

# The Basketmaker Communities Project Annual Report, 2014 Field Season

*Caitlin A. Sommer, Shanna R. Diederichs, Susan C. Ryan,  
Steven R. Copeland, and Kari L. Schleher*



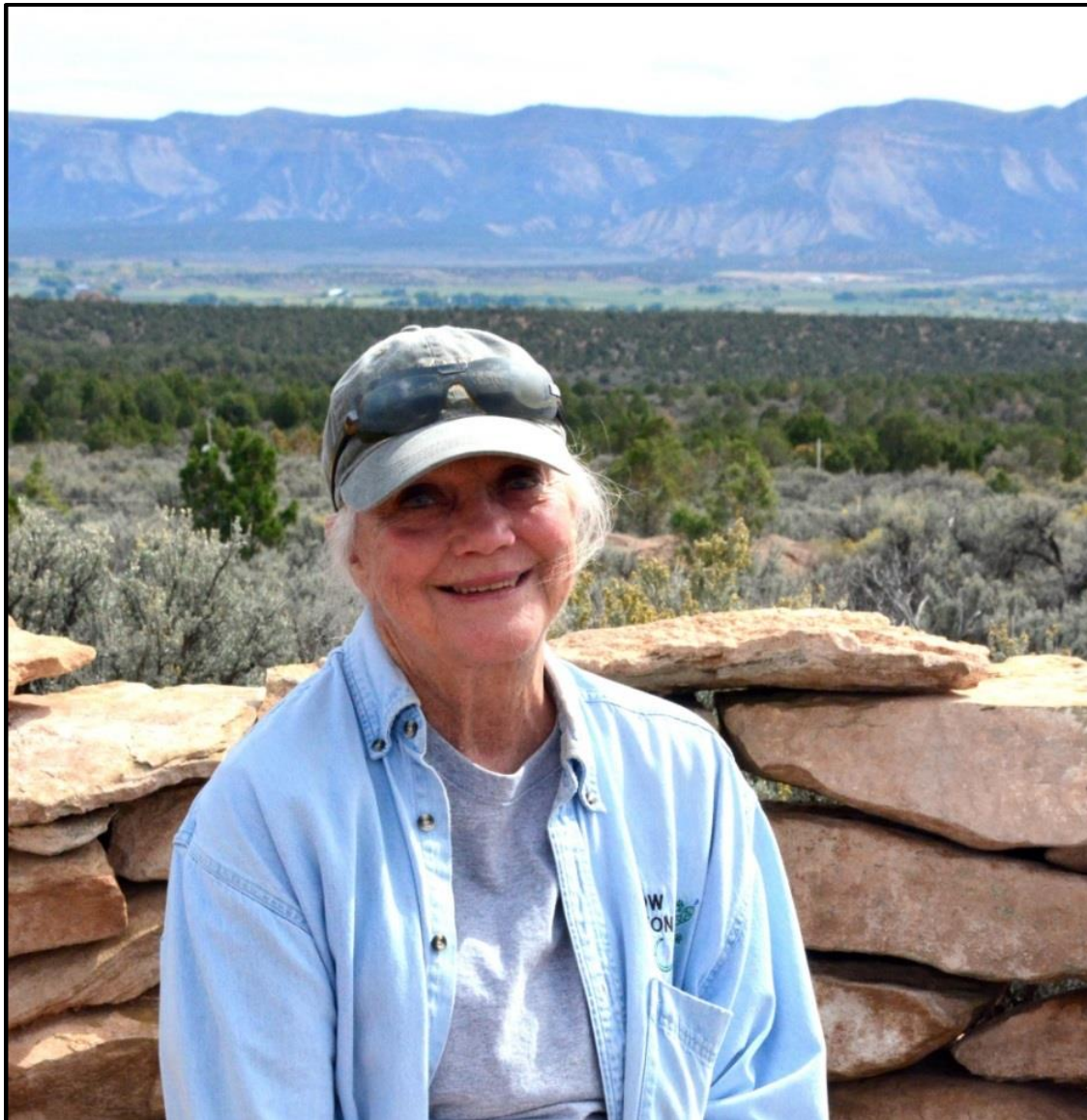
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**REMINDER:** Archaeological resources are protected by federal laws, and archaeological research is guided by a set of professional ethics. See [Archaeological Ethics and Laws](#).

Thank you, Jane Dillard, for allowing Crow Canyon staff and more than 4,000 interested members of the public to engage in archaeological research in your front yard. Over the course of four field seasons, you graciously tolerated everything from portable toilets in your driveway to invasions of countless noisy and excited middle school excavators, and you managed to do it all with grace and a smile on your face. This project would not have been possible without your generous partnership.

**Thank you, Jane!**



**Jane Dillard, property owner of the Dillard site.**

## **Introduction**

In 2014, the Crow Canyon Archaeological Center (Crow Canyon) conducted its fourth year of field research as part of the Basketmaker Communities Project, a multiyear study of early Pueblo community development in the central Mesa Verde region. The study focuses on a pivotal, but under-investigated, time in Pueblo history—the Basketmaker III period, which dates from A.D. 500 to 750. The focus of Crow Canyon's field research is a settlement cluster consisting of more than 100 Basketmaker sites located within a 4.9-km<sup>2</sup> area near the town of Cortez, in southwestern Colorado. In 2014, Crow Canyon conducted various combinations of geophysical survey, subsurface probing, and excavations at four sites, three of which exhibit evidence of a single Basketmaker III occupation.

Excavation was completed at the Dillard site (5MT10647), a multi-habitation site that dates from the seventh century A.D. and includes a great kiva. Excavation, subsurface probing, and remote sensing was also conducted at three small habitation sites: 5MT10709 (no name assigned), the Shepherd site (5MT3875), and the Switchback site (5MT2032). Fieldwork at the first two sites will be completed during the 2015 field season, whereas excavation at the Switchback site was completed in the spring of 2014. Also, remote-sensing surveys (electrical resistance and magnetometer) were conducted at the Hatch group (sites 5MT10684, 5MT2037, 5MT10686, and 5MT10687) to prepare for the 2015 field season. In addition, an electrical resistance survey that covered three 20-x-20-m grids was completed at Site 5MT10674. Understanding the relationship between the Dillard site and the many surrounding sites in the study area is essential to our understanding of how early Pueblo communities formed and were organized.

This report summarizes progress on the Basketmaker Communities Project during the 2014 Crow Canyon field season, which was conducted from March through November. Fieldwork and related Crow Canyon education programs were conducted by members of our archaeology and education staff with assistance from seasonal interns. Remote-sensing data were collected by Crow Canyon field staff and post-processed and summarized by Mona Charles of Powderhorn Research, LLC. Field and laboratory work conducted by outside contractors is also summarized. Upon completion of all fieldwork, laboratory analyses, and synthetic studies, Crow Canyon will publish detailed results of the Basketmaker Communities Project on its website ([www.crowcanyon.org](http://www.crowcanyon.org)).

## **Project Area Location and Ownership**

The Basketmaker Communities Project study area is located in the central Mesa Verde region ([Figure 1](#)) more specifically, in the McElmo drainage unit, which is defined as the lands in southwestern Colorado that are drained by McElmo Creek. The settlement cluster that is the focus of Crow Canyon's research lies north of the creek, on a dissected upland between Alkali Canyon to the west and the less-substantial Crow Canyon to the east, just over 6 km (about 4 mi) west of Cortez, Colorado.

The primary project area is defined by the property boundaries of Indian Camp Ranch, a 1,200-acre, 31-lot private residential community developed in the late 1980s and early 1990s. There are 208 known archaeological sites in the Ranch (Ortman et al. 2011); evidence visible on the modern ground surface indicates that 107 sites date from the Basketmaker III period. [Figure 2](#) shows the boundaries of Indian Camp Ranch and individual lots as well as the locations of the known or suspected Basketmaker III sites. Lots outlined in bold are those for which Crow Canyon has obtained permission from the individual landowners to conduct field investigations (see the following section).

## **Permits and Permissions**

During 2014, excavations, testing, and survey were conducted under State of Colorado archaeological permits 2014-77 and 2014-78 and with the permission of the Indian Camp Ranch Homeowners Association and individual landowners. Both the bylaws and covenants of Indian Camp Ranch were crafted to promote the preservation of, and research on, archaeological sites (Indian Camp Ranch Homeowners Association 2007). In 2010, the Association granted the Crow Canyon Archaeological Center permission to conduct field research at Basketmaker sites located within the Ranch, subject only to restrictions imposed by individual landowners and provided that the work complied with the professional and ethical standards established by the Society for American Archaeology and the Register of Professional Archaeologists. A contract signed with Galen Larson allows Crow Canyon to conduct surveys on his property through December, 2016.

Since that time, eight individual contracts between Indian Camp Ranch landowners and the Crow Canyon Archaeological Center have been signed. These contracts limit Crow Canyon activities on particular properties; two prohibit testing and excavation but permit surface mapping and remote sensing; a third permits less than 10 m<sup>2</sup> of excavation at two separate sites, which limits our work to test excavations at those sites. Five other contracts give permission for excavations at sites on the landowners' lots. The contract between Galen Larson and Crow Canyon allows for in-field analysis of artifacts, soil probing, and remote-sensing.

## **Public Involvement**

A diverse segment of the public benefitted from Crow Canyon's research during the 2014 field season. Through our research and education programs, participants ranging in age from middle school through adult assisted with field and laboratory work. Specifically, 257 school children, 79 National Endowment for the Humanities teachers, 17 Middle School Archaeology Camp participants, 14 High School Field School participants, 23 High School Archaeology Camp participants, 55 Adult Research Participants, and 17 Earthwatch volunteers took part in the Basketmaker Communities Project.

Crow Canyon continued their partnership with the Earthwatch Institute in 2014, bringing participants from all over the world to participate in the project. Hundreds of additional individuals were provided with formal tours offered as part of single-day field trips, multiday non-excavation school-group programs, or other Crow Canyon-sponsored activities. The number of people served reflects not only Crow Canyon's commitment to involving the public in its research but also the level of public interest in the ancient past of the Mesa Verde region.

The Basketmaker Communities Project was highlighted in several public venues in 2014. In June 2012, Oregon Public Broadcasting conducted filming at the Dillard site for a one-hour episode of *Time Team America*, a popular PBS science-archaeology series. This episode aired on August 26, 2014 and was viewed by approximately 1.5 million people. Additionally, the Dillard site was featured in an article authored by William D. Lipe, current member of Crow Canyon's board of trustees, and former director of our research department, that appeared in the December 2014/January 2015 issue of *Current World Archaeology*. Through public-outreach products such as these, the Crow Canyon Archaeological Center aims to widen its audience and spread the message of an inclusive American past and the application of science to its study.

### **American Indian Involvement**

American Indians were involved in the Basketmaker Communities Project in several ways during 2014. Scholarship funds totaling \$15,120 were disbursed to 56 American Indian students. Scholarships were provided to American Indian students attending Crow Canyon's Middle School Archaeology Camp, High School Field School, and High School Archaeology Camp. Additional American Indian students attended programs at the Center with school groups supported by Crow Canyon. Students were affiliated with Brave Girls in Santa Fe, Southern Ute Montessori, Santa Ana Pueblo, the Southern Ute Tribe, the Apache tribe, and the Santa Fe Indian School.

As part of Crow Canyon's ongoing Pueblo Farming Project, Hopi farmers visited the Crow Canyon campus in 2014 to consult on our experimental gardens. During their stay, these advisors visited the Dillard site, sang a blessing for the ancestors and the archaeological work, and discussed their perspective on dryland farming.

Crow Canyon's Native American Advisory Group contributed to the project in several ways. The Group met four times in 2014, and the Director of American Indian Initiatives, Marjorie Connolly, consulted with particular members of the Group on issues such as culturally sensitive items and two burials found during excavation at the Dillard site. Finally, during Crow Canyon's October board meeting, members of the Group visited the Dillard site, heard updates on progress made during the 2014 field season, and provided a site-closing blessing.

Throughout these activities, the insights and perspectives shared by American Indians informed Crow Canyon's research and enriched the experience of participants enrolled in the Center's education programs. We intend to build on our relationships with American Indians by providing scholarships for field programs and through continued consultation with our Native American Advisory Group and other interested parties as the Basketmaker Communities Project progresses.

### **Environmental Setting**

The Basketmaker Communities Project study area consists of gently rolling uplands where varying thicknesses of eolian silt loam overlie Dakota Sandstone. The elevation at the center of the project area is about 1890 m (6200 ft). Approximately 100 million years of geologic history dating from the late Triassic/Jurassic through the middle Cretaceous are exposed to the west in

Alkali Canyon. The various geologic strata provided Pueblo people with construction stone and raw material for tools, and the permeable layers form a high-quality aquifer that gives rise to numerous springs at the interfaces between fine sandstone beds and less-permeable mudstones.

Indian Camp Ranch was probably once completely covered by pinyon-juniper woodland, dominated by pinyon pine and Utah juniper, with an understory of bunch grasses, yucca, and prickly pear cactus. Today, remnants of this woodland can be found in the northwest and south-central portions of the Ranch, but elsewhere the native vegetation has been replaced (in the past 100 years) by ranchland and farm fields. Properties in the eastern one-third of the Ranch have been cultivated and are planted in winter wheat. Ranchlands, including a portion of the tract on which the Dillard site is located, are dominated by big sagebrush, rabbitbrush, and bunch grasses.

### **History of Archaeological Investigations**

In 1984 and 1985, the Crow Canyon Archaeological Center recorded 11 sites on property that is now part of Indian Camp Ranch. The recorded sites are 5MT2032, 5MT3873, 5MT3875, 5MT3887, 5MT3890, 5MT3893, 5MT3906, 5MT3907, 5MT3911, 5MT3915, and 5MT3919. This documentation was part of the Center's early public-education initiative, and no formal report was generated (Mark Varien, personal communication 2013).

In the fall of 1989, Woods Canyon Archaeological Consultants, Inc., conducted a reconnaissance of the newly created Indian Camp Ranch. The goal of this survey was to identify and briefly describe sites within the 1,200-acre development and to plot the sites on an aerial photograph (Honeycutt and Fetterman 1991). From 1991 through 1993, Woods Canyon archaeologists formally recorded sites located during the reconnaissance, eventually documenting 208 sites within Indian Camp Ranch, including the 11 sites recorded by Crow Canyon in the mid-1980s (Fetterman and Honeycutt 1994).

One of the most compelling features recorded during the survey by Woods Canyon was a 10-m-wide depression on a tract located in the far western portion of the development. The depression and immediately surrounding area were designated Site 5MT10647; Crow Canyon later named this the Dillard site, after the landowner who, in the meantime, had purchased the tract. In 1991, Woods Canyon archaeologists excavated a 12-m-long dog-leg trench through this prominent feature, revealing a large, circular but fairly shallow structure (Fetterman 1991).

Evidence of a Basketmaker III presence has also been documented on adjacent lands south and east of Indian Camp Ranch. Approximately 300 ha (740 acres) south of the ranch were surveyed for a fuel-reduction project for Canyons of the Ancients National Monument (Fetterman 2004). Thirty-seven sites with Basketmaker III components were recorded, including single- and multiple-habitation sites, field houses, and activity areas. The nearby Crow Canyon Archaeological Center, located south and east of Indian Camp Ranch, recently surveyed its campus of approximately 70 ha, or 170 acres (Kuckelman and Powell 2009), and six Basketmaker III sites were recorded. Of these, three are single-habitation sites and three are limited-activity (probably resource-procurement) sites. The results of the Indian Camp Ranch, fuel-reduction, and Crow Canyon's campus surveys indicate that a large Basketmaker III community once occupied more than 800 ha (1,976 acres) between Crow and Alkali canyons.

However, because there has been no comprehensive study of this settlement to date, the momentary population and exact nature of the community, as well as its relationship to neighboring communities, are mostly unknown.

## **Research Objectives**

The Basketmaker Communities Project is a study of seventh-century population growth and social organization in the central Mesa Verde region. Data generated as a result of Crow Canyon's field and laboratory research will lead to a better understanding of settlement changes that occurred as hunter-gatherer societies transitioned into agricultural economies across the northern Southwest (Varien and Diederichs 2011). In addition to being a time of marked population growth, the Basketmaker III period was also witness to great technological and social change, including the expansion of dry farming, the addition of cultivated beans and new varieties of maize to the diet, the replacement of the spear and atlatl with the bow and arrow, the first manufacture of pottery, and the initial construction of public architecture. Taken together, these characteristics form what Kohler and Varien (2010:44) call the "full Neolithic package," and the appearance of these changes kicked off the ancestral Pueblo "Neolithic Revolution" in the Four Corners area, including the Mesa Verde region.

The cluster of Basketmaker III sites in the study area is unique in its potential to shed light on the Pueblo Neolithic transition. First, the density of Basketmaker III sites across Indian Camp Ranch is fairly high (about one site per every 4 ha), indicating that the settlement was substantial. Second, the great kiva at the Dillard site is the only confirmed Basketmaker III great kiva in the central Mesa Verde region. The presence of this structure indicates that the site was a focal point for a burgeoning population, and this great kiva may constitute some of the earliest evidence of non-kin social organization in the region. Finally, at least 77 of the Basketmaker III sites in Indian Camp Ranch are single component, including the Dillard site. These sites are especially suitable for the study of Basketmaker III settlement patterns, because architectural and other material remains are not obscured by later Pueblo components with substantial masonry construction.

The research goals of the Basketmaker Communities Project are fourfold: (1) to date Basketmaker III households and public architecture across Indian Camp Ranch to determine the contemporaneity of sites in the settlement and calculate momentary-population estimates, (2) to determine the relationships among different households in the settlement and between sites with public architecture and those without, (3) to assemble data on imported cultural material and traditions, and (4) to identify the subsistence technologies and strategies employed by the Basketmaker III inhabitants. The results of our research will be used to address three important questions. First, what was the source population for the Basketmaker III immigrants to the study area? Second, is there an identifiable community represented by the Indian Camp Ranch Basketmaker III settlement, and, if so, how was it organized? Third, what was the nature of the Neolithic transition during the Basketmaker III period, and what technological changes made the transition possible?

Research at the Dillard site and surrounding sites will address these important questions as well as issues of general anthropological interest, including the nature of leadership, the development

of, and/or resistance to, social inequality, and the role of public architecture in social complexity. The Basketmaker Communities Project research design is presented in detail in Ortman et al. (2011).

## **Field Methods**

The ephemeral nature of Basketmaker III surface remains at open sites presents a special challenge to field archaeologists. As a result, Crow Canyon employed several tactics to locate, delineate, and test structures, activity areas, and middens in the project area. Field methods used during the 2014 field season included (1) site mapping, (2) remote-sensing survey combined with soil probing, (3) trowel- and shovel-stripping block areas in 2-x-2-m units, (4) excavating structures and structure chambers in quadrants (up to one-half the area of an individual structure) or in 1-x-3-m units, and (5) random testing of midden areas with 1-x-1-m units.

A detailed description of Crow Canyon's field methods and provenience system can be found in our online field manual (Crow Canyon Archaeological Center 2001). In addition, project-specific methods are outlined in the project research proposal (Ortman et al. 2011).

## **Testing vs. Intensive Excavations**

The research design for the Basketmaker Communities Project calls for both testing and intensive excavations. Test excavation, as defined by the Colorado State Historic Preservation Office, is limited excavation of noncontiguous units totaling less than 10 m<sup>2</sup> at any given site; intensive excavation is excavation that exceeds 10 m<sup>2</sup> (Office of Archaeology and Historic Preservation 2011). In 2014, we conducted both intensive and test excavations.

## **Structure Numbering Conventions**

Crow Canyon's field-recording system requires detailed documentation of all architecture exposed in the course of excavation. For structures, that documentation includes recording the following: structure stratigraphy, length, width, height/depth, and diameter; specific characteristics of individual walls and surfaces; and detailed information about features. Basketmaker III pithouses pose a particular challenge for recording because the typical structure consists of two chambers— a main chamber and an antechamber— and the architectural characteristics of the two can be quite different. For example, the floors of many main chambers are deeper than the floors of the associated antechamber, a bench may be present in one chamber but not the other, and the construction of the walls and floors of the two chambers can differ markedly. Therefore, although the main chamber and antechamber constitute a single domicile, we document them as separate structures. Throughout this report, and in all related field records and databases, we have assigned two structure numbers to each pithouse that has an antechamber: one number is assigned to the main chamber; a different number is assigned to the antechamber. Both numbers are provided on maps and the first time a given structure is presented in text— for example, Structure 205 (main chamber) and Structure 226 (antechamber). Thereafter, the structure is referred to in the singular as "the pithouse," "the structure," or as a hyphenated compound (in this example, Structure 205-226), to make clear that the discussion refers to just one pithouse.



## **Specialty Analyses and Projects Conducted in 2014**

### *Temperature Monitoring*

In 2011, two monitors were installed to record temperature data in the western portion of the project area. These electronic monitors are very precise and can operate unattended for months at a time. The monitors were placed at two geographically distinct sites. One monitor was installed at a small habitation site, the Switchback site (5MT2032), which sits on a ridge top at an elevation of 1932 m. The second monitor was installed in the center of the Dillard site at 1925 m. Five other comparable monitors are recording data on experimental farm plots across Crow Canyon's campus, 3 km to the east, to determine the maize productivity of particular environmental settings. The electronic monitors on Indian Camp Ranch have been downloaded once each year to confirm that they are in working order and to establish a backup record. With the data from these monitors, we hope to determine if temperatures and growing-season length are currently adequate for maize farming at particular locales in and near the Basketmaker Communities Project study area. This project will continue through 2016.

### *Mapping*

During the 2014 field season, sites located on the Galen Larson property (adjacent to the Indian Camp Ranch subdivision) were mapped using a Topcon GTS-203 electronic total station surveying instrument in combination with AutoCAD LT and Adobe Acrobat software (Schleher and Coffey 2014). We drafted maps for two Basketmaker III period sites and began mapping one Pueblo I period site—the unfinished map will be completed during the 2015 field season. Because many Basketmaker III structures cannot be detected on the modern ground surface, we defined architectural blocks primarily on the basis of other evidence visible on the modern ground surface, such as concentrations of artifacts and possible construction stone.

### *Geophysical Survey and Subsurface Probing*

Four sites, located on property owned by Pat and Sarah Hatch within Indian Camp Ranch, were surveyed with geophysical imaging (electrical resistance and magnetometer) during the 2014 field season. This work had two primary objectives: (1) to locate subsurface structures and activity areas and (2) to help develop plans for future targeted excavations. The site surveys summarized in this report include the Dry Ridge site (5MT10684), the Pasquin Site (5MT2037), the Badger Den site (5MT10686), and Sagebrush House (5MT10687).

One site, 5MT10674, located on the Watson property, was surveyed with electrical resistance during the 2014 field season. Three 20-x-20-m grids were completed. This work had two primary objectives: (1) to locate subsurface structures and activity areas and (2) to help develop plans for future targeted excavations. A detailed report of geophysical survey methods and results is available (Charles 2014).

To generate comparable data across the Basketmaker Communities Project study area, remote-sensing surveys were conducted in standard grids measuring 20-x-20 m. These remote-sensing

blocks were laid out on a generally north-south axis, south of the typical locations of storage features, in an effort to detect pit structures and extramural activity areas. Anomalies that on the basis of preliminary data seemed most likely to indicate the presence of pit structures were probed with a 1-inch-diameter soil auger. The characteristics of cultural deposits were described, and the depth of the reddish loess that forms undisturbed native sediment was recorded.

Remote sensing has been invaluable to our research during the Basketmaker Communities Project. Even on pristine sites, Basketmaker III surface signatures are, by their nature, ephemeral and difficult to interpret; sites in disturbed settings, such as cultivated fields, can be nearly impossible to decipher. With remote-sensing technology, researchers are collecting site-size and site-layout information comparable to that obtained through pedestrian survey of later ancestral Pueblo sites. It has been proven that multiple methods of remote sensing lead to more accurate interpretations. In order to assemble a more accurate picture of the settlement and the distribution of sites within it, we plan to continue remote-sensing surveys in combination with subsurface probing at Basketmaker III sites in the project area wherever feasible.

### *Adobe Samples Analysis*

Eight geomorphological test units located throughout the Basketmaker Communities Project study area were evaluated by geomorphologist Cynthia Fadem, who notes in a report that,

minerals diffract x-rays at specific and consistent angles based on the spacing in the crystal lattice. Powder x-ray diffraction (XRD) spectra record the intensity of diffractions at each angle. With  $2\theta$  (known angle of detection) on the x-axis and x-ray return count on the y-axis, an XRD spectrum shows the angles of return for all crystalline materials in the sample. I analyze samples of unknown mineralogy using a Rigaku MiniFlex x-ray diffractometer and their resultant spectra using MDI Jade software. This software compares the sample spectrum statistically with a database of known XRD spectra. I calibrate the MiniFlex as needed using samples of known composition (Fadem 2014:1).

The 13 adobe samples submitted for analysis from the Basketmaker Communities Project had nearly identical x-ray diffraction spectra. Mineral analysis indicated a predominance of quartz ( $\text{SiO}_2$ ) with gismondine [ $\text{CaAl}_2\text{Si}_2\text{O}_8 \cdot 4(\text{H}_2\text{O})$ ], possibly a weathering product of anorthite ( $\text{CaAl}_2\text{Si}_2\text{O}_8$ ). These results are consistent with an eolian sediment source and are nearly identical to non-adobe soil spectra from the Dillard site (5MT10647). Because the regional soil parent material is Mesa Verde Loess, it seems likely these adobes originated within the region. Given the similarity to local soils, it is unlikely further analysis would better pinpoint a geographic source for these materials.

### *Pollen Analysis*

Twenty-three pollen samples collected during the Basketmaker Communities Project were processed by the Palynology Laboratory at Texas A&M University, where pollen grains were separated and concentrated utilizing protocols developed and tested by Vaughn Bryant, Jr. These samples were analyzed by Susan Smith during the 2014 season. The majority of samples were from the Dillard site (5MT10647), and five samples were from 5MT10736, the site of a small hamlet buried within a plowed field. Results from the Dillard site indicate a moderate

representation of maize and moderate use of native resources. The following is a summary of Smith's (2014) findings.

The 2014 pollen results for the Basketmaker Communities Project document a variety of native plant resources that might have contributed to subsistence. Maize is the only definitive cultigen identified and, similar to results from 2013, is represented at relatively low levels; however, maize is represented more heavily in one pit structure and one surface room—Structure 220 at the Dillard site and Structure 108 at the TJ Smith site (5MT10736), respectively. This pattern may be evidence of specialized use of these two structures for processing and possibly for storage of harvests.

Several pollen types may reflect the former presence of local wetland or riparian environments where none exist today. The wetland indicators include birch (three samples), cattail (one sample), and possibly carrot family (six samples). Buffaloberry, identified in three samples, is another possible wetland plant, because one native species (*Shepherdia argentea*) is restricted to stream banks or moist meadow soils. Rose family pollen was identified in 10 samples, and this is also a potential indicator with several species that thrive in wet meadow or riparian habitats. If the inference of local wetland is correct, then climatic conditions must have been wetter at approximately A.D. 700 than today.

Eighteen of the 23 samples analyzed come from Structure 102 (great kiva) at the Dillard site. This structure is characterized by a greater variety of plant resources and produced the highest project expression of cheno-ams. The pollen diversity captured in samples from the great kiva suggests a broader spectrum of subsistence resources and/or different cultural activities inside the great kiva than in other sampled contexts.

Structure 220 is another intensively sampled pithouse at the Dillard site, and the recovered pollen preserved the strongest economic signature of all project features examined. This suggests that the structure was dedicated to food processing and possibly storage. In addition to maize, the pollen of rose family and prickly pear are especially notable in samples from this structure.

A possible contextual pattern recognized for the Dillard site is that of high juniper and sagebrush in two bench samples—one from the great kiva and one from Structure 220. This pattern might relate to the storage of fuel wood, pollen rain from roof materials concentrating on the benches, some other subsistence or ceremonial activity, or abandonment activities.

Structure 205 is notable in both the 2014 and 2013 pollen results; the associated samples contain water indicators (birch and cattail), the only project occurrence to date of cholla, and no maize pollen, though a trace of maize was recovered from the antechamber (Structure 226) in samples analyzed in 2013 (Smith 2013). The relatively low expression of maize in the architecturally distinct pithouses is an apparent pattern in the project area and could signify cultural preferences or technology for processing harvests outside of structures. Only a small quantity of pollen is predicted to persist on food products cleaned of chaff and other materials. Alternatively, subsistence for pithouse residents might have included a broader spectrum of native resources.

The results from the smaller site, TJ Smith (5MT10736), point to an emphasis on three probable local native resources: nightshade family, carrot family, and tansy mustard (or a plant with pollen that resembles tansy mustard). The results from this site duplicate the pattern at the Dillard site

for pithouses vs. surface rooms. At the TJ Smith site, Structure 111 contained primarily pollen from native plants, whereas Structure 108 preserved abundant maize pollen.

### *Macrobotanical Analyses*

Macrobotanical analyses were conducted by Karen Adams and Heather Miljour in 2014. Samples from the following sites were analyzed: the Dillard site (5MT10647); the Switchback site (5MT2032); the TJ Smith site (5MT10736); and Windrow Ruin (5MT3890). Twenty-two flotation samples were sorted for radiocarbon specimens. Thirty-eight high-priority flotation samples were analyzed by Heather Miljour. A total of 132 macrobotanical samples were examined for all charred non-wood specimens. Fifty-six wood samples from the Switchback site were examined to determine the wood type— all were either juniper (*Juniperus*) or pinyon (*Pinus edulis*). Finally, maize parts were described in detail from all Basketmaker Communities Project sites.

### *Petrographic Analysis*

Twenty-three sherds from the Dillard site (5MT10647) were selected and sent to Emma Britton for the preparation of thin sections, and analysis, at the University of California, Santa Cruz (Britton 2014). Results indicate that the sherds were all from vessels that were locally produced, and that the clay and tempering materials were harvested from within the central Mesa Verde region. Most vessels that were represented were produced with Dakota Formation clays and were tempered with crushed igneous rock. Interestingly, data indicate that there were at least four different types of pottery recipes utilized by the ancestral Pueblo residents at the Dillard site. There are three possible explanations for these different recipes. First, there might have been four different communities of practice, or production groups, residing at the settlement, each group having learned pottery production techniques in distinctive ways. Second, pottery might have been traded within the central Mesa Verde region, also from distinct communities of practice. Finally, and given that emigrants settled at the Dillard site for the first time in the A.D. 500s, potters could have been experimenting with locally available materials to find the combination of resources that worked best. These data are extremely useful for comprehending larger anthropological issues including migration, identity, and technological change through time, and will be a continued focus of research for the next two years of the Basketmaker Communities Project.

### *Phytolith Analysis*

Twenty soil samples were processed for quantitative phytolith recovery and analysis from two sites in the Basketmaker Communities Project study area— the Dillard site (5MT10647) and the TJ Smith site (5MT10736). The samples included a surface control sample from each site for reference/comparative purposes. A summary of the basic laboratory protocol used to isolate phytoliths (silt fraction isolation, flotation recovery of the light particle fraction using a high density liquid, and examination and analysis of the recovered particles via polarized light microscopy at 500x) is outlined in a report prepared by phytolith analyst J. Bryon Sudbury (2014).

The phytolith assemblage was evaluated for indications of maize, beans, and squash. Maize cob phytoliths are represented in the samples; however, their relatively low frequency on the sites may be due to poor preservation or absence during occupation. Panicoid cross phytoliths were generally more abundant in the better preserved samples. The same can be said about the rondel forms—they represent grasses (and some could be from maize). Somewhat surprisingly, only two of the phytoliths produced by cucurbits (squash) and that exhibit distinctive, spherical scalloped surfaces were observed in this study. One specimen is large enough that it is probably from a domesticated cultivar, whereas a much smaller specimen is likely to have been produced by a wild gourd. Sedge phytoliths, indicative of wetter soil conditions or of gathering botanicals from outside the settlement, were recovered from three samples. Several phytolith plant hairs were noted, including one from the hearth in Structure 309 at the Dillard site; the same sample contained a sedge specimen.

In sum, evidence indicates the presence of maize, cucurbits, and sedges; no evidence of beans was noted. Fire indicators, burned phytoliths, and seasonality indicators were also present. Although phytolith preservation was fair to very poor at these sites—a result of soil pH and soil carbonates—considerable additional data from the sand fractions were noted and reported, including color, texture, soil minerals, charcoal, and other cultural debris, as well as the presence of Herkimer diamonds. Additional important information about other biogenic silicas (sponge spicules, statorpores, and diatoms) was also noted, as were important issues involving biogenic silica stability and dissolution. Resource procurement was suggested by the cucurbit phytoliths, and maize agriculture is implied.

### *Residue Analysis*

The Interdisciplinary Laboratory of Archaeological Residue Chemistry (iLARC) at the University of North Texas received 30 artifact samples from the Dillard site (5MT10647) for residue analysis. Archaeological artifacts consisted of 17 pottery fragments, six projectile points, two bifaces, and five ground-stone implements. Extraction and analysis procedures for protein and fatty acids are described in a report submitted to Crow Canyon by Barker et al. (2014). Fatty acid analysis allows interpretation of coarse-scale food groups, whereas protein residue analysis potentially offers interpretation of precise taxonomic identification of food residues. Barker et al. (2014) also evaluated pottery artifacts for total organic carbon (TOC) content. This allows a coarse-scale examination of the taphonomic condition of residues in general which can be used to aid interpretation of fatty acid and protein results.

Results of these analyses were generally negative, with the possible exception of residues from fatty acids. However, taken together, these results are meaningful in terms of residue taphonomy. The TOC results indicate low quantities of biomolecular residues, and the fatty-acid results indicate a high incidence of degradation from diagenesis. Thus, it is not surprising that the few identified peptides in the protein residue analysis relate to either soil bacteria residues or trace contaminants of analytes/reagents typically found in LC-MS/MS laboratories (particularly in a non-targeted analysis). Archaeological chemists typically do not evaluate the meaning of negative results; rather, these are dismissed as meaningless and receive no further attention. In this analysis, however, multiple lines of evidence shed light on the meaning of negative results. First, it is unlikely that these results are false negatives (at least given the sensitivity of UNT iLARC equipment), because there is sound evidence of poor preservation. Second, it is only in

light of multiple lines of evidence that the taphonomic condition of each class of residues is more confidently revealed.

In sum, Barker et al. (2014) surmised that the depositional environments from which these samples were recovered were not conducive to optimal preservation. In general, TOC results from these artifacts indicate poor preservation of biomolecular residues, fatty-acid analysis reveals poor preservation but multiple interpretable results, and results of protein analysis were negative for these samples.

### *Artifact Analysis*

In-house artifact cataloging and analysis for the Basketmaker Communities Project is ongoing. More than 16,400 pieces of chipped stone (12,500 in 2014), 8,400 pottery sherds, and 400 flotation samples have been analyzed for the Basketmaker Communities Project thus far.

### *Intensive Site Evaluation*

In 2013, the Crow Canyon Archaeological Center contracted with Woods Canyon Archaeological Consultants (Woods Canyon) of Cortez, Colorado, to conduct an intensive evaluation of 70 Basketmaker III habitations within Indian Camp Ranch. This sub-project is part of the larger Basketmaker Communities Project and is funded by the National Science Foundation. The aim of this sub-project is to create, on the basis of surface signatures, a relative chronology of all Basketmaker III habitations within the study area.

The intensive site evaluation consists of a tally of surface artifacts, an appraisal of site size, and a quantification of structures. The 70 sites included in this study were chosen on the basis of site forms completed during previous surveys of portions of Indian Camp Ranch conducted between 1965 and 2003 (Adams 1984; Fetterman 2004; Fetterman and Honeycutt 1994; Lightfoot 1985; Martin et al. 1971; Van West 1986). With a few exceptions, a complete tally of surface artifacts was completed at each site.

As of December 2013, Woods Canyon had completed the fieldwork for this intensive site evaluation sub-project (Shanks 2014). Although 70 sites were chosen for revisiting, only 68 were evaluated. The Dillard site (5MT10647) was intensively studied, tested, and excavated by Crow Canyon, so it was excluded from Woods Canyon's sub-project. Two additional sites were excluded from the study as a result of recent disturbance or lack of evidence for a Basketmaker III component. And finally, one site not included on the initial list of 70 sites for study was added to the study on the basis of a field assessment of the site as a Basketmaker III activity area that might have served as a habitation. With the removal of three sites and the addition of one site from the initial list of 70, Woods Canyon evaluated a total of 68 sites.

At the end of the 2014 field season, several tasks were completed for this sub-project. Standard Office of Archaeology and Historic Preservation (OAHP) Cultural Resource Re-Visitation forms, with a specially prepared form of collected data, were finalized and submitted to OAHP for inclusion in the Colorado State Historic Preservation records. A project report was completed that included the project specifics, a summary of results, and a preliminary synthesis of data. All

data from the sub-project have been provided to the Crow Canyon Archaeological Center to add to our databases for future studies.

## **Chronometric Analyses**

One of the primary objectives of the Basketmaker Communities Project is to create a Basketmaker III settlement history of the project area by collecting materials from both habitation and ancillary structures that yield absolute dates. Three dating methods are being applied; dendrochronology, radiocarbon accelerator mass spectrometry, and archaeomagnetic dating. Eleven dendrochronology samples were submitted to the Laboratory of Tree-Ring Research at the University of Arizona in the winter of 2012/2013, and we received the results in the fall of 2014. Unfortunately, none of the samples were datable. Additional samples collected during the 2014 field season will be sent to the Laboratory of Tree-Ring Research this winter. The results of radiocarbon and archaeomagnetic dating are discussed below. Table 1 provides all radiocarbon accelerator mass spectrometry and archaeomagnetic dates received as of December 2014; however, only those dates received during the 2014 field season will be discussed below.

### *Radiocarbon Accelerator Mass Spectrometry Dating*

Ten radiocarbon accelerator mass spectrometry (AMS) samples were analyzed for the Basketmaker Communities Project in 2014. All of the samples were processed by Darden Hood of Beta Analytic, and the results were reported in a two-sigma, 95-percent probability range.

One radiocarbon sample was recovered from the Dillard site, two were recovered from Site 5MT2032 (the Switchback site), four were from Site 5MT3890 (Windrow Ruin), and two were recovered from Site 5MT10736 (the TJ Smith site). The resulting dates demonstrate that the Dillard site was occupied from the late sixth century through the seventh century A.D. The results indicate that the sites mentioned above, were occupied in the A.D. 600s and 700s ([Table 1](#)).

### *Archaeomagnetic Dating*

Six archaeomagnetic samples were analyzed from hearth or burned floor contexts during the 2014 field season. Five of these samples are from the Dillard site (5MT10647), whereas the sixth sample was collected from the TJ Smith site (5MT10736). These samples were analyzed by the Archaeomagnetic Laboratory at the Illinois State Museum (Lengyel 2014). At the Dillard site, samples were collected from the hearth collars in Structures 228, 226, 236, and 232, and one sample was taken from the charred floor of Structure 101. At the TJ Smith site, one sample was collected from the hearth in Structure 111. The Archaeomagnetic Laboratory reported that the magnetic quality of these samples was very good and that the samples are statistically indistinguishable from each other, suggesting that the features were roughly contemporaneous; they appear to date from the early- to mid-seventh century A.D. ([Table 1](#)).

## 2014 Excavations

Many Basketmaker III structures in the central Mesa Verde region have been fully excavated; however, previous investigations have not emphasized the recovery of comparable data from multiple sites in one settlement cluster. The Basketmaker Communities Project provides an opportunity to remedy this deficit. To do so, we are examining multiple sites within a single, large settlement cluster and using similar sampling strategies at all sites, which will ensure a high degree of data comparability. These strategies include: (1) exposing the shape and size of selected pit structures by stripping the post-occupational deposits from both above the structures and around the structure perimeters; (2) excavating a trench through selected structures to better define structure boundaries, expose stratigraphy, and locate floor features; and (3) excavating an additional one-quarter to one-half of the trenched structures to expose the hearth, ritual features, and storage features.

The sampling strategy for the Basketmaker Communities Project also calls for the excavation of randomly selected 1-x-1-m units in extramural midden (refuse) deposits. The artifact-assemblage data for the middens will be used to: (1) establish a basic site chronology, (2) identify the types of activities that occurred in different architectural blocks, (3) make inferences about ancient subsistence practices and exchange networks, and (4) reconstruct the past environment. These data will also be used in a variety of intrasite and intersite comparative studies.

Excavations during the 2014 field season were conducted at four sites: 5MT10647 (the Dillard site), 5MT2032 (the Switchback site), 5MT10709 (no assigned name), and 5MT3875 (the Shepherd site). [Table 2](#) provides a summary of all the excavation units for the 2014 field season. Table 2 also specifies which units have been completed and which will be continued during the 2015 field season. By the end of the 2014 field season, excavation had occurred in 304 units since the inception of the project, and a total of 275 units had been excavated, fully documented, and backfilled. Before backfilling, exposed walls and floors within structures were protected with Geotech cloth, a breathable, synthetic fabric that does not deteriorate unless exposed to ultraviolet light. The backfilled sediment was tamped to reduce settling and the ground surface was restored as much as possible to its pre-excavation condition. At the end of the 2014 field season, 29 excavation units were still in progress. These were covered with plywood and sealed with plastic sheeting to protect the units from damage during the winter. Work within these units will continue in the 2015 field season.

### Site 5MT2032 (the Switchback site)

Approximately 250 m northwest of the Dillard site, on a north-south trending ridge, is a cluster of sites that are inferred to date from the Basketmaker III period. This includes the following sites: 5MT10711, 5MT10713, 5MT10714, and 5MT2032. Site 5MT2032, the Switchback site, located on the east side of the ridge, was selected for sampling, and portions of the midden and pithouse were excavated in 2013 and 2014 ([Figure 3](#)). An alignment of nine slab-lined storage rooms crosses the slope just above the pithouse. One of the surface rooms was investigated in 2014. Details of this work are provided below.



### *Structure 110*

A 2-x-2-m unit was excavated into Structure 110, a pithouse. Excavations were completed in this structure during the spring of 2014. The roof of the structure does not appear to have been dismantled, and more than 50 dendrochronological samples were recovered. Large chunks of burned adobe were also collected for analysis. A variety of features are associated with the pithouse floor including a wing wall, deflector, a weight-bearing post, various pits, and a bin. A household artifact assemblage that appears to date from the Basketmaker III period was documented on the exposed portion of the floor ([Figure 4](#)). The floor surface had been coated with plaster ([Figure 5](#)). After completing all excavation and documentation, we backfilled the structure.

### *Structure 113*

A 2-x-2-m unit was excavated into a slab-lined storage room that appears to have been roofed. One excavated posthole contained the remains of a post, but the remains were too deteriorated to collect for a dendrochronological sample. The floor was use-compacted native sediment. The floor assemblage was composed of mixed refuse dating from the Basketmaker III period. Features associated with the floor included one pit of unknown function, one posthole ([Figure 6](#)), and a footer trench. Subsequent to its documentation, the structure was backfilled.

### *Nonstructure 115*

A 2-x-2-m unit was excavated to investigate the presence of upright slabs about 10 m east of Structure 110. The cultural deposits in the fill above the prehistoric ground surface (Nonstructure 115) were midden deposits. The upright slabs were in fill and were not in contact with a use surface. When the fill was removed from the unit, a section of dry-laid masonry was exposed. Presumably, the upright slabs had been a part of this wall. We infer that the remaining section of this wall might have been part of a small checkdam, because the wall was constructed within, and perpendicular to, a small drainage ([Figure 7](#)). The feature and unit were documented and subsequently backfilled.

### *Nonstructures 101 and 102*

In order to sample three percent of the midden at the Switchback site, 30 randomly selected 1-x-1-m units were excavated, 28 of which were completed before the 2014 field season. The two remaining units were documented and backfilled during the spring of 2014. Though the density of artifacts on the modern ground surface was high, the midden deposit (Nonstructure 101) was shallow. It was approximately 10 cm thick, and most artifacts were recovered within a few centimeters of the modern ground surface. Mechanical disturbance and modern burning episodes were evident in five of the units. Though mixed, these burned deposits (Nonstructure 102) included secondary refuse.

## Site 5MT3875 (the Shepherd site)

Site 5MT3875, the Shepherd site ([Figure 8](#)), is located on the east slope of a ridge that drops into the Crow Canyon drainage system on the far eastern edge of the project area. It was first recorded in 1983 by Jo Berger, one of the original Crow Canyon directors, as part of an early Crow Canyon archaeology program. It was re-documented in 1991 by Woods Canyon Archaeological Consultants, who recorded the site as a large scatter of artifacts dating from the Basketmaker III period and that included 11 burned-rock concentrations ranging in size from 2-x-2 m to 10-x-4 m. Two small rubble mounds were also recorded. During the summer of 2014, our efforts were focused on excavating and documenting the middens (Nonstructure 105, 109, 112) and on testing a possible pit structure toward the northeastern portion of the site (Nonstructure 115).

### *Nonstructure 105*

A low-density midden (Nonstructure 105) is located in the central portion of the Shepherd site. Along with a light scatter of surface artifacts, six rock clusters were mapped within this nonstructure. Three percent of the midden was sampled with 11 units measuring 1-x-1 m. Midden deposits are shallow, ranging from 3 to 20 cm deep. Artifact density was low, but included pottery sherds, flaked-lithic artifacts, and ground-stone tool fragments. Excavations will continue at the Shepherd site in 2015.

### *Nonstructure 108*

Nonstructure 108 is an L-shaped rock concentration measuring 10-x-6 m. The rocks range from 5 to 40 cm long, and the concentration rises only slightly above the modern ground surface. A 2-x-2-m unit was excavated in the northwest portion of the concentration. Excavations will continue in 2015.

### *Nonstructure 109*

Nonstructure 109 is a midden deposit that measures 8-x-8 m and is located south of Nonstructure 108. The midden was sampled with six 1-x-1-m units. Similar to the other refuse deposits at the site, this midden is shallow, averaging 12 cm deep. Nevertheless, this midden contained a higher artifact density than other middens and yielded more than 100 pottery sherds, flaked-lithic artifacts, ground-stone fragments, and a projectile point. Excavation will continue in 2015.

### *Nonstructure 112*

Six 1-x-1-m units were excavated in the easternmost midden (Nonstructure 112) during the 2014 season. This small midden is associated with a possible pit structure (Nonstructure 115) identified by geophysical survey. Excavations will continue in 2015.

### *Nonstructure 115*

One 2-x-2-m unit was placed within a geophysical anomaly detected with the electrical resistivity survey. Excavations were started in 2014, and postabandonment deposits were removed. Artifact density was high and included gray ware sherds and flaked-lithic debris. Sparse deposits of burned adobe were observed in the fill, but the pieces were too small to collect. Excavations will continue in 2015.

### **Site 5MT10709**

During the 2014 field season, excavations at Site 5MT10709 (no name assigned) commenced. This site was selected for testing because it is a single habitation site dating from the Basketmaker III period. One pithouse, two middens, and a concentration of rubble with upright slabs were identified by Woods Canyon Archaeological Consultants in 1991 and then again in 2013 by Crow Canyon staff ([Figure 9](#)). No less than three percent of each midden was tested, consisting of six 1-x-1-m units in the east midden and eight 1-x-1-m units in the west midden. A 3-x-1-m unit was placed in the inferred center of the pithouse in an effort to expose and document a hearth and other floor features. All but two of the units were completed and backfilled during the 2014 field season. The two remaining units—the 3-x-1-m unit in the main chamber and a 1-x-1-m unit thought to be in an antechamber—will be completed during the 2015 field season.

### *Nonstructure 101*

Six 1-x-1-m units were placed in Nonstructure 101, the east midden. This midden contains a low density of artifacts; flaked-lithic debitage, gray ware sherds, ground-stone tools, and other lithic artifacts were recovered. Most of the deposits in this midden were shallow, suggesting that the site might have suffered sediment deflation since its occupation approximately 1,400 years ago. The midden unit located farthest to the south contained one posthole, suggesting the presence of a ramada or shelter over an extramural use area. All midden units were documented and backfilled during the 2014 season.

### *Nonstructure 105*

Eight 1-x-1-m units were placed in Nonstructure 105, the west midden. This midden has a low density of artifacts; gray ware sherds, flaked-lithic debitage, and ground-stone tools were recovered. Similar to Nonstructure 101, these cultural deposits are shallow, which suggests that the site experienced a period of sediment deflation in the past 1,400 years. One of the units located in the southeast portion of the midden contained a pit feature that could have been used for storage. A unit in the north-central portion of this midden appears to contain a portion of an antechamber of pithouse Structure 106. Seven of the eight 1-x-1-m units were documented and backfilled during the 2014 field season, whereas the antechamber unit will be completed in 2015.

### *Structure 106*

One 3-x-1-m unit was placed in the inferred center of the pithouse (Structure 106) in order to expose a hearth and other floor features. The postabandonment sediments contain a moderate density of artifacts; we recovered gray ware sherds, flaked-lithic debitage, and ground-stone tools. Only postabandonment sediments have been removed from this unit, although roof fall was observed at the end of the 2014 field season. Excavations will continue in 2015.

### **Site 5MT10647 (the Dillard site)**

During the 2014 field season, excavation at the Dillard site continued south of the great kiva, in the great kiva, and directly north of the great kiva ([Figure 10](#)). Most cultural deposits at the Dillard site are shallow, ranging from 2 to 35 cm thick. This may indicate that the site has suffered sediment deflation since its occupation approximately 1,400 years ago. A distinct layer of undisturbed, reddish-brown eolian loess underlies the cultural deposits at the site. Most excavation units were terminated at this soil horizon.

### *Architectural Block 100*

#### Structure 102

During the 2014 field season, excavation continued in the northwest quarter of Structure 102 (the great kiva) at the Dillard site. In addition to the northwest quarter, three additional excavation units were placed in the structure with the goal of locating a hearth. The original north-south trench, excavated in 1991 by Woods Canyon Archaeological Consultants, was re-excavated to make certain that no floor features had been overlooked during earlier work.

By midsummer, the floor in the northwest quarter had been fully revealed, and it became apparent that no hearth was present in this portion of the structure ([Figure 11](#)). Features eventually identified in this quarter were the northwest and northeast main roofing support posts, three floor vaults, two sand-filled pits, and various other pit features. The presence of three floor vaults, the latest of which truncated an earlier vault, indicates that the great kiva had undergone at least two remodeling episodes ([Figure 12](#)). This suggests a long use life for the structure. The latest floor vault and two sand-filled pits are aligned north-south, whereas the two earlier floor vaults were aligned northwest-southeast. The north-south alignment of the latest floor features suggests that a hearth might be present immediately beyond the south profile face.

A 2-x-2-m unit (1403N 491E) was placed south of the latest floor vault in an effort to locate the hearth ([Figure 13](#)). As the floor was revealed in this unit, it became apparent that no hearth was present (see below for a discussion of the floor). However, a shallow firepit was identified. On the basis of the northwest-southeast alignment of the two earlier floor vaults, another excavation unit, Segment 2, was placed in an effort to expose a hearth. Segment 2 is a wedge between the north-south trench excavated by Crow Canyon and the northwest-southeast trench (Segment 4) excavated by Woods Canyon Archaeological Consultants. No hearth was exposed in this section of the great kiva, but a southeast support post<sup>o</sup> which had been remodeled twice<sup>o</sup> was identified ([Figure 14](#)).

The portion of the bench that was located in Segment 2 ([Figure 13](#)) was not carved out of undisturbed native sediment but was constructed from redeposited calcium carbonate and Mesa Verde loess. A stratigraphic break between the section of wall formed of undisturbed native sediment and the section of wall formed of redeposited sediment aligns with a break between the undisturbed native and constructed portions of bench ([Figure 15](#)). This break also aligns with the two earlier floor vaults, suggesting an earlier northwest-southeast orientation of the great kiva. The pattern of fill and construction in this segment, along with its alignment with the two earlier construction episodes of the great kiva, suggests the presence of a southeast-oriented entryway into the great kiva.

A trench 1.0 m long and 50 cm wide (Segment 3), located south of Segment 2, was excavated to determine if there was a southeast entry into the structure ([Figure 13](#)). The unit was excavated through the southern wall of the great kiva and into the prehistoric ground surface. The profile faces in Segment 3 indicated three distinct depositional events ([Figure 16](#)). The uppermost stratum is a mixture of unburned adobe and redeposited native sediment interpreted as fill that might have been used to seat the retaining wall of the great kiva. The second stratum is a construction deposit with a high density of calcium-carbonate and adobe inclusions that was interpreted as fill used both to seal the southeast entry and to create a level surface for the upper, adobe-rich, stratum. This fill rested on top of what appeared to be two steps carved out of undisturbed, calcium-carbonate-rich, native sediment.

It is unknown if this entryway and steps were used by the builders of the great kiva to gain easy access into the building during construction or if it was used by members of the community as an entryway/exit. If it was a permanent entryway/exit, then it is likely that this feature would have been associated with the two earlier floor vaults that are oriented northwest-southeast. During the final construction phase in the great kiva, the orientation was altered from a northwest-southeast alignment to a north-south alignment. At this time, the possible entryway might have been sealed with the construction fill observed in Segments 2 and 3 ([Figure 13](#)).

The floor surface exposed in the 2-x-2-m unit 1403N 491E ([Figure 13](#)) was plastered and covered with sand in the northern half but not in the south half of the unit. This is congruent with the floor surface in the northwest quarter of the great kiva; the plastered sections of the floor seemed to be intact around the bench, over and around features, and between three exposed postholes. The northern half of this unit was also between three exposed postholes. On the basis of these exposed postholes, and the inference that this structure was built using a four-post construction technique, this area is likely to be the center of the great kiva.

A firepit and one pit feature of indeterminate use were identified and documented within the 2-x-2-m unit 1403N 491E ([Figure 13](#)). The fill within the firepit was ashy and charcoal-stained, but the sediment into which the firepit was excavated was neither fire-reddened nor charcoal-stained. This suggests that the sediment found within the firepit was a secondary deposit. This pit was aligned with the latest floor vault and two sand-filled pits, suggesting that it is associated with the last construction event and the alteration to a north-south axis of orientation. Only a few Basketmaker III great kivas have been excavated in the northern Southwest, and no great kiva other than Structure 102 has been recorded in the central Mesa Verde region. It is not clear whether this firepit represents an early great kiva hearth, or if this particular great kiva did not

have a true hearth, or if the hearth was not aligned with the other floor features; the latter seems to be the least likely of the three possibilities suggested.

The floor area closest to the bench and the features in Segment 2 ([Figure 13](#)) had been coated with red plaster; however, the other areas of the floor surface either had never been plastered, or the plaster was not preserved ([Figure 17](#)). No sand was observed on the floor surface in Segment 2. A feature recorded in the 3-x-1-m trench (1402N 493E) adjacent and to the west of Segment 2 was re-exposed; only a small portion of this pit feature was exposed in that trench ([Figure 13](#)). After the remainder of the pit was exposed in Segment 2, it became clear that this feature was the southeast main roof-support post ([Figure 14](#)). The post had not been removed when the structure was decommissioned, and portions of it were recovered for dendrochronological analysis. Two additional postholes in this area were identified and interpreted as evidence of remodeling events ([Figure 14](#)). The two earlier postholes were most likely associated with construction events that occurred with the two floor vaults that were aligned northwest-southeast. All excavation units within the great kiva were documented ([Figure 18](#)) and backfilled during the 2014 field season.

#### Nonstructures 108 and 109

Two sparse artifact scatters were noted south of Structure 102 (the great kiva) – one to the southeast (Nonstructure 108) and one to the southwest (Nonstructure 109). Each of the scatters measure approximately 15-x-15 m. Six randomly selected 1-x-1-m units were excavated into each midden in order to sample refuse deposits that might have been associated with the great kiva and to detect evidence of any other cultural activities in these locations. The midden deposits in both of these areas were shallow and contained sparse artifacts. Artifacts collected include gray ware pottery sherds, flaked-lithic debris, a small fragment of turquoise, and one stone bead. Two pit features were identified in two of these units.

One of the identified features is an irregularly shaped pit within which secondary refuse had been deposited. At the base of the pit, a *ödimpleö* was observed with an upright sandstone slab. This might be a posthole. The irregular shape of the pit suggests that it is more likely that the dimple is the true feature, and that the prehistoric ground surface surrounding the posthole was modified during the construction and subsequent use of the posthole. The feature was excavated, documented, and backfilled during the 2014 field season.

The other identified feature was a circular pit within which secondary refuse had been deposited. Unburned sandstone slabs were present in the pit but were not arranged in such a way to suggest the pit had been slab-lined. Rather, it appears that they were deposited in the pit as secondary refuse. This pit might have been used for storage, because no thermal alteration was observed. The feature was excavated, documented, and backfilled during the 2014 field season.

#### Nonstructure 104

In the spring of 2014, four 2-x-2-m units were placed in a geophysical anomaly located immediately north of Structure 102 (the great kiva). This anomaly is a large pit feature, 1.40 m long, 1.38 m wide, and 34 cm deep, that might have been a storage room. The upper fill within the pit was composed of postabandonment, naturally deposited sediment, whereas the lower fill

was secondary refuse. Though sandstone, charcoal, and adobe inclusions were observed, there was no direct evidence that this pit was roofed (i.e., no postholes were found). One large piece of turquoise was recovered from the base of the feature. This feature is most likely associated with either Structure 312 to the north or Structure 102 (the great kiva) to the south. The feature was excavated, documented, and backfilled during the 2014 season.

### *Architectural Block 200*

#### Structures 205 and 226

Structures 205 and 226 are the main chamber and antechamber, respectively, of a pithouse identified during the electrical resistivity survey in 2011. This pithouse is located about 25 m south of the great kiva, along the western edge of the ridge ([Figure 10](#)). Despite the slight western aspect of this location, the structure is oriented northwest-southeast with the antechamber southeast of the main chamber.

The last feature to be excavated in Structure 205 was a step between the antechamber and the main chamber. Passing from the main chamber into the antechamber required a step up of 20 cm. A notch had been dug into, and under, a balk of sediment ([Figure 19](#)) from which the step was carved. A slab of rock or wood might have been placed there to reinforce the step. The step is 82 cm wide.

In 2014, three postholes, three other pits, and one stepped entryway were excavated and documented in Structure 226. Two of these postholes appear to have been associated with roof support, whereas the third may be evidence of a remodeling event. The stepped entry extended from the floor of Structure 226, the antechamber, to the prehistoric ground surface outside the structure. This entry opened to the southeast and was 1.42 m long. The steps had been carved out of undisturbed native sediment. Structures 205 and 226 were excavated, documented, and backfilled during the 2014 field season ([Figure 20](#)).

#### Structures 220 and 234

The 2014 field season focused on removing the fill within the main chamber, Structure 220 ([Figure 10](#)), and to expose the floor and its associated features. The floor was constructed of use-compacted native sediment. A hearth, several postholes, a sipapu, and five additional pits were identified and documented in the main chamber. Two postholes were identified and documented in the antechamber. See Diederichs et al. (2014) for a discussion of the features recorded in previous field seasons.

In contrast with other structures documented at the Dillard site, this pithouse was not cleared of its material culture before it was decommissioned. A cache of stone tools was located to the west of the ramped entry, a vessel appeared to have been smashed as the roof collapsed on it, and a metate had been left on its three sandstone-block supports ([Figure 21](#)). The position of the metate would have caused the ground materials to fall directly into a pit feature located in the floor surface.

The hearth is 66 cm long and is inferred to be circular. The hearth is 20 cm deep and had been cleaned out before the structure was decommissioned. An archaeomagnetic sample was taken from the hearth's collar, but results have yet to be received. Directly adjacent and to the southeast of the hearth was an additional pit feature. The fill within this pit was ashy, which suggests that this feature was used as an ashpit.

A sand-filled pit feature interpreted as the sipapu was identified in alignment with, and northwest of, the hearth. Half of the feature was exposed in our excavation unit and was 24 cm deep. An additional small pit feature was documented between the sipapu and hearth. This feature was empty when the roof collapsed, which allowed roofing material to fall within the pit. Though not interpreted as a sipapu, this pit is also northwest of, and in alignment with, the hearth.

Seven postholes were identified and documented on the bench surface and are inferred to have been part of the structure's superstructure. No large postholes were identified in the floor, which suggests that the roof of this structure was not constructed with a four-post support system like others found at the Dillard site. This structure and its features were excavated, documented, and backfilled during the 2014 season ([Figure 22](#)).

#### Nonstructure 227

A burial pit was found north of Structure 220. Only a portion of the pit was exposed in our excavation unit, so the exact dimensions of the pit are unknown. However, the segment exposed in our unit measured 1.07 m long, 56.5 cm wide, and 42 cm deep. An osteologist examined the remains (Noldner 2014), after which all stones, sediment, and artifacts that had been removed from the unit were placed back into the pit. One incomplete gray ware seed jar that was not removed or collected was observed on the southern rim of the pit. The presence of this type of jar indicates that the burial probably dates from the Basketmaker III period.

#### Structure 232

In 2014, four postholes and one additional pit feature were identified in Structure 232. An archaeomagnetic sample collected from the hearth in 2013 was datable but yielded the large age range of A.D. 88–690 ([Table 1](#)). The postholes were located on the bench surface and were probably part of the structure's roofing system ([Figure 23](#)). The structure and features were excavated, documented, and backfilled during the 2014 field season.

#### Structure 236

See Diederichs and Copeland (2013) and Diederichs et al. (2014) for a more complete discussion of Structure 236; only the dating of one feature will be discussed here. The hearth yielded an archaeomagnetic date that centered on the mid-A.D. 600s ([Table 1](#)). The structure was backfilled during the 2014 field season ([Figure 24](#)).



### Nonstructure 241

A 2-x-2-m unit was placed northwest of Structure 228 in an effort to reveal more of the stockade discussed below. Two features, a posthole and an additional pit, were identified at roughly the same elevation as the other features associated with Nonstructure 241 (Diederichs et al. 2014). The posthole may be part of the stockade, and/or may be associated with Structure 228 located to the southeast. Both features were excavated, documented, and backfilled during the 2014 field season.

### Nonstructure 248

In 2013, a 2-x-2-m unit had been placed on a rock-concentration feature that had been identified during the Woods Canyon Archaeological Consultants 1991 survey. Excavation revealed the presence of eight aligned postholes. These postholes are evidence of a possible stockade. In the spring of 2014, three additional 2-x-2-m units were placed to expose the possible stockade further. In total, 24 postholes were identified, excavated, and documented ([Figure 25](#)). Two additional pit features were identified as well, and may be evidence that this space was as an extramural use area. All features were excavated, documented, and backfilled during the 2014 field season.

### *Architectural Block 300*

Geophysical surveys conducted in 2012 detected numerous anomalies in Architectural Block 300 north and northeast of the great kiva. Subsequent soil probing and subsurface testing confirmed that at least four of these anomalies are pit structures. Two additional anomalies were probed in 2013; one appears to be a pit structure, whereas an anomaly to the west now appears to be a thick deposit of secondary refuse. In addition to anomaly testing, we continued to seek postholes associated with a possible stockade in Architectural Block 300 during the 2014 field season. A partially slab-lined feature (Feature 8, Nonstructure 304) was exposed during this process. All excavation units in Block 300 were documented and backfilled during the 2014 field season.

### Nonstructure 302

In 2014, three additional 2-x-2-m units were excavated in Nonstructure 302, the Architectural Block 300 midden, in an effort to locate a possible stockade. Please refer to Diederich et al. 2013 for a description and discussion of Nonstructure 302. Though no evidence of a stockade was found in Nonstructure 302, an extramural work area was identified ([Figure 26](#)). This use surface is Nonstructure 304 and is interpreted as the prehistoric ground surface.

### Nonstructure 304

Five pit features were observed in Nonstructure 304, one of which might have been a roasting pit, whereas another was large enough to have been a storage pit. One posthole was documented; the presence of this feature suggests that this area might have been roofed. The fill in these features was composed of dark brown organic sediments and secondary refuse.

In addition to these features, a large storage pit (Feature 8) was identified (Figure 27). This feature is not fully slab-lined, though there are some upright slabs around the southern perimeter of the pit (Figure 27). The feature is 1.46 m long and inferred to be approximately 1 m wide, although only the south half of the feature was exposed within the unit. The fill within the feature was similar to the fill of the features described above. A few chunks of adobe were present in the fill of this feature, suggesting it might have been roofed. It is unclear whether Feature 8 is a storage pit or a pit room.

A small pit feature was identified in the southwest corner of the same 2-x-2-m unit in which Feature 8 was exposed. This smaller feature contained fill similar to that found elsewhere in Nonstructure 304, and this pit has been interpreted as a storage feature that was probably associated with the use of nearby Structures 309 and 311.

### Structure 311

In 2014, the lowermost 10 cm of fill above the floor of Structure 311 was removed, revealing a small portion of a hearth and one additional pit feature (not shown in Figure 28). The structure was apparently cleaned out before it was decommissioned; only a few sherds and pieces of flaked-lithic debitage were recovered from the floor. The floor is use-compacted native sediment. Only a small segment of the hearth was revealed in the southwest corner of the 1-x-3-m unit, and a 2-x-1-m unit was therefore excavated adjacent to the west edge of the 1-x-3-m unit. An estimated one-half of the hearth was exposed with the addition of this unit, as was a sand-filled pit interpreted as a sipapu and another pit feature north of the sipapu. The alignment of the hearth and sipapu suggests that this structure has a northwest-southeast axis of orientation (Figure 28).

Except for the hearth, all pit features were filled with a mixture of sand and silty clay, indicating that they were intentionally filled before the structure was decommissioned. The fill of the hearth appeared to be primary refuse. An archaeomagnetic sample was taken from the collar of the hearth collar, and we are awaiting results of this dating.

A small pit feature was recorded on the prehistoric ground surface east of this pithouse. This pit feature is associated with Nonstructure 304, but is included in this discussion on the basis of its proximity to Structure 311. The pit was identified by a single upright sandstone slab protruding from the prehistoric ground surface. Because only a small segment of the feature was exposed and excavated, the use of this feature is difficult to assess, however, the pit might have been a storage feature associated with nearby Structure 311. Structure 311 and its associated features were excavated, documented, and backfilled during the 2014 field season.

### Structures 312 and 324

In 2014, excavation in Structures 312 (the main chamber) and 324 (the antechamber) focused on removing the roofing and construction fill from two 2-x-2-m units north of the hearth and two 2-x-2-m units south of the hearth. After the floor surface had been revealed, an additional 2-x-2-m unit was placed to northwest of the hearth in an effort to expose additional floor features. The floor is use-compacted native sediment. Artifacts within the structure were apparently removed before the structure was decommissioned, though a low density of primary refuse was observed

on the floor. Twenty-four postholes, a hearth, bench, deflector, and ramped entryways were identified in the structure. Various pit features, some interpreted as having been used for storage, were identified and documented. This pithouse is oriented northwest-southeast ([Figure 29](#)).

The bench was narrow and was observed along the walls of Structure 312; Structure 324 lacked a bench. Twenty-one postholes were identified and documented on the bench surface. The associated posts were probably tied into the roofing system.

The hearth was large, shallow, and basin-shaped. It measures 60 cm in long and wide and is 14 cm deep. Primary refuse had apparently been removed from the hearth; roofing sediment was observed within the feature. An archaeomagnetic sample was collected from the adobe collar of the hearth, but results have yet to be received. Evidence of a deflector was identified southeast of the hearth and consisted of five postholes. The presence of postholes suggests jacal construction.

The ramped entryway extends from the southeast portion of the floor of the antechamber to the prehistoric ground surface outside the structure. The ramp is 2.30 m long, 59 cm wide, and rises 18 cm from the floor of the antechamber to the prehistoric ground surface. The ramp was formed of undisturbed native sediment. A posthole is located between the interface of Structure 324 and the prehistoric ground surface on the southeast side of the ramp. The post in this posthole might have helped support an opening into the antechamber.

There was also a step feature identified between Structures 312 (main chamber) and 324 (antechamber). This feature was constructed of undisturbed native sediment and is 3.05 m long and 10 cm high. During the 2014 field season, all features in these structures were excavated and documented, and the structures were backfilled.

### Structure 313

In 2014, the lowermost 10 cm of fill was removed from Structure 313, revealing the floor surface and its associated artifacts. The floor is use-compacted native sediment. The artifacts on the floor were sparse and appeared to be a mix of primary and secondary refuse. A hearth and three other pit features were also identified on the floor. Unlike the hearth, the three other pit features had been intentionally filled before the structure was decommissioned. The fill within the hearth was a mixture of ash and roofing sediments. A rodent had disturbed the integrity of the hearth's adobe collar, making it difficult to collect an archaeomagnetic sample. However, flotation samples were collected from the fill of the hearth in the hopes of receiving a radiocarbon date from charred annual plant material.

Two of the three pit features are located northwest of the hearth, suggesting this structure had a northwest-southeast axis of orientation ([Figure 30](#)). Both pits were intentionally filled with sand and, on the basis of their locations and alignment, are inferred to be sipapus. Both of these features are approximately 25 cm in diameter and are 10 cm deep.

A small, shallow pit feature was recorded north of the hearth and adjacent to the north wall of Structure 313. This feature was intentionally filled with sand and is 14 cm long, 15 cm wide, and

2 cm deep. This feature is inferred to be a pot rest. During the 2014 field season, all features in this structure were excavated and documented, and the structure was backfilled.

#### Nonstructure 326

Three pit features were identified between Structure 312 and Structure 309 ([Figure 10](#)). Similar to the fill found in other features located in Architectural Block 300, the fill in these features was dark brown organic sediment mixed with secondary refuse. Small adobe inclusions were present in the fill, but it is difficult to determine from where they originated. The largest pit feature is inferred to be a storage cist, and it measures 1.57 m long, 1.74 m wide, and 23 cm deep. One pit is deep enough to have been a posthole; however, both of the other pits are basin shaped in cross section, and it is unlikely that they are postholes. These features were excavated, documented, and backfilled during the 2014 field season.

#### Nonstructure 329

A pit feature was identified on an extramural use surface, Nonstructure 329, directly north of, and adjacent to, Structure 313. The fill within this feature was dark brown organic sediment and secondary refuse. An unknown portion of the pit was exposed; the portion exposed measures 68 cm long, 54 cm wide, and 35 cm deep. This pit is most likely associated with the pithouse to the south, Structure 313. This feature was excavated, documented, and backfilled during the 2014 field season.

#### *Architectural Block 500*

Previous field seasons focused efforts on documenting the midden ([Figure 10](#)) in Block 500 (Diederichs and Copeland 2013; Diederichs et al. 2014). In 2012, one of the randomly selected 1-x-1-m excavation units revealed the edge of a burned pithouse (Diederichs et al. 2014). A 3-x-1-m trench was added adjacent to the southern edge of this unit in order to reveal more floor space than would have been exposed in the original 1-x-1-m unit. During the 2014 field season, all efforts in Block 500 were focused on completing the excavation and documentation of the pithouse (Structures 505 and 508).

#### Structures 505 and 508

In 2014, the lowermost few centimeters of fill were removed from the structures to reveal the floor surfaces. In doing so, it became apparent that Structure 505 is the main chamber, and Structure 508 is the antechamber. A balk of undisturbed native sediment was left prehistorically as a division between the two chambers. Presumably, there would have been a passageway cut into this balk to allow passage between the two chambers, but no passageway was detected during excavation. The floor of each structure is use-compacted native sediment ([Figure 31](#)). No artifacts were observed on the floor in either chamber, which suggests that objects were removed when the pithouse was decommissioned.

Unlike the majority of structures on the Dillard site, this pithouse was burned. This resulted in the preservation of some of the primary roof beams. Many of these beams were recovered as

dendrochronological samples. No hearth was identified in our excavation units, and no archaeomagnetic samples were collected from this structure.

One posthole was identified and documented in the main chamber just north of the balk of sediment between the two chambers. Remnants of a post were noted at the base of the feature, indicating that this post had not been removed prehistorically.

Two other pit features were also identified, one in the main chamber and one in the antechamber. The feature in the main chamber may represent an earlier attempt to dig a posthole that was abandoned in favor of the posthole described above. The pit feature in the antechamber exhibits disturbance from roots, animals, and a possible remodeling event. Interpreting the use of the pit is difficult, given the amount of disturbance, but the feature might have functioned as a metate bin or above-floor storage bin. This pithouse was excavated, documented, and backfilled during the 2014 field season.

## **Summary**

The goals of the fourth year of the Basketmaker Communities Project were to complete all excavations at the Dillard site and to finish at least one of the farmstead sites. We utilized several methods in our investigations—surface documentation, geophysical survey, and targeted soil probes and excavation. Several analyses were completed, and the resulting data are giving us a new understanding of the Dillard site and its surrounding community.

The pit structures and great kiva on the Dillard site predate the other dated farmsteads within Indian Camp Ranch. The dates received suggest that Basketmaker III people settled on the Dillard site in the late sixth and early seventh centuries, and most of our dates cluster around the mid-A.D. 600s. Dates for the great kiva suggest that the use life of this structure extended beyond the main occupation of the Dillard site in the mid-A.D. 600s, and continued into the early eighth century. Dates for the farmsteads slightly postdate the main occupation at the Dillard site, and cluster around the late seventh and early eighth centuries. The community began at the Dillard site, and residents continued to inhabit that settlement until the mid-to-late A.D. 600s.

These initial results suggest that we might have found evidence of early community organization around a central, community structure (the great kiva). After a few decades, the Basketmaker III people began dispersing onto what are now other properties within Indian Camp Ranch, establishing smaller farmsteads. Even though the main occupation at the Dillard site ended by the end of the seventh century, the people living in the surrounding farmsteads continued to use the great kiva until the early eighth century. This may be an example of an early community of dispersed settlements.

Excavations in the great kiva confirmed that the structure underwent at least two remodeling events. We also documented that the alignment of floor features switched from their original northwest-southeast orientation to a north-south orientation. This is interesting, because the Basketmaker III time is thought of as the formative period during which ancestral populations became identifiably Puebloan. Structures and features in subsequent time periods also exhibit north-south alignment.

Lastly, we found evidence of a stockade southwest of the great kiva on the Dillard site. Given the clustering of households to the north and south of the great kiva, the stockade might have acted as a physical boundary between these two neighborhoods. This may be an early expression of duality and/or moieties. Further analyses may show differences between the assemblages from the structures north of the great kiva vs. those south of the great kiva.

The Basketmaker Communities Project continues to shed light on a relatively unknown period in ancestral Pueblo prehistory. The next two years of the project will focus on understanding the nature of community change through time and on what impact Basketmaker III populations had on the local environment.

## **Curation**

The Crow Canyon Archaeological Center has an executed agreement with the Anasazi Heritage Center. The latter will curate all artifacts and documentation from the Basketmaker Communities Project generated during the 2011–2016 field seasons.

## **Work Plan for 2015**

Crow Canyon researchers will continue to conduct remote-sensing surveys and excavations across Indian Camp Ranch in 2015 as part of the Basketmaker Communities Project. Three additional Basketmaker III single-habitation sites will be sampled next season, which will bring the total number of sites sampled to seven for the project. Also, we will conduct excavations on at least one multi-component ancestral Pueblo site that has deposits dating from both the Basketmaker III and Pueblo II periods. This site is located on a north-south trending ridge top and is on property owned by Pat and Sarah Hatch. As noted above, remote-sensing work has already been completed for sites located on this ridge. Excavations will continue at the Shepherd site and Site 5MT10709, with an effort to complete all excavation and documentation on these sites by the end of the 2015 field season. Several analyses are also planned for 2015. A geomorphologist has been contracted to analyze construction material from several structures and to assess agricultural potential across the study area. Pollen, archaeomagnetic dating, and additional tree-ring samples have been selected and will be submitted to specialists.

•A Proposal to Expand Basketmaker Community Project Research: An Addendum to a Proposal to Conduct Archaeological Testing at Indian Camp Ranch, Montezuma County, Colorado (Ryan and Diederichs 2014) contains a research design that will guide field and laboratory work during the 2015 season. It also contains contracts executed between the Crow Canyon Archaeological Center and the Indian Camp Ranch Homeowners Association, Pat and Sarah Hatch, Galen Larson, and the Anasazi Heritage Center. During the 2015 field season, the Basketmaker Communities Project will be funded, in part, by a Colorado State Historical Fund grant.

## **Personnel, 2014 Field Season**

### **Archaeology Department Staff**

Shirley Powell, vice president of programs  
Susan Ryan, director of archaeology  
Shanna Diederichs, supervisory archaeologist and project director  
Steve Copeland, field/lab archaeologist  
Caitlin Sommer, field/lab archaeologist  
Grant Coffey, supervisory archaeologist  
Amanda Hernandez, seasonal archaeologist  
Kristin Kuckelman, research publications manager  
Jamie Merewether, collections manager  
Kari Schleher, laboratory analysis manager  
Dan Simplicio, laboratory education coordinator  
Lara Noldner, laboratory assistant  
Michael Lorusso, laboratory assistant  
Heather Miljour, archaeobotany intern  
Sarah McCormick, laboratory intern  
Katherine Shaum, laboratory intern  
Samantha Jo Linford, field intern  
Tanachy Bruhns, field intern  
Kelsey Vaughan, laboratory intern  
Sarah Hibdon, laboratory intern  
Grace Erny, field intern  
Aryel Rigano, field intern

### **Education Department Staff**

Kathy Stemmler, director of education  
Paul Ermigiotti, educator  
Rebecca Hammond, educator  
Savanna Davenport, educator  
Rebecca Simon, educator  
Anna Cole, curriculum developer  
Caina Miller, enrollment manager  
Marah Brenneman, education intern

## References Cited

Adams, Charles E.

1984 *Preliminary Report of Work Accomplished During 1983 under State Permit Nos. 83-8 and 83-9*. Crow Canyon Campus, Center for American Archeology, Cortez, Colorado. Report submitted to the Bureau of Land Management, San Juan Resource Area Office, Durango, Colorado.

Barker, Andrew, Jonathan Dombrosky, Amy Eddins, Barney Venables, and Steve Wolverton  
2014 *Report on Residue Analyses of Artifacts from the Dillard Site, Southwestern Colorado*. Letter report submitted to Crow Canyon Archaeological Center, September 2014.

Britton, Emma

2014 *Petrographic Analysis Report: The Dillard Site, Colorado*. Letter report submitted to Crow Canyon Archaeological Center, October 2014, Cortez, Colorado.

Charles, Mona

2014 *Electrical Resistance Survey of Eight Sites in the Indian Camp Ranch, Montezuma County, Colorado*. Powderhorn Research, LLC. Manuscript on file, Crow Canyon Archaeological Center, Cortez, Colorado.

Crow Canyon Archaeological Center

2001 *The Crow Canyon Archaeological Center Field Manual*. Electronic document, <http://www.crowcanyon.org/fieldmanual>, accessed 5 January 2015.

Diederichs, Shanna R., and Steven R. Copeland

2013 The Basketmaker Communities Project Annual Report, 2012 Field Season. Electronic document, <http://www.crowcanyon.org/basketmaker2012>, accessed 1 December 2014.

Diederichs, Shanna R., Steven R. Copeland, and Caitlin A. Sommer

2014 The Basketmaker Communities Project Annual Report, 2013 Field Season. Electronic document, <http://www.crowcanyon.org/basketmaker2013>, accessed 1 December 2014.

Fadem, Cynthia

2014 *Adobe Samples Analysis, Basketmaker Communities Project*. Letter report submitted to Crow Canyon Archaeological Center, November 2014.

Fetterman, Jerry E.

1991 Field notes regarding the great kiva at the Dillard site, 5MT10647. Documentation completed by Woods Canyon Archaeological Consultants, Yellow Jacket, Colorado. Original notes on file at Crow Canyon Archaeological Center, Cortez, Colorado.

2004 *Report on the Cultural Resource Survey for the Indian Camp Northeast Hazardous Fuel Reduction Project, Canyons of the Ancients National Monument, Montezuma County,*



Colorado. Woods Canyon Archaeological Consultants, Yellow Jacket, Colorado. Report submitted to the Bureau of Land Management, Colorado State Office, Lakewood, Colorado.

Fetterman, Jerry, and Linda Honeycutt

1994 *Interim Report on the Archaeological Survey of Indian Camp Ranch, Southwestern Colorado*. Indian Camp Ranch Report, No. 3. Woods Canyon Archaeological Consultants, Yellow Jacket, Colorado.

[Honeycutt, Linda, and Jerry Fetterman]

1991 *Indian Camp Ranch at Cortez: Archaeology at Work, Preserving the Anasazi Legacy for the Future*. Indian Camp Ranch Report, No. 1. Archie and Mary Hanson, Templeton, California.

Indian Camp Ranch Homeowners Association

2007 Bylaws of Indian Camp Ranch Homeowners Association, Inc. Cortez, Colorado.

Kohler, Timothy A., and Mark D. Varien

2010 A Scale Model of Seven Hundred Years of Farming Settlements in Southwestern Colorado. In *Becoming Villagers: Comparing Early Village Societies*, edited by Matthew S. Bandy and Jake R. Fox, pp. 37661. University of Arizona Press, Tucson.

Kuckelman, Kristin A., and Shirley Powell

2009 *A Class III Survey of the Crow Canyon Archaeological Center Campus, Montezuma County, Southwestern Colorado*. Crow Canyon Archaeological Center, Cortez, Colorado. Report submitted to the Colorado Historical Society, Denver.

Lengyel, Stacey

2014 *Archaeomagnetic Laboratory Results for the Basketmaker Communities Project*. Archaeomagnetic Laboratory, Illinois State Museum, Springfield, Illinois. Report on file, Crow Canyon Archaeological Center, Cortez, Colorado.

Lightfoot, Ricky R.

1985 *Report of 1984 Archeological Investigations Conducted Under State Permit #84-15*. Crow Canyon Archaeological Center, Cortez, Colorado. Report submitted to the Office of the State Archaeologist, Colorado Historical Society, Denver.

Martin, Daniel, Robert Lister, and David Breternitz

1971 *Evaluation of Archaeological Resources on Public Lands of Bureau of Land Management in Cortez-Dove Creek Area (McElmo District), of Southern Colorado (SJ71002)*. University of Colorado, Boulder.

Noldner, Lara

2014 *Osteological Report for the Dillard Site (5MT10647)*. Manuscript on file, Crow Canyon Archaeological Center, Cortez, Colorado.

Office of Archaeology and Historic Preservation

2011 *Rules and Procedures: Historical, Prehistorical, and Archaeological Resources Act*. Office of Archaeology and Historic Preservation, History Colorado Publication 8CCR 1504-7. Electronic document, [http://www.historycolorado.org/sites/default/files/files/OAHP/crforms\\_edumat/pdfs/1308b.pdf](http://www.historycolorado.org/sites/default/files/files/OAHP/crforms_edumat/pdfs/1308b.pdf), accessed 12 December 2011.

Ortman, Scott G., Shanna R. Diederichs, and Kristin A. Kuckelman

2011 A Proposal to Conduct Archaeological Testing at Indian Camp Ranch, Montezuma County, Colorado. Proposal submitted to the Colorado State Historic Preservation Office, Denver, Colorado. Manuscript on file, Crow Canyon Archaeological Center, Cortez, Colorado.

Ryan, Susan C., and Shanna R. Diederichs

2014 A Proposal to Expand Basketmaker Community Research: An Addendum to a Proposal to Conduct Archaeological Testing At Indian Camp Ranch Montezuma County, Colorado. Proposal submitted to the Colorado State Office of Archaeology and Historic Preservation, Denver, Colorado. Manuscript on file, Crow Canyon Archaeological Center, Cortez, Colorado.

Schleher, Kari, and Grant Coffey

2014 *Basketmaker Communities Project Permit Report for State of Colorado Archaeological Survey and Testing Permit No. 2014-77*. Report submitted to the Colorado State Office of Archaeology and Historic Preservation Office, Denver, Colorado.

Shanks, Brian

2014 *Survey Research for Crow Canyon Archaeological Center's Basketmaker Communities Project: Early Pueblo Society in the Mesa Verde Region, Montezuma County, Colorado*. Report on file, Woods Canyon Archaeological Consultants, Cortez, Colorado.

Smith, Susan J.

2013 *Indian Camp Ranch Dillard Site Pollen Analysis*. Manuscript on file, Crow Canyon Archaeological Center, Cortez, Colorado.

2014 *Indian Camp Ranch Project 2014 Pollen Analysis*. Manuscript on file, Crow Canyon Archaeological Center, Cortez, Colorado.

Sudbury, J. Byron

2014 *Phytolith and Biogenic Silica Data from the Dillard and T. J. Smith Sites, Montezuma County, Colorado*. Manuscript on file, Crow Canyon Archaeological Center, Cortez, Colorado.

Van West, Carla R.

1986 *Cultural Resource Inventory for the 1985 Field Season in the Crow Canyon and Sand Canyon Areas, Montezuma County, Colorado*. Crow Canyon Center for Southwestern Archaeology, Cortez, Colorado. Report submitted to the Bureau of Land Management, San Juan Resource Area Office, Durango, Colorado.

Varien, Mark D., and Shanna R. Diederichs

2011 Nomination of the Indian Camp Ranch Archaeological District, Site 5MT19927, to the National Register of Historic Places. Nomination submitted to the U.S. Department of the Interior, National Park Service, National Register of Historic Places, Washington, D.C. Manuscript on file, Crow Canyon Archaeological Center, Cortez, Colorado.