analyzed from site 42Ws288 and produced one charred Zea mays cob fragment, three charred Echinocereus sp. seeds, two unidentifiable charred remains and no unburned specimens. The Echinocereus cactus flowers during the months of May and June (Treshow 1975:16) and may be harvested in June or July. Since these seeds are found only in charred form and are not found in any other context, it can be inferred that they were utilized by the prehistoric inhabitants of the site immediately prior to abandonment. If this assumption is true, then it can be inferred that the site was abandoned during midsummer. This will be discussed in more detail later.

One hearth sample was analyzed from a total of seven samples collected from site 42Ws388 and produced three charred Chenopodium sp. seeds and one charred Lepidium sp. seed. This site will be discussed in detail later in the report.

Site 42Ws395 had five samples analyzed and two were from hearths. One exterior hearth (as discussed earlier) contained 72 Amaranthus sp. seeds in charred form, 18 in unburned form, and three unidentifiable charred seeds. The other hearth was located in a pithouse and contained five Zea mays cob fragments, six Chenopodium sp. seeds, and two Lepidium sp. seeds. All specimens were charred.

Site 42Ws392 had two hearth samples analyzed which contained 15 Zea mays cob fragments, nine Zea mays kernel fragments, two Phaseolus vulgaris (bean) fragments and two Nicotiana sp. seeds. All were recovered in charred form.

Hearths should be indicative of site occupation no greater than a week prior to abandonment. This being the case, then it is interesting that from the seventeen hearth samples analyzed, *Zea mays* and *Chenopodium* sp. seeds, which are otherwise the top two taxa recovered, have a very low return rate. Site abandonment, with the exception of 42Ws392, may be due to a shortage of domesticates and other high ranking resources (see Simms 1984 for a discussion of resource ranking). However, such a definitive statement cannot be made at this time because of the lack of comparative data from the region and the small number of samples analyzed from each site. Future research within the Western Anasazi area is needed and may address this issue in more detail.

### Cist Floor and Fill

In contrast to hearths, cists represent a storage facility presumedly used throughout the occupation of the site and thus would represent long-term usage of plant resources. Also, it would be expected that the majority of botanical remains recovered from cists should be unburned. This is not say that charred specimens should not be present in a food storage facility. Seeds are dried prior to storage to increase preservation (see Copeland 1976:257-263) and with aboriginal parching techniques, a portion of the seeds become charred.

Three sites had only flotation samples collected from cists. One sample was analyzed from the cist floor at site 42Ws245 and contained no botanical remains. Two cist floor samples were analyzed from site 42Ws385 and produced one charred *Chenopodium* sp. seed and three unidentifiable unburned seeds. Site 42Ws397 also had only two samples collected from cist floors. One cist floor sample produced no botanical remains, while the other contained two charred *Chenopodium* sp. seeds and three unburned *Portulaca oleracea* seeds.

The highest botanical return rate came from a cist floor at site 42Ws389 containing one charred *Chenopodium* sp. seed, six unburned *Chenopodium* sp. seeds, and 10 unburned *Helianthus annuus* seeds. Also, the cist floor sample from site 42Ws395 produced high returns containing one charred *Chenopodium* sp. seed, one charred *Portulaca oleracea* seed, one unburned *Zea mays* cob fragment, four *Cucurbita* sp. seeds, three unburned *Portulaca oleracea* seeds, three unburned *Physalis* sp. seeds, and two *Sphaeralcea* sp. seeds.

The above data is very interesting for two reasons. First, the majority of the botanical remains recovered from cists are quite different from those recovered in hearths. Secondly, several of the cists produced no botanical remains. This may be due to the fact that unburned plant remains are more apt to bio-degrade, and thus their lack is a product of preservation; or, it may reflect how the aboriginals were storing their food resources. Lindsay (Appendix II, this report) indicates that grass pollen was extremely high in one cist sample and suggests that grass seeds were being stored. However, no grass seeds were recovered from floation samples collected from cists. An alternative explanation may be that grass was used as a packing material rather than as a direct food resource.

Large botanical food resources, such as domesticates, could be stored directly in the cist; however, smaller resources, such as *Chenopodium* seeds, would more likely be stored in containers before being placed in the cist, and thus packing material would likely be used.

A point that should be expressed is that samples containing no remains actually contain a lot of data. For example, the cists which produced no remains may support the hypothesis that food resources were stored in smaller containers before being placed in the cist. It will be interesting to see if future analysis support this position.

Pithouse Floors and Use Deposits

Material recovered from floors is difficult to interpret for several reasons. First, unless several samples are recovered from floor context, it is difficult to interpret what botanical remains were being utilized from those which are the product of foot traffic. On the other hand, foot traffic forces small remains below the level of origin (Gifford 1977 and 1978), grinding them into the floor and increasing the chance of preservation.

Secondly, small botanical remains recovered from pithouse floors are generally viewed as primary deposition rather than secondary disposal (Binford 1978; Murray 1980; O'Connell 1984; Shiffer 1972, 1978). Unless evidence indicates that a structure was reused as a midden, it can be assumed that small items recovered from a floor are in primary deposition. This is not to say that small items build up over time; on the contrary, different cleaning techniques such as sweeping will remove some smaller particles (see Heath and Metcalfe 1984).

The issue of plant utilization from floor samples cannot be addressed in this report because of the small number of samples collected but, due to the factor of grinding materials into a floor, the data should reflect what was available to the prehistoric inhabitants.

A floor sample was analyzed from site 42Ws256 and produced 10 charred *Zea mays* cob fragments along with one unburned *Zea mays* cob fragment and one unburned grass floret. At site 42Ws256 only one charred *Sphaeralcea* sp. seed was recovered from floor context and no remains were recovered from a sample collected from a use level. A floor sample collected from 42Ws289 also produced no remains. The floor of Room 1 at site 42Ws288 contained one charred *Chenopodium* sp. seed, four unidentifiable charred items, 12 unburned *Chenopodium* sp. seeds, and four unburned *Portulaca oleracea* seeds. The floor sample collected from a pithouse at 42Ws387 contained one charred *Chenopodium* sp. seed, two unburned *Zea mays* cob fragments, 11 unburned *Chenopodium* sp. seeds, and four unburned *Portulaca oleracea* seeds. The pithouse floor at site 42Ws388 produced one charred *Zea mays* cob fragment, while the floor in Room 3 at 42Ws395 produced one unburned *Chenopodium* sp. seed. A use deposit sample from the floor of a pithouse at 42Ws392 contained one charred *Zea mays* cob fragment, one unidentifiable charred item, and 10 charred Orobanchacea seeds.

Roasting Pits

Roasting pits, unlike hearths, do not necessarily represent the last week of activity at the site for they may have been employed for a special activity function. Also unlike hearths, roasting pits are always in the open and thus subject to greater disturbance.

A total of eight samples were analyzed from roasting pits in the Quail Creek area. One sample from 42Ws268 produced 10 charred *Zea mays* cob fragments, one charred *Zea mays* kernel fragment and two charred *Lepidium* sp.

seeds. The roasting pit at site 42Ws288 contained 15 charred Zea mays cob fragments, five charred Zea mays kernel fragments, and two charred Portulaca oleracea seeds. The sample from 42Ws386 had four charred Zea mays cob fragments and one charred Lepidium sp. seed.

The roasting pit at site 42Ws318 shows the greatest post-abandonment disturbance. It contained only two charred Portulaca oleracea seeds, one unburned Lepidium sp. seed, one unburned Larrea tridentata, and eight unburned Apiaceae seeds. Four samples were analyzed from a single roasting pit at site 42Ws388. Two of the samples were barren while the other two samples produced three charred Zea mays cob fragments, two charred Chenopodium sp. seeds, and four charred Galium trifidum seeds.

The fact that four samples were analyzed from roasting pits and two of these samples were barren indicates the need to collect several samples from roasting pits as well as hearths in order to obtain a true representation of what is in these features. This is due to the large quantity of fill within such features.

The relatively high percentage of Zea mays recovered from these roasting pits suggests that they were probably used to roast corn.

Locus and Stratum

Two samples were analyzed from the context of a locus. One at site 42Ws272 contained one Euphorbia sp. seed, one Scirpus sp. seed, one Rhus trilobata seed, one Eriogonum sp. seed, and one unidentifiable. All were unburned but recovered from an ashy layer indicating intrusion. The same is true at site 42Ws274 where one unburned Bromus tectorum and one unburned grass floret was recovered from a charcoal lens. A sample collected from an ashy layer in a stratum at site 42Ws258 produced only one unburned Apiaceae seed.

The above samples all reflect severe contamination. Another problem in interpreting samples from a locus or a stratum is that the context is usually not associated with concrete features of past human activities such as hearths or floors. A similar problem occurs with fill samples. Other than identifying what was found, these samples do not provide information about past human behavior.

Rock Ring

The sample from the rock ring at site 42Ws1208 included one charred Chenopodium sp. seed, three charred Portulaca oleracea seeds, one charred Apiaceae seed, three unburned Chenopodium sp. seeds, eight Bromus tectotrum seeds and five grass florets. The presence of Bromus tectorum definitely indicates that the sample was contaminated after European contact since Bromus is an introduced species.

Refuse Pit

Refuse pits should reflect the activities occurring at the site throughout the occupation. Assuming that hearths are periodically cleaned out and that floors are swept, then one would expect to recover small items of secondary deposition from middens.

Only one refuse pit sample was analyzed from 42Ws392 and included twenty-four charred *Zea mays* cob fragments, two charred *Zea mays* kernel fragments, two charred *Phaseolus vulgaris*, seven charred *Curcubita* sp. stem fragments, seven *Chenopodium* sp. seeds, and 13 unidentifiable charred seeds. Most of these are domesticates and definitely associated with past human behavior.

## Granary Plaster

The plaster of a granary at site 42Ws284 was soaked and floated. This sample is very interesting since it reflects what plants were near the site at the time of its construction. It contained two *Portulaca oleracea* seeds, two *Ambrosia* sp. seeds, one *Juniperus* sp. budscale and five grass florets; all were unburned. The presence of *Juniperus* may or may not reflect the immediate presence of this tree. If wood was being transported to the site it is conceivable that budscales would be in and around the site.

## Burials

Two burials were excavated and one floatation sample was collected from below the pelvic area of each. Next to botanical remains recovered from coprolites, this may prove to be the most direct evidence for plants utilized as dietary resource. However, burial samples have an inherited problem that coprolite samples do not. That is, do the remains reflect what was in the digestive tract at the time of death, or do they reflect mortuary offering, or do they reflect seed rain? The author (unpublished notes) has conducted experiments to identify seeds which are acid eaten from being passed through a digestive tract. Further research needs to be done but the initial results hold promising results.

The burial sample from 42Ws392 contained five charred *Chenopodium* sp. seeds, two unburned *Chenopodium* sp. seeds, four unburned *Helianthus annus* seeds, one unburned *Scirpus* sp. seed, and two unburned *Physalis* sp. seeds.

The burial sample from 42Ws395 contained one charred *Chenopodium* sp. seed, one unburned *Curcurbita* sp. fruit fragment, one unburned *Chenopodium* sp. seed, one unburned *Eriogunum* sp. seed, three unburned *Physalis* sp. seeds, and one unburned grass floret.

## Vessel

The contents of a vessel at site 42Ws392 contained six charred *Chenopodium* sp. seeds, nine unburned *Chenopodium* sp. seeds, and three *Curcurbita* sp. seeds. The vessel was closed and unbroken when unearthed indicating that the botanical remains recovered from the inside of the vessel were placed there by the aborignial inhabitants. The vessel was located within the burial of the individual noted above. *Curcurbita* sp. is a domesticate and was unquestionably part of the prehistoric diet. The presence of *Chenopodium* in the vessel strongly suggests that it also was a mainstay of the prehistoric diet.

## Summary

The above data suggests that preservation is not a problem within the Quail Creek area. Unburned specimens were recovered throughout the area and from various features. The fact that 25 percent of the samples were barren may actually represent the function of the feature. For example, seven cists contained no botanical remains, possibly indicating that resources were first stored in smaller containers, or that bulk food resources such as domesticates were being stored.

The data also appear to support the hypothesis that remains recovered from hearths may appear different from other features at the site because hearths are a reflection of the last occurring activity. The hearth samples contained a wider variety of plant taxa than any other feature type. This, in part, is due to the greater number of samples collected from hearths than from any other feature but, nevertheless, lower ranked resources occur more frequently than do domesticates and higher ranked resources such as Chenopodium.

PREHISTORIC TIME SEGMENTS AND PLANT UTILIZATION

The time segments from the Quail Creek Projects vary from Basketmaker III to Southern Paiute. The number of samples analyzed from each time period along with the taxa are listed in Table VI. Due to the unequal, and in most cases small, number of samples analyzed from the various time periods, it is statistically impossible to interpret variation from one time period to the next. Nevertheless, some interpretations can be made which may aid future macrofossil analyses throughout the Western Anasazi region.

The precentage data in Table VI are based on the probability of occurrence of return rates per sample. The fact is, the majority of the time segments did not include large enough samples to reflect true plant taxa representation and therefore we can only establish preliminary interpretations witin a broad general framework.

It is not surprising that the largest proportion of the samples were recovered from Pueblo I sites. It was during this period that a "large riverine population" (Heid 1982:149-150) was established in the Western Anasazi region. Twenty flotation samples were analyzed from this period and Zea mays had the greatest representation, followed by Chenopodium. The fact that Zea mays is the only domesticate recovered from this time period does not necessarily mean it was the only domesticate utilized. Corn, unlike other plant resources, has a by-product, the cob which is more likely to appear in the archeological record (Heath and Metcalfe 1984) than other plant remains.

The early Pueblo II to late Pueblo II samples include the domesticates Zea mays, Curcurbita sp., Phaseolus vulgaris, and possible evidence of the cultivation of Nicotiana sp., along with a relatively high representation of Chenopodium sp., Portulaca oleracea and Helianthus annuus.

The Southern Paiute segment includes plant remains from the domesticate Zea mays as well as wild resources such as Chenopodium sp., Portulaca oleracea, Scirpus sp. and others.

The data suggests that subsistence modes and plant utilization of the aboriginals did not radically change from A.D. 500 to the present. The subsistence activities appear to represent a mixed economy of domesticated and wild resources. Only further research will support or dismiss this interpretation.

TABLE VI

BOTANICAL REMAINS RECOVERED WITHIN PREHISTORIC TIME SEGMENTS

---Occurrence of Taxa Per Sample---

| Dating | # of Samples | *Chenopodium* spp. | *Zea mays* | *Portulaca oleracea* | *Helianthus annuus* | *Lepidium* spp. | POACEAE | *Scirpus* spp. | APIACEAE | *Cucurbita* spp. | *Phaseolus vulgaris* | *Amaranthus* spp. | *Euphorbia* spp. | *Quercus* spp. | *Sphaeralcea* spp. | OROBANCHACEAE | *Bromus tectorum* | *Eriogonum* spp. | *Galium trifidum* | *Physalis* spp. | *Rhus trilobata* | ASTERACEAE | *Ambrosia* spp. | *Echinocereus* spp. | *Juniperus* spp. | *Nicotiana* spp. | *Larrea tridentata* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Prehistoric | 1* | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Southern Paiute | 5 | 20% | 20% | 20% | - | - | 20% | 40% | 20% | - | - | - | 20% | 20% | - | - | 20% | - | - | - | - | - | - | - | - | - | - |
| Western Anasazi | 4 | 25% | - | 25% | - | - | 25% | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 25% | - | 25% | - | - |
| Western Anasazi/Southern Paiute | 6 | - | 17% | 17% | 50% | - | 17% | - | - | - | - | - | - | 17% | - | 17% | - | - | - | - | - | - | - | - | - | - | - |
| Late Pueblo II | 3 | 100% | 67% | - | 33% | - | - | 33% | - | 33% | 33% | - | - | - | - | - | - | - | - | 33% | - | - | - | - | - | - | - |
| Mid-late Pueblo II | 12 | 42% | 17% | 17% | 8% | - | 8% | - | 8% | 8% | - | 8% | - | - | - | - | - | 8% | 8% | 8% | - | - | - | 8% | - | - | - |
| Pueblo II | 2 | - | 100% | - | - | - | - | - | - | - | 50% | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 50% | - |
| Early Pueblo II | 2* | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Late Pueblo I/Early Pueblo II | 2 | 50% | 50% | - | 50% | 50% | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Pueblo I/II | 2 | 50% | 50% | - | - | 50% | - | 50% | - | - | - | - | 50% | - | - | - | - | 50% | - | - | 50% | - | - | - | - | - | - |
| Pueblo I | 20 | 20% | 25% | 15% | - | 15% | - | - | 5% | - | - | - | - | - | 10% | 5% | - | - | 5% | 5% | - | 5% | - | - | - | - | 5% |
| Basketmaker III | 1 | 100% | 100% | 100% | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

* = Indicates no botanical remains were recovered within this time period.

## SUBSISTENCE ACTIVITIES AT QUAIL CREEK

The data suggest that the prehistoric subsistence activities at Quail Creek were based on a mixed economy of horticulture and wild plant resources. The domesticated crops consisted of _Zea mays_ (corn), _Phaseolus vulgaris_ (beans), and _Curcurbita_ sp. (squash). It is possible that there was a form of domesticated _Nicotiana_ sp. (tobacco) growing but since a wild form of tobacco presently grows in the area this cannot be verified. The wild resources utilized were mainly _Chenopodium_, _Portulaca oleracea_, _Helianthus annuus_ and _Lepidium_ sp. This strong bias towards only a few of the possible edible plants in the area indicates that, in general, domesticates were the dietary staples.

42Ws268 had six samples analyzed from a Pueblo I context. Four of the samples were from cists and produced no remains, while the roasting pit had corncobs and kernels present along with _Lepidium_ sp. It is possible that the cists were used to store large quantities of domesticates. Due to the large size of domesticated resources, it is likely that they would all be removed and utilized and disposed of elsewhere. If this was the case, then it is reasonable that no remains would be recovered from the cists.

42Ws388 is also a Pueblo I site and it reflects a similar pattern. The cist contained no botanical remains, while the roasting pit yielded corn cobs, _Chenopodium_ and _Galium_. Pithouse 2 had _Chenopodium_ and _Lepidium_ in the hearth, and a fragment of corncob was recovered from the floor.

However, 42Ws395 appears different in that a greater variety of wild resources were recovered. Any interpretation from this site is difficult because of the small sample size and because it has a multi-component time frame. Cist 1 has been dated as Pueblo I and it contained a corn cob fragment, squash seeds, _Chenopodium_, _Portulaca oleracea_, _Sphaeralcea_ and _Physalis_. The middle to late Pueblo II component at this site also reflects a high reliance on wild resources. The only domesticate recovered was a small fragment of squash located below the pelvic area of the burial. The largest quantity from one sample was recovered from this site. Ninety _Amaranthus_ seeds were retrieved from Hearth 5 in Rockshelter 2. The hearth from Pithouse 2 could only be ascribed to the late Pueblo I/early Pueblo II period. It looks similar to other sites as it contained corncobs, _Chenopodium_ and _Lepidium_.

42Ws288 is a middle to late Pueblo II component. The roasting pit was probably used to roast corn as evidenced by the charred cob and kernel remains. Hearth 1 also contained corn remains. No domesticates were recovered from the floor of Room 1 or the hearth in Room 2, where only three cactus seeds were recovered. This may indicate that the inhabitants of the site possessed no domesticates at the time of abandonment, but due to the small sample size, no conclusion can be drawn.

The most interesting site in this study is 42Ws392. Unfortunately, the small sample size and the fact that it is a multi-component site limits interpretations. The Pueblo I component use deposit on Floor 1 of the pithouse contained only one corncob fragment and 10 cf. broomrape seeds. Broomrape is generally a parasite on sagebrush (Albee 1980:394) and may only represent a by-product of the use of sage. The Pueblo II component indicates a heavy reliance on domesticates since no wild resources were identified. Isolated Hearth 1 contained corn kernels and tobacco seeds, while the hearth associated with Floor 3 of the pithouse contained corncobs and kernels, as well as bean fragments. The late Pueblo II component continues to reflect the heavy reliance on domesticates. The sample from the refuse pit contained corncobs and kernels, beans, squash stems and *Chenopodium* seeds. The contents of the burial sample and vessel sample from this time period are slightly different. The vessel contained *Chenopodium* and squash seeds, but the sample taken below the pelvic area of the burial contained no domesticates. As Lindsey (Appendix II, this report) states, the high percentage of willow and primrose pollen from the burial indicates a springtime interment. This being the case, then the absence of domesticates from the burial may indicate the shortage of domesticates during the spring and a return to reliance on wild resources.

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