

THESIS

THE SAINT CHARLES RIVER PROJECT:  
AN EXPLORATION OF PREHISTORIC TRADE, EXCHANGE AND  
APISHAPA ARCHITECTURAL PATTERNING IN SOUTHEASTERN COLORADO

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In partial fulfillment of the requirements

For the Degree of Master of Arts

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Spring 2012

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## ABSTRACT

### THE SAINT CHARLES RIVER PROJECT: AN EXPLORATION OF PREHISTORIC TRADE, EXCHANGE, AND APISHAPA ARCHITECTURAL PATTERNING IN SOUTHEASTERN COLORADO

The Saint Charles River Project (SCRP) involved the exploration of two rock shelters, and the recordation of five sites that exhibit architectural features near Beulah, Colorado. The construction styles coupled with the physiographic placement of the architectural features along the SCR are indicative of the Apishapa phase (Withers 1954), which occurs between A.D. 1050 - 1450 throughout the greater Arkansas River Basin (ARB). GIS analysis of the geospatial patterning of these sites indicates a significant preference for architectural site selection based on proximity to river access down to the Saint Charles River as well as the view of the surrounding terrain and proximity to water. No evidence was collected during the SCR supporting the argument of the defensive nature and subsequent placement of these prehistoric architectural features on the landscape. All thermal features recorded are external to the architectural features, which imply a seasonality use, not a year round occupation. This in turn points toward mobility on the landscape that is reinforced by the geochemical evidence of trade or exchange found at the sites reported here. Trade or exchange is demonstrated by the presence of the following exotic materials: Alibates from the Northern Panhandle of Texas, obsidian from Malad, Idaho, obsidian from Northern New Mexico, as well as a Catlinite pipe fragment from Southwestern Minnesota.

The sites reported here, help to define the previously unknown western boundary of the Apishapa Phase occupation in Southeastern Colorado, and further help to define the southwestern boundary of trade and exchange throughout the Great Plains during the Late Prehistoric period from A.D. 100 –. 1175.

## ACKNOWLEDGMENTS

I am indebted to so many people for allowing me the opportunity to study the sites along the Saint Charles River, a simple thank you cannot begin to express the level of gratitude I have. Everyone involved in this project should take great pride in the fact that one of the sites reported below, Roper's Walk, has been purchased by the Archaeological Conservancy ensuring future research and protection of this extraordinary site. The roster of volunteers from the Pueblo Archaeological and Historical Society as well as the Beulah residents that made this achievement possible include: Chuck and Georgine Booms, Paul Barton, Hamp and Sherry Howe, Anne Whitfield, Fran Cosyleon, Eva Tucker, Io Washburn, Mark Yager, Michael Ketchen, Corky and Norma Outhier, Bob Purvis, Lt. Kay Keating, Kevin Fern, Alden Ore, Chrissanne Galvez, Carla Hendrickson, Elaine West, Betsy Brown, Reeves Brown, and the late Norm Simonson. I could not have recorded the historical and prehistoric aspects of Roper's Walk without you.

Without access to numerous contiguous stretches of private property, this project would not have been possible. Land access was graciously granted to me by the Joe O'Brian of the Red Creek Land Company, Roy and Donna Roper, Jim Young of Spring Creek Ranch, Kevin Fern, Bess and Rick Langdon, and last but not least, Betsy and Reeves Brown of the 3R Ranch who have allowed me unlimited access to the majority of the sites reported here.

I also would like to acknowledge the guidance and support given to me by numerous members of the anthropology department at Colorado State University. Dr Steven Leisz, Rocky Coleman, and Lucy Burris who collectively helped me take a potentially unwieldy GIS data set, and produce some rudimentary models of the spatial patterning of the archaeological sites recorded throughout the Saint Charles River Project. Thanks to Dr. Mary Van Buren who helped me to hone my reading and analytical skills. I am especially grateful for the focus on theory and historical archaeology which have in no small part, facilitated the acquisition of Roper's Walk by the Archaeological Conservancy. Rocky Coleman was instrumental and enthusiastic about my

project from the beginning, encouragement that was much needed along the way. Dr Larry C. Todd, Chrissina Burke and Casey Dukeman all took time out of their busy schedules to help with the faunal analysis from two rock shelters. And lastly, I am deeply indebted to Dr Jason LaBelle for his unending support, encouragement, and guidance as I explored the archaeology within a region that covers eight states and over 10,000 years of prehistory. Dr. LaBelle's depth of knowledge, sense of humor, patience, and the genuine desire to share these qualities with others has indeed made this an enjoyable journey of discovery.

No acknowledgment could be complete without giving thanks to the entities that helped fund the research conducted during the Saint Charles River Project: CSU and the Karen Greiner Endowment for Colorado Archaeology, the Colorado Archaeological Society, the Alice Hamilton Scholarship, the Red Creek Land Company, and the 3R Ranch.

Finally, I would be remiss to not acknowledge my wife, Paula Evans, who has supported me in so many ways throughout this project, working relentlessly, while I was out exploring the canyons of the Saint Charles River.

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# **Chapter One**

## **Preservation, Exploration, and Research**

### **Introduction**

What began as a simple set of research questions regarding the nature of the archaeology along the Saint Charles River (SCR), located 25 miles southwest of Pueblo, Colorado, has become an intensive exercise in conservation, fundraising, and preservation. Some of the data generated during this project has resulted in Roper's Walk (Chapter 5), being purchased by the Archaeological Conservancy. It is hoped that other data within this thesis will act as a core of information that will be utilized in gaining recognition of the area as a cultural landscape which is worthy of preserving as a whole.

In broad terms, the Saint Charles River Project (SCRCP) involves the exploration of two rock shelters, and the recordation of five sites that exhibit architectural features. Construction styles and physiographic placement of the architectural features along the SCR are indicative of the Apishapa phase (Withers 1954), which occurred between A.D. 1050 and A.D. 1450.

E.B. Renaud first described and recorded the variability in complexity and building styles of these architectural features in 1932 in his survey of Southeastern Colorado (Renaud 1934). In most cases, the walls of the architectural features found in the Beulah District are more substantial in construction than the single rock, circular outlines attributed to "tipi rings". Along the SCR, these features exist singularly or in hamlets with clusters of two to ten rooms. These structures are round, oval, C, or D shaped in configuration and consist of dry laid masonry that seldom reach more than ½ meter in height, or up to three courses of loosely placed slabs of locally occurring Dakota sandstone .

## **Purpose and Direction of Study**

The majority of Apishapa phase sites recorded in the greater Arkansas River Basin (ARB) have been decidedly south and east of the Beulah locality (Renaud 1934, Campbell 1969, Nowak and Berger 1982, Nowak and Jones 1984, Nowak and Jones 1985, Lintz 1986, Nowak and Kantner 1987, Nowak and Fiore 1988, Gunnerson 1989, Nowak and Spurr 1989, Nowak and Kantner 1990, Nowak and Kantner 1991, Nowak and Fedor 1992, Nowak and Gerhart 1994, Nowak and Morton 1998, Zier and Kalasz 1999, Nowak and Gerhart 2001, Nowak, M. and Gerhart 2002, Owens 2007), thereby limiting our knowledge of settlement structure along the Foothills of the Rockies within Southeastern Colorado. The sites reported in this thesis were chosen as a course of study due to the unique opportunity to analyze and compare sites occupying several contiguous stretches of private property, along a confined river system within a relatively small geographic area.

In general, past archaeological research and site location analysis has been necessarily concerned with the distribution and location of sites across the landscape as well as various components of settlement strategies at the site level (Steward 1938:2, Wiley 1953:1, Trigger 1968:79, Binford 1980:9). The importance of this study is that it interprets data generated from multiple sites which are separated by less than 17 km along two drainage systems, the North and South Forks of the Saint Charles River. This study compares the material remains between the archaeological sites through multiple lines of analysis. This is achieved by looking at the various locations along the SCR, which includes site level analysis, as well as the placement within a broader geographic context. These comparisons help to discern the similarities (or differences) between the sites, and create a broader understanding of the technological organization driving the settlement patterns of the prehistoric inhabitants along the SCR. At the site level, this study utilizes GIS to explore the geographic distribution and placement of

architectural sites along the SCR within an ecological context. Organizational behavior regarding the placement of architecture along the canyon rim is further explored through site-by-site and inter-site measurements of geospatial elements that include distance from water, access to river access, slope analysis, big game habitat, and view shed. GIS applications have also been utilized in the analysis of the density distribution of artifacts and debitage within sites allowing for the identification of possible work areas or central loci of activity.

In addition to the research outlined above, this thesis will also explore several subcategories including the geochemical analysis of obsidian and Catlinite, as well as palynology, faunal analysis, and Fourier Transform Infrared Spectroscopy (FTIR). The importance of the geochemical analysis lies in the fact that it creates a very clear picture of the source material utilized for tools that were brought into the SCR in their finished forms. This in turn creates the framework to look at exotic materials in terms of trade, exchange, or direct procurement. The faunal, FTIR, and palynology data allow us to look at specific resources that were available and exploited by prehistoric people at four of the seven sites reported below.

### **Research Questions**

The SCR primarily focused on the mapping and recordation of architectural sites. Specifically their physical positioning along the SCR canyon rim in relation to proximity to water, and their proximity to river access down to the river based on slope. The artifacts associated with the architecture, coupled with availability for lithic, faunal, and floral resources within the physiographic region allow for multiple lines of inquiry and interpretation of several aspects of technical organization.

This thesis will examine three primary questions in exploring settlement variation along the SCR through an environmental perspective. The answers to these questions, may allow us to

look beyond the proposed defensive positioning on the landscape (Renaud 1932:11, 1935:14, 1942:4-8, Krieger 1946, Ireland 1968, Campbell 1969:433, Lintz 1986, Gunnerson 1989, Duncan 2002, Owens 2007)), or the ceremonial function attributed to them by Renaud (1933:95). These lines of inquiry matter, because the assumed defensive positioning of architectural features along canyon rims has been argued for so long in the literature, it has become a mantra that may have precluded other more productive lines of inquiry regarding settlement strategies. As noted by Milner (1999:106), “warfare simply refers to situations where separately constituted and spatially discrete groups of people engage in armed, often planned, potentially lethal, and culturally sanctioned confrontations that advance the shared interests of the members of the separate communities that take part in the fighting”. The presumed conflict within the region that would lead people to adopt a defensive positioning for architecture has not been adequately addressed. Apishapa and other early Diversification groups are so poorly understood to begin with (Zier and Kalasz 1999), it would be very difficult define all the players within the ARB that are specifically Apishapa. It would be even harder to establish the identity of the imagined groups that are enacting a culturally sanctioned confrontation with some undefined goal of conquest that would cause Apishapa and other early Diversification groups to construct architectural features in a defensive position on the landscape. The ceremonial explanations for site selection, as well as paucity of data driven or other easily testable methodologies leave us with a very shallow explanation in the end. It is argued here that the answers to the following three questions are central to understanding aspects the prehistoric settlement behavior within the Beulah District and possibly the greater ARB.

## **1) What is the nature and variability of the archaeological sites along the Saint Charles River?**

At the onset of this project, the nature and extent of the archeological resources along the SCR was unknown. There has been limited research done in the SCR river basin in terms of the chronologies, ubiquity of artifacts, and the overall condition of the sites. Previous research has identified architectural features and rock shelters, but because no inter-site comparisons were made and it was not clear from any reports reviewed (Renaud 1932, Withers 1949, Nelson 1970), what material remains were preserved and exposed on the surface. It was also unknown what material remains beyond rock art may be found within the numerous rock shelters occupied along the canyon walls defining the SCR canyon system. Although five rock shelters were visited during this project, only two were sampled for archaeological and faunal remains and are reported below. The majority of the work conducted during the SCRCP was conducted as pedestrian survey by the author, in systematic 20 meter transects over an area covering more than 3,000 acres.

The data generated regarding the nature and variability of the SCR sites were established through a combination of survey, mapping, and recordation of sites as they were found. The archaeological remains identified consist of prehistoric architectural features, stone circles, rock shelters, rock art, and open-air lithic scatters. Once the sites were identified and recorded utilizing GPS technology, GIS applications were utilized for a more intensive analysis.

Throughout this thesis, it is assumed that as a necessity for survival, all animal (including humans) are in all ways tied to water. The site selection made by prehistoric people regarding the placement architectural features along the canyon rim may have been done in a way that is understandable based on broader questions regarding slope, proximity to arable land, and access to river access from the canyon rim down to the river.

## **2) What is the chronology of the archaeological sites along the Saint Charles River?**

The paucity of archaeological data within the greater Arkansas River Basin (Zier and Kalasz 1999:240), and the uncertainties of the temporal and geographic boundaries between culture chronologies within it, creates a void where any, and all data is critical for the resolution of questions regarding the settlement of the area. This is especially true in the western and eastern extent of the ARB drainage system (Zier and Kalasz 1999:213) during the Diversification period (A.D. 1050 to 1450) when architectural features indicative of the Apishapa phase first appear on the landscape. According to Zier and Kalasz (1999), “large Apishapa Phase architectural site locations have not yet been confirmed along the Foothills of the Rocky Mountains” (Zier and Kalasz 1999:214), so the proper temporal placement of the architectural sites and rock shelters along the SCR based on morphology, site location, and relative/absolute dating techniques, represent important pieces of the puzzle.

In this thesis, the chronology of the archaeology along the SCR is established through multiple lines of evidence including the analysis of diagnostic projectile points, hydration dating of obsidian, radiocarbon dating of hearth fill, radiocarbon dating of bone, radiocarbon dating of maize, and the inferred temporal placement of rock art. These data ultimately confirm the utilization the physiographic area over a period of 10,000 years, with the greatest expression of archaeological materials being represented over the past 900 years. The sites reported here also help to establish for the first time, the western boundary of Apishapa land use in the greater ARB.

## **3) How do sites along the SCR relate to each other in terms of lithic assemblages, projectile points, and exotic material?**

This question is important because sites along the SCR had several characteristics in common, the first being that at each site visited, there are few (if any) temporally diagnostic materials present, and the second being that there is a relative abundance of debitage indicative of

tool manufacture, repair, and maintenance. Not being able to find diagnostic materials at all sites made temporal comparisons of each site difficult, so the research became focused on learning what the similarities of the sites might be in terms of technological organization. Specifically, what is the dominant lithic material types being utilized? In addition, how does this relate to present mobility theory in terms of local vs. non-local procurement strategies? How does this relate to trade and exchange? Moreover, what does this say about connections with a broader geographic region?

Geochemically sourced pieces of obsidian collected during the SCRP have shown connections with Malad, Idaho as well as several obsidian sources in Northern New Mexico. The presence of Alibates demonstrates a connection with the northern panhandle of Texas, and the furthest traveled exotic material, Catlinite, comes from Pipestone National Monument in Southwest Minnesota.

Comparisons made between sites in the Beulah District regarding the frequency distribution of material types have demonstrated some interesting trends. There appears to be a relatively low frequency of local materials being utilized. The majority of the debitage is small and non-cortical which in turn, implies that retouch and maintenance of tools brought into the area was the dominant behavior, not the exploitation of local materials as one would expect from an indigenous population (Andrefsky 1994, Odell 2000).

## **Chapter Summaries**

Chapter Two details the project setting and location including physical aspects of the study area including the location, geology, climate, flora, fauna, and lithic resources available within the study area. Chapter Three summarizes previous archaeological research in the Beulah District as well as providing a cultural history and chronology for Southeastern Colorado. Chapter

Four describes the field methods utilized throughout the SCRP. These include survey methods, sampling strategies, and recording techniques of the numerous architectural features encountered along the SCR. Chapter Five involves the description of the sites recorded throughout the Beulah District. These sites include new discoveries, as well as the re-recording of some previously investigated sites. Chapter Six is where the first research question is addressed, and the study area data are analyzed in terms of different aspects of the architectural sites. Chapter Seven contains information pertaining to the chronologies of occupation of the Saint Charles River basin as seen through radiocarbon dates, obsidian hydration, projectile point chronologies as well as the relative dating methods for rock art. In Chapter Eight, numerous implications of architecture, lithics, and other artifacts are explored. Chapter Nine presents the analysis and conclusions of obsidian, Catlinite, pollen, as well as fourier transform infrared spectroscopy (FTIR) studies. Finally, Chapter Ten summarizes the work done during the Saint Charles River Project with some parting thoughts on future research.

## **Chapter Two**

### **Project Setting and Location**

#### **Introduction**

The following chapter outlines various physiographic features, climate, and faunal resources encountered within the area surrounding the SCR basin. From an ecological perspective, these data are important to understand because they help to define what physiographic constrictions were present, as well as the potential resources available the prehistoric inhabitants of the region within each ecological zone. The architectural features and rock shelters analyzed and recorded in this study are positioned along approximately 17 km of canyon rim in the upper Saint Charles River.

Common to all of the sites recorded or observed during the SCRCP, the site selection process for the placement of architectural features may show that the prehistoric inhabitants along the SRC appear to be operating under the same organizational paradigm, loosely implying that there is a discernable cultural process at work common to all of the architectural sites. This settlement paradigm appears to be directly correlated to proximity to water, slope issues, river access, and a commanding view of the surrounding terrain.

Assuming that the present environment within the ARB is generally similar as to what it was between AD 450 and AD 1450, many of the faunal and floral resources present today, would have been available and economically useful to the prehistoric inhabitants of the SCR. Allowing for local microclimatic and geological variation, the following chapter provides a general outline and description of the location, physiographic setting and potential resources available to prehistoric people along the Saint Charles River Canyon.

## **Geology and Canyon Formation**

The physiographic area east of the Beulah Valley is best described as short grass prairie, but it is more specifically positioned along the transitional ecotone between the mountains, foothills, and plains. This area is dissected by significant canyon features, which are up to 70 m in depth in over 100 m wide and represent a very real obstacle in travel for both game animals and humans across the plains within this region. The Canyon formation is a result of significant erosional forces where the Saint Charles River has become confined through the down cutting of the relatively soft marine sediments that dominate the greater landscape. These canyon features occur all along the base of the Wet Mountains, and in general run perpendicular to the eastern slope of the ridge that “ramps up” to the summit of Green Horn Peak (Cuerna Verde) at an elevation of 3,400 meters. Based on observations in the field, the canyon edge is best described as the junction between poorly formed soils resulting from the decomposition of a limey marine sediment overlain by active aeolian deposits and limited vegetative growth. Along the canyon edge, these aeolian deposits have eroded down to bedrock that is comprised of Dakota Sandstone (Taylor and Scott 1973). This denuded area generally occurs within 5 to 25 m of the canyon rim and transitions from bedrock to sediments with depths ranging between zero and three meters as one moves away from the canyon rim. This area of sediment reduction along the canyon rim is a result of the energetic response of the sediments to erosion caused primarily by wind and water. The study area is dissected by several faults that have locally metamorphosed the Dakota Sandstone, as seen in outcrops of sandstone with slickenside, as well as small outcrops of low-grade quartzite. No quarry sites were located during the SCRP, but the potential for discovery is promising due to the presence of low grade quartzites found at the mouth of the SCR canyon near the 3R Ranch. Often encountered along the canyon rim are large sandstone blocks found in cleavage planes that are orientated along the axis of the faults which run in a general northeast to

southwest direction. These blocks are exposed as the sediments are denuded around them, and because of their ubiquity, are common in the construction of the architectural features found along the canyon rim (Figure 1).



Figure 1. Denuded area where sediments have eroded to bedrock leaving sandstone boulders exposed. Sandstone blocks like these were used in the construction of the architectural features found along the north and south Saint Charles River Canyons

### **Rock Shelters**

Rock shelters represent a resource that is ubiquitous along the SCR canyon, and would be readily available for use by prehistoric people. Immediately beneath the exposed portion of Dakota sandstone that defines the rim of the SCR canyon system, is a less resistant layer of fine-grained siltstones and mudstones (Schwarzbach 1960:6-45). Through the energetic overbank flood actions of the Saint Charles River through time, and the ever-persistent forces of mechanical weathering (Rapp and Hill 1988:66), numerous rock shelters have formed throughout the canyon and within these rock shelters, the preservation of perishable material remains have

been remarkable (see Chamber Cave below). A conservative estimate of 20 habitable rock shelters along the SCR gives an indication of the archaeological potential that is yet unexplored.

### **Lithic Resources**

Within the confines of the canyon walls along the SCR, there are remnant river terraces comprised of well-rounded but poorly sorted gravels and boulders ranging in size from 3 cm to 45 cm in maximum length. The structure of the clasts within these river terraces and rock bar formations show significant imbrication indicating a flow direction that is parallel to the current course of the Saint Charles River. This imbrication shows that that these formations were made prior to the SCR incising its channel through the Dakota sandstone. Many of the deeper deposits found along the SCR are in Pleistocene terraces which have been found to contain cultural material (see the Outhier site, Chapter 5). These depositional features are comprised mainly of basalt, quartz, granite, and with very small and sporadic expressions of chert and argillite. These depositional features may have been an important source for lithic materials utilized by prehistoric inhabitants along the Saint Charles River. Each of the sites reported below contain varying amounts of these lithic materials as evidenced by debitage and tools, which range in function from expedient to formal.

### **Elevation**

At nearly 1900 meters above sea level, the Beulah locality is almost 400 meters higher in elevation than other Apishapa sites in the greater Arkansas River Basin. Elevation data collected from 184 site reports within the Arkansas River Basin (Zier and Kalasz 1999) show a mean occupational elevation of 1,501 m, with a standard deviation of only 27 m. This trend may be

indicative of a land-use pattern that is tied to very specific elevation, possibly due to horticultural and agricultural practices. Even though corn has been recovered from two rock shelters along the SCR, at 1900 meters in elevation, the immediate area around these sites may have been a difficult place to practice horticulture due to a short growing season, early frost, as well as the rain shadow effect of the Wet Mountains.

### **Climate and Precipitation**

For the critical drainage systems that charge the Saint Charles River, the North Fork of the Saint Charles is the most likely to be affected by drought conditions because there are no springs with a high enough flow rate to actively charge the river. Instead, the entire north fork system is charged by rainwater and snow melt within a limited catchment basin. Each of the tributaries feeding the North Fork of the SCR from the south end of the valley moving north are known as, South Fork, Squirrel Creek, Middle Creek, and North Fork. The south branch of the SCR is fed by an active, year round system originating higher up in the Green Horn Mountains. The distribution of residential sites along SCR does not appear to favor either drainage system, which may imply that during the periods of occupation, there was enough surface water to support the population in either canyon segment of the SCR.

The annual precipitation in the form of rain is the most important component for enabling any sort of passive horticulture or even more intensive agricultural practices. Jenkins (1941:312) considers 8 inches of rain between June, July, and August as the minimum amount of precipitation required for the dry-land farming of maize. Although a small and relatively short term sample recorded over a short period of time by the science department at Rye High School, the 21-year mean precipitation during these critical growing months (Figure 2) in the Rye/Beulah

area is 7.05 inches. This is just shy of what is considered by Jenkins (1941) to be the minimum amount necessary for dry-land agriculture.

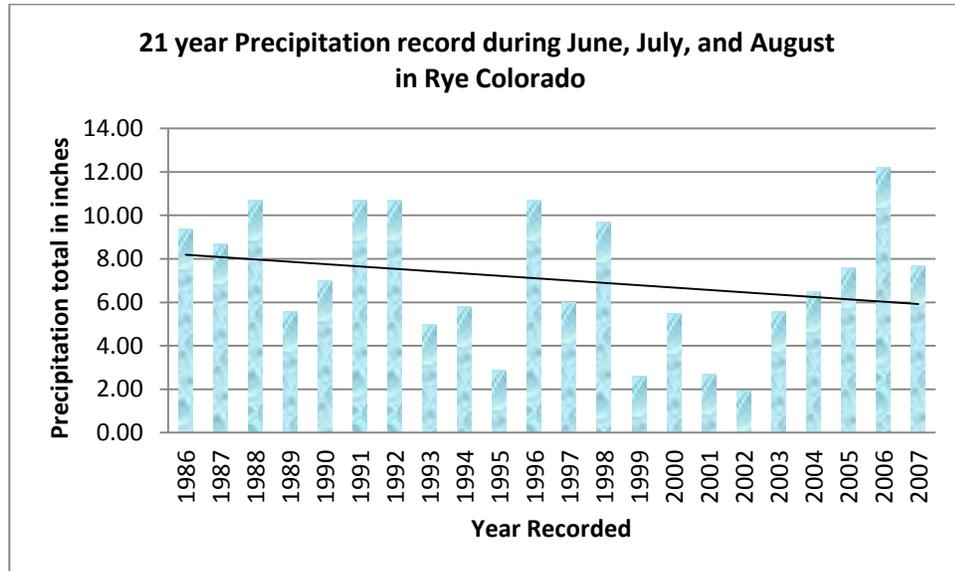


Figure 2. A twenty one year precipitation record during at Rye High School during the critical growing months June, July, and August in Rye, Colorado

### Flora

The vegetative communities present in the Beulah area are characteristic of the Great Plains environment and for the sake of simplicity, are divided into four distinct zones: grassland, pinon/juniper/scrub oak, montane, and riparian. The significance of these environments lies in the abundance of economically useful plants as well as the faunal resources they support.

- 1) The grassland areas are present throughout the large flat area between each canyon feature spurring off the Wet Mountains in an easterly direction. These grasslands are comprised mainly of buffalo grass (*Buchloe dactyloides*), blue gamma grass (*Bouteloua gracilis*), and grasses within the Poaceae family (Cummings et al 2008). Other vegetative communities present within the grasslands are: sagebrush (*Artemisia*), mountain mahogany (*Cercocarpus*), yucca (yucca, soapweed), prickly pear and cholla cactus (*Opuntia*), hedgehog cactus (*Echinocereus*), Indian

paintbrush (*Castilleja*), sego lily (*Calochortus*), bistort (*Polygonum bistortoides*), Apiaceae (Umbel Family), Saltbush (*Atriplex*), Sunflower (*Helianthus Prunus*), cherry group currant, gooseberry (*Ribes*), and wild rose (*Rosa*).

- 2) The Pinon – Juniper – Scrub oak is characterized by the presence of pinon pine (*Pinus edulis*), juniper (*Juniperus scopulorum*), ponderosa pine (*Pinus ponderosa*). Several large ponderosa trees (.75 meter diameter) are found growing within the SCR canyon proper along the canyon/cliff base. A dense concentration of scrub oak (*Quercus gambellii*) is found along the stream banks and cliff bases of the SCR and may have been the focus of intensive processing.
- 3) The riparian areas within the study area are of particular importance as they offer a great variety of economically useful plants. These plant communities include serviceberry (*Amelanchier*), hackberry (*Celtis occidentalis*), willow (*Salix amygdaloides*), and cattail (*Tapha latif*).
- 4) The montane environments adjacent to the Beulah locality consists of coniferous forests and contain a mix of several conifer species, primarily Ponderosa Pine, Douglas-Fir, Blue Spruce, Limber Pine and Bristlecone Pine. Other tree species include Quaking Aspen

### **Faunal Resources**

The variety of animals identified within in faunal remains collected at archaeological sites in the Beulah District include large bodied animals such as bison (*Bison*), elk (*Cervus canadensis*), mule deer (*Odocoileus humionus*), and pronghorn antelope (*Antilocapra americana*). Other animals have been observed during the SCRCP and include whitetail deer (*Odocoileus virginianus*), black bear (*Ursus americanus*), mountain lion (*Felis concolor*), bobcat (*Lynx rufus*), and coyote (*Canis latrans*). Smaller faunal resources are represented by prairie chicken (*Tympanuchus cupido*), wild turkey (*Meleagris gallopavo*), Mallard duck (*Anas platyrhynchos*), wood duck (*Aix sponsa*), beaver (*Castor canadensis*), and rodents such as packrats (*Neotoma*

*cinerea*) and prairie dogs (*Cynomys ludovicianus*), all of which were observed at some point during the SCRP. In general, it can be said that the restriction of travel across the plains, and access to water for humans and game animals alike, is defined in large by the presence of the significant canyon features encountered along the Front Range and in the SCR locality specifically.

Based on GIS data from the Colorado Division of Wildlife, distribution of faunal resources within the Beulah district appears to be spatially limited and in many ways, confined by access to the vegetative communities within the canyon systems, foothills, and mountains. A prime example of this is seen in orange (Figure 3) on the critical range for elk map. There is a resident herd of elk that lives within the Saint Charles and Graneros Creek drainages. The physiographic setting is geographically restricted by steep canyon formations and is consequently subject to many harsh environmental factors that act as an organizing principle for both humans and other animals alike. The main importance of the two GIS data sets presented below in Figure 3 and Figure 4 is that the habitat graphically illustrated, shows the intersection between critical habitats for both grazers and browsers. Although speculative without comparative data sets, the data for pronghorn may closely represent the past environment that supported bison, a resource that was exploited by primitive inhabitants of the SCR (see Red Bison Rock shelter and R276 below).

## Critical Range for Elk

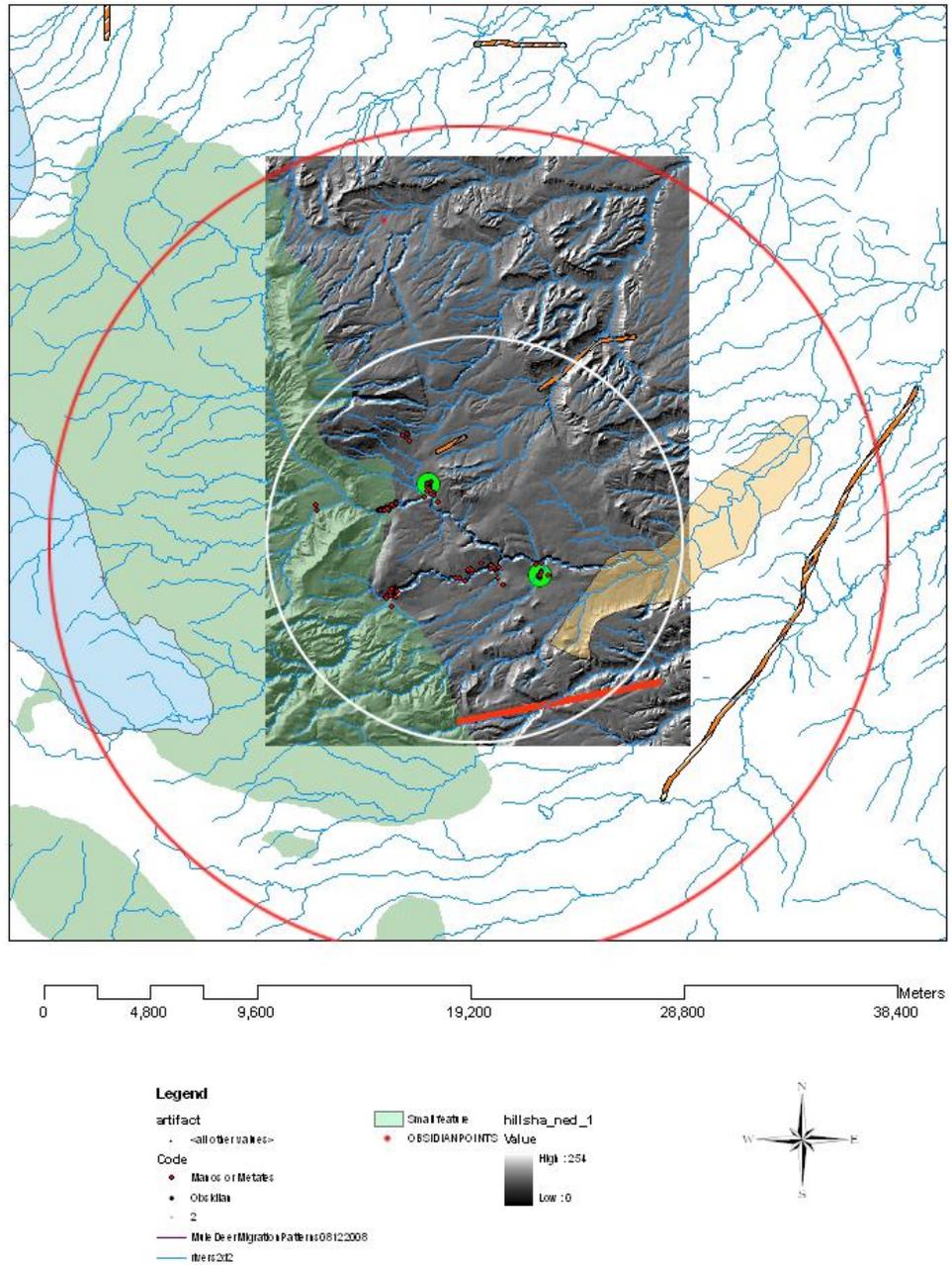


Figure 3. Critical range for elk. The red circle depicts a 40-kilometer radius around the SCRCP which is assumed to be the geographic area that could be traveled within a day's time from the Saint Charles River Canyon. The area in white represents a 10 kilometer radius which is the presumed foraging radius (von Thunen 1966), within a two hours walk.

### Critical Range for Pronghorn

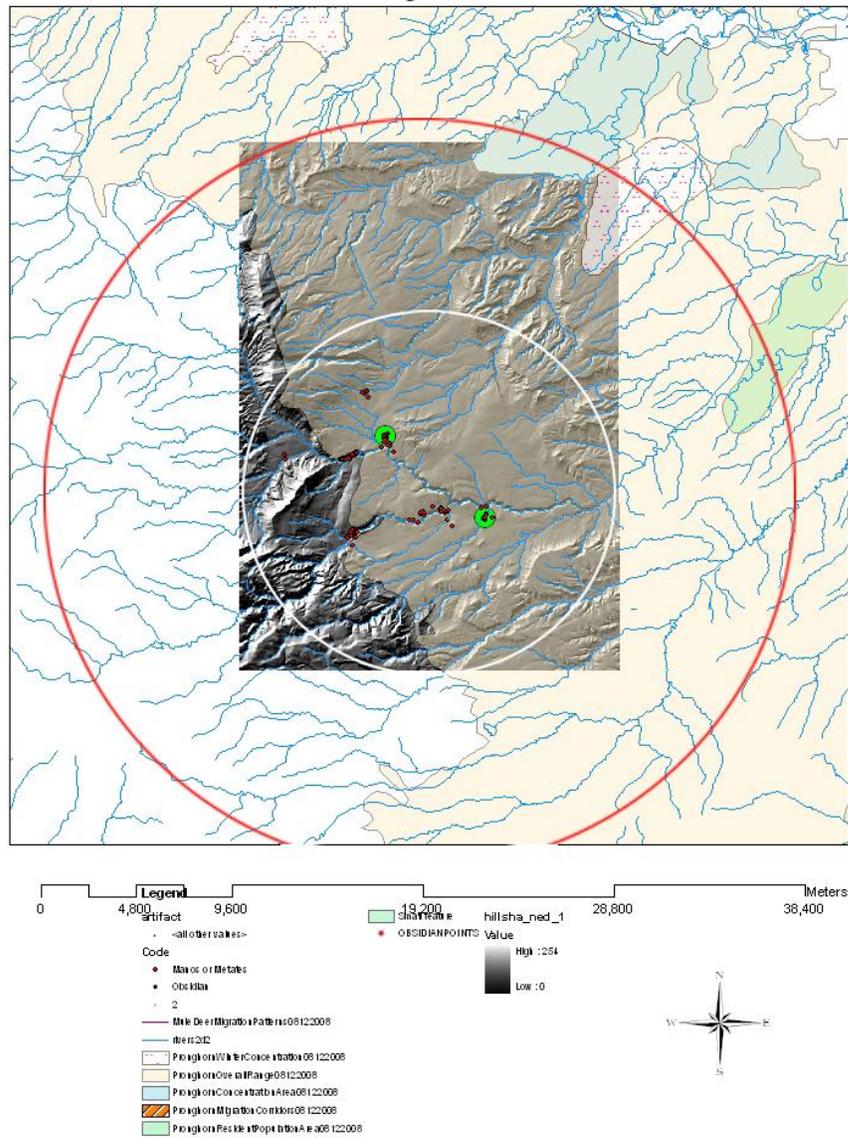


Figure 4. Critical range for pronghorn. The red circle depicts a 40-kilometer radius around the SCRP which is assumed to be the geographic area that could be traveled within a day's time from the Saint Charles River Canyon. The area in white represents a 10 kilometer radius which is the presumed foraging radius (von Thunen 1966) within a two hours walk.

## Summary

The data above helps to illustrate that there is an abundance of economically beneficial species represented in both faunal and floral communities found within the Beulah locality. Elk, Bison, pronghorn bone were recovered from R276 and the Red Bison Rock shelter and there is the possible presence of duck in hearth material at both Roper's Walk and the Brown Palace. Several of the floral resources were found in hearth material at both Roper's Walk and the Brown Palace indicating that they were of some economic importance.

## **Chapter Three**

### **Cultural Chronology and Previous Archaeological Research in the Saint Charles River Basin**

#### **Introduction**

The following pages briefly outline the extent of the research conducted within the greater ARB and thereby provide a temporal frame of reference for the sites along the SCR, as well as their place in the regional cultural history (Table 1). The chapter also includes information regarding previous research conducted in the Beulah District since the 1930's. While previous investigators have placed the cultural chronology in the Arkansas River basin differently along similar timescales (Campbell 1969, Eighmy 1984, Lintz 1989, Gunnerson 1989, Withers 1954), the cultural taxonomy used in this paper is defined by the phase and type distinctions presented by Zier and Kalasz (1999:56-72, Table 1). An example of similar timelines being placed on different scales can be seen with the first introduction of ceramics into the region around A.D.100 (Zier and Kalasz 1999). Zier and Kalasz (1999) would call the technological introduction of ceramics into the area, the Developmental Period between A.D. 100 and A.D. 1050, while Withers (1954) would call it the Graneros Focus (a now defunct term) ending in A.D.1300. Both have the same start date and both have a perceived end date based on various technological changes seen in within dated contexts.

Table 1  
Arkansas River Basin Cultural Chronology (Adapted from Zier and Kalasz 1999)

Cultural Taxon	Temporal Range in Radiocarbon Years Before Present
<b>Paleoindian Stage</b>	>11,500 to 7,800
Pre-Clovis	>11,500
Clovis	11,500 - 10,950
Folsom Period	10,950 - 10,250
Plano Period	10,250 - 7,800
<b>The Archaic Stage</b>	7,800 – 1,850
Early Archaic	7,800 – 5,000
Middle Archaic	5,000 – 3,000
Late Archaic	3,000 – 1,850
<b>Late Prehistoric Stage</b>	<b>1,850 – 225 (A.D. 100 to 1775)</b>
Developmental Period	1,850 – 900 (A.D. 100 to 1050)
Diversification Period	900 – 500 (A.D. 1050 to 1450)
Apishapa Phase	900 – 500 (A.D. 1050 to 1450)
Sopris Phase	900 – 750 (A.D. 1050 to 1200)
Protohistoric Period	500 – 225 (A.D. 1450 to 1725)

**The Paleoindian Stage** includes the Clovis, Folsom, and the Plano periods (11,500 B.P. to 7,800 years B.P.). In general, this era is characterized in the literature as being one of great mobility regarding the land use patterns of hunter-gatherers, and is poorly represented in the archaeological remains recorded in the ARB (Cassells 1997:55-91, Zier and Kalasz 1999:73, Zier and Kalasz 1999: 80-99). Most finds are single projectile points, which may perhaps represent kill sites. These points are often products of very fine artisanship and are usually made from high quality tool-stone. The high mobility of Paleoindian groups is inferred from the distribution of fine-grained cryptocrystalline tool stone such as Alibates, spread over a very large geographic area. The presumed diet was almost exclusively big game animals as evidenced from numerous kill sites throughout the region (Zier and Kalasz 1999), and the general lack of groundstone. Typical tools include large bifaces, with basal fluting.

Folsom aged material (10,950 B.P. to 10,250 B.P.) is found in greater quantities in the surrounding areas such as the Chaquaqua Plateau (Campbell 1969) and the San Luis Valley at

Linger, Zapata Falls, and the Cattle Guard sites to the west (Jodry and Stanford 1992:101), but it is very limited within the ARB (Zier and Kalasz 1999). Because of the lack of campsites, and the frequency with which Folsom material are found associated with kill sites, it assumed that Folsom were much like Clovis in that they were highly mobile and focused primarily on big game hunting for subsistence.

**The Archaic Period** (7,800 B.P. to 1,850B.P.) is characterized as one of greater climatic and cultural stability, by the disappearance of the megafauna, and by a shift in general subsistence strategies employed by the prehistoric inhabitants of the greater ARB. The technology of early Archaic sites within the ARB is poorly known, but is characterized in part by large, side notched projectile points which are presumed to be dart points. Dart points are smaller in size than those assumed to have been used for thrusting, and may represent the utilization of an atlatl. These points are too large to have been effectively used as arrow points.

Mobility may have become reduced during the Archaic as evidenced in an architectural feature (5LA2190) found north of the Purgatoire River, just west of Trinidad. With a radiocarbon date of  $3160 \pm 160$  B.P., this feature represents the earliest masonry recorded in Colorado (Cassells 1997:110). The site was once thought to be an Apishapa structure, but radiocarbon dates placed it nearly 1,500 years earlier than the first Apishapa expression in the archaeological record (Cassells 1997:110-11). Throughout the greater ARB, the population in general was on the rise as seen the growing number of radiocarbon dates associated with open-air archaeological sites, as well as the increasing use of rock shelters.

**The Middle Archaic** (5,000 B.P to 3,000 B.P.) is more clearly understood through excavation and projectile typology established through 26 regional radiocarbon dates (Zier and Kalasz 1999:113). There is a slight shift towards a greater dependence on plant materials, but hunting is still important. This shift is seen technologically through a greater concentration on the use of plant materials as evidenced by the presence of groundstone within archaeological sites

(Cassells 1997:122). This period is typified by the McKean Complex and includes dart points which are “lanceolate and stemmed- indented base forms” (Zier and Kalasz 1999:117). Typical of this period in the mountain regions are Duncan, Hanna, and Mallory points with expressions of Elko and Pinto styles (Stone 1999:138-139).

**The Late Archaic** (3,000B.P. to 1,850 B.P.), is characterized by a hunter-gatherer lifestyle, but with a notable change in projectile point styles including corner and side-notch points . Other subsistence strategies remain similar to the Middle Archaic, but with a greater physical expression of archaeological sites on the landscape indicating population growth within the region (Campbell 1969).

**The Late Prehistoric Stage** (1,850 to 225 B.P.) represents the period with the most dynamic cultural and technological change found throughout the study area. It is marked by several innovations, namely, the introduction of freestanding architectural features, ceramics, and the bow and arrow. As reported by Campbell (1969), Metate Cave (5LA211) is a key source for this chronological information and has produced dates that correspond to the earliest arrowhead sized projectile points (Figure 5) as well as ceramics. The earliest date for these technological changes occurred around  $1,680 \pm 95$  B.P. GX-0718, (Campbell 1969:187-193, Zier and Kalasz 1999:142). The technological advances represented by the introduction of the bow had a direct impact on the size of projectile point morphology resulting in a reduction in size of the larger dart points (Zier and Kalasz 1999:130). Projectile points were both side and corner notched with a local mountain tradition exhibiting serrated edges. The general morphology of the projectile points changed from corner to side notching as time progressed, but there is considerable overlap of styles through time, which confuses an orderly temporal interpretation of point morphology.

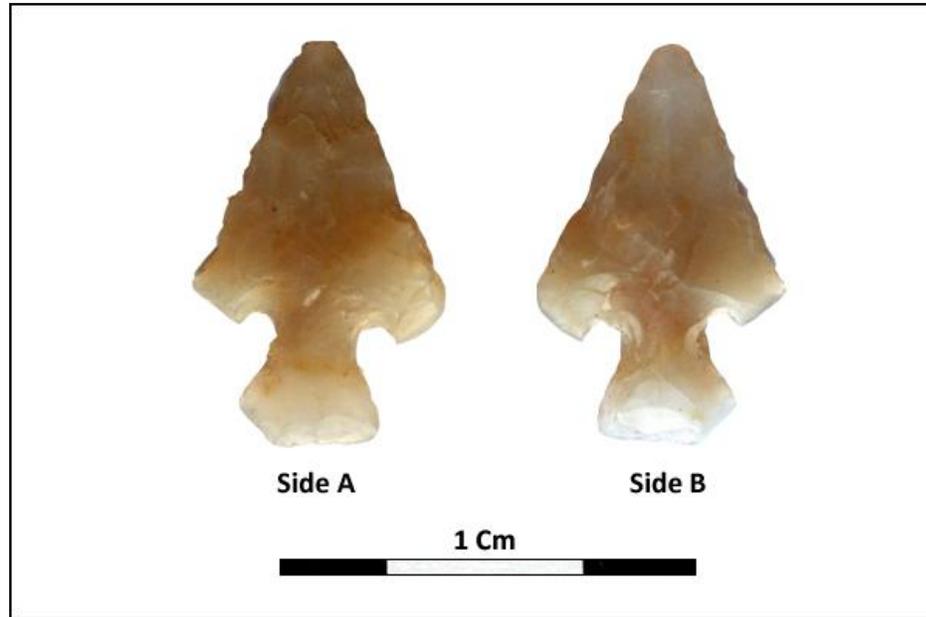


Figure 5. Example of a small Scallorn style corner-notched projectile point found on Roper's Walk, this projectile style is typical of late prehistoric sites, such as the Metate Cave (5LA211), after the introduction of the bow and arrow around  $1,680 \pm 95$  B.P GX-0718 (Campbell 1969:193)

Zier and Kalasz (1999) divide the Late Prehistoric into three stages, the Developmental (A.D. 100 to 1050), the Diversification (A.D. 1050 to 1450), and the Protohistoric (A.D. 1450 to 1725). Within the Diversification period, there are two distinct phases, the Apishapa phase (A.D. 1050 to A.D. 1450) and the Sopris phase (A.D. 1050 to A.D. 1450). The Sopris Phase sites in the ARB represent a unique expression of architecture and are decidedly different from the contemporaneous Apishapa Phase structures. "Sopris construction displays a characteristic rectilinear foundation and patterned internal feature configuration" (Zier and Kalasz 1999:159-160). Daub used in the wall construction of Sopris architecture is also different from Apishapa structures which are more circular and are made from horizontally and vertically placed courses of dry-laid masonry (Withers 1954, Zier and Kalasz 1999, Kalasz 1988). Sopris Phase sites have also have shown a connection with the Southwest due to the presence of black on white ceramics (Dick 1963), while Apishapa sites frequently have cord marked ceramics, black on white trade wares (Zier and Kalasz 1999:209), or no ceramics at all.

## **Graneros**

The term Graneros is now defunct, but is presented here because it persists in the literature and is frequently used as a description for sites in the ARB dating between A.D. 100 and 1100 (Zier and Kalasz 1999). Withers (1954) defined the Graneros focus based on material remains recovered through excavation and analysis of the Bellwood site located 15 km southeast of the Beulah locality, on a tributary to the Saint Charles River. The definition of Graneros by Withers was an attempt to help identify “valid and describable cultural units for the prehistoric occupations of eastern Colorado” (Withers 1954:1), and was in part defined by the presence of ceramics with straight or slightly out curved rims and conoidal bases (Withers 1954). Withers presented the idea that the earliest manifestation of the Graneros came from the existing Plains Woodland Pattern (A.D. 200-1000) in the Midwest. The Woodland pattern was further divided into two designations of the Woodland foci. The first being the Parker focus, whose material expression contains cord-marked pottery, vessels that have conoidal bases and straight incurving rims and medium to large corner notched projectile points (Withers 1954:1). The second designation of the early Plains Woodland pattern is the Graneros focus. Later work has shown that Graneros is contemporaneous with, or predates the Parker focus (Campbell 1969:425) but it is assumed to be the direct predecessor to the Apishapa Phase A.D.1100-1450 (Campbell 1969:428).

### **The Bellwood Site 5PE 278**

The Bellwood Site is constructed with pit-house style architecture, consisting of 5 stone circles, and is located outside of Colorado City on a tributary of the Saint Charles River. Arnold Withers excavated the site between 1950 and 1952 (Zier and Kalasz 1999:31) and determined it

to be of the “Late Woodland Horizon” (Withers 1954:1-2). The subsequent designation of Graneros Focus was based on an attempt by Withers to define the timing of the first farmers and ceramic producing inhabitants within the Arkansas River Basin. A radiocarbon date obtained from the Graneros site places it at a calibrated date of AD 450 (MC.NP.R22: 1500 +/- 55 BP). The definition of Graneros is based on the presence of “cord-marked pottery with bases that were conoidal and rims that were straight or slightly out-curved... and projectile points (that) are corner notched and range in size from very small to large” (Withers 1954:1). According to Zier and Kalasz (1999:58), even though the analysis of the data collected since the 1954 has shown the taxonomy of Graneros has proven to be invalid, it erroneously persists in the description of sites that are dated between AD 250 and AD 1000. Another characteristic attributed to Graneros is that they appeared to gravitate toward canyon rims and benches overlooking river bottoms, and build circular structures of dry-laid masonry, a characteristic that is also attributed to the Apishapa Phase, which dates between AD 1100 and AD 1450.

Importantly, there are no unequivocally defined transition boundaries between Graneros and the Apishapa Phase (Zier and Kalasz 1999:68), and the similarities in architectural construction and other material culture implies a deeper connection in life ways than an arbitrary division of time for the sake of creating a cultural history of the region.

### **Overview of Apishapa**

The Apishapa Phase (hereafter referred to as Apishapa), is in part defined by the presence of small triangular side-notched points, backed knives, cord marked pottery, and circular stone enclosures built on canyon rims and benches overlooking river bottoms (Renaud 1933, Campbell 1969, Lintz 1986, Gunnerson 1989, Zier and Kalasz 1999). These sites date between A.D. 1100 – 1450 and the architecture associated with the Apishapa phase is complex and varied,

but generally manifests in circular configurations of dry-laid masonry with vertically placed stone slabs being common. Architectural features are also constructed in C and D shaped features as well as long rock wall alignments, or barrier walls (Campbell 1969:422) that do not necessarily define the residential features. This architecture is best represented along the Apishapa Plateau (Campbell 1969:55) in Southeastern Colorado. Most sites attributed to Apishapa are confined to the Arkansas River Basin. However there are sites that hold similarities to Apishapa structures found near the Black Mesa in the Western Panhandle of Oklahoma, northern New Mexico (Lintz 1986:26), and in the San Louis Valley of southern Colorado.

Gunnerson (1989) argues that the “type-sites” for Apishapa are Cramer and Snake Blakeslee (Gunnerson 1989), which are located 70 to 75 km southeast of the Beulah area. These sites are the most dramatic examples of Apishapa architecture in the Arkansas River Basin (Figure 6), and as “type sites” for Apishapa, are far less representative of the majority of architectural features found within the greater Arkansas River basin. Renaud (1934) suggested that the Cramer site and Snake Blakeslee may represent a ceremonial focus (Renaud 1934:95), as the scale of the architecture and the abundance of bone recovered through excavation indicates a centralized gathering place.

The tremendous architectural variability in terms of size, physical orientation, construction techniques, and layout presents a challenge in constructing a coherent and easily applied system of organization. To date, the best attempt to quantify these stone enclosures based on their morphological attributes are in Kalasz’s master’s thesis (1988), where he produced a classification system based on 5 classes and 22 sub-classes. Although useful on many levels, it proved too difficult to apply to the construction techniques encountered along the Saint Charles River because many features were too deeply buried to determine the actual construction method.

Campbell (1969) presents data that shows the Apishapa sites in the ARB are dated to the Middle Ceramic between AD 1100 and AD 1450. The similarities in site location and

construction techniques, i.e. circular house bases built on canyon rims, may have led Campbell to believe that Apishapa were related to the Antelope Creek sites located in the panhandles of Texas and Oklahoma. Campbell (1969) further argued that the Apishapa may have been ancestral to those complexes (Campbell 1969:2).

Lintz 1986 later showed through radiometric dates (1986:177-190) that Apishapa and Antelope Creek were in existence contemporaneously, and consequently Apishapa were not the predecessors to Antelope Creek. Lintz further speculated that the Apishapa Phase formed out of local groups and is confined to the Arkansas River Basin and the Chaquaqua Plateau (Lintz 1986:26). Lintz (1986) also argued that the Apishapa Phase may have contributed to what he designated the Upper Can-Ark or the Panhandle Aspect. This appears to be a regional variant that with architectural and subsistence traits similar to both Antelope Creek Focus and Apishapa Phase sites. By this designation, it appears to the present author that Lintz may be implying that there may was some cultural overlap between the three groups or hybridization of architectural styles. Importantly, one of the main architectural sites examined by Lintz (1969), Alibates #28, is located on the Alibates quarry in the northern panhandle of Texas. The architectural footprint of Alibates #28 is very similar to Feature 9 at the Brown Palace site (Chapter 5) within the SCR basin.



Figure 6. The Snake Blakeslee Site located 70 to 75 km southeast of the Beulah District (<http://www.coloradoarchaeologists.org/>)

### **Previous Research in the Beulah District**

The remainder of this chapter covers sites that have been previously recorded in the Beulah locality (Table 2), all of which were revisited by the author during this project. The first academic research conducted in the Beulah area was between 1930 and 1933 when Chester Thomas invited University of Denver (DU) Professor E.B. Renaud to visit and examine several rock shelters which contained rock art (Renaud 1933:16). With the extensive help of Charles Steen and local ranchers, Renaud identified eight sites in what he aptly called the “Beulah District”. These sites were assigned by Renaud the DU numbers of R274 to R281 inclusive. Three of the sites were camps, three were rock shelters, and the other two are not clearly identified by Renaud whether they were rock shelters, stone forts, or lithic scatters, consequently they were not included in any of the site descriptions presented below. Of the sites investigated, R278 (5PE 223) was “of special interest” to Renaud (Renaud 1933:16), because of the presence of several stone enclosures and stone fences. Several years later, Arnold Withers, also of DU,

recorded several architectural sites in the Beulah District in 1949 (Table 2) but no comparative analysis of these sites was performed.

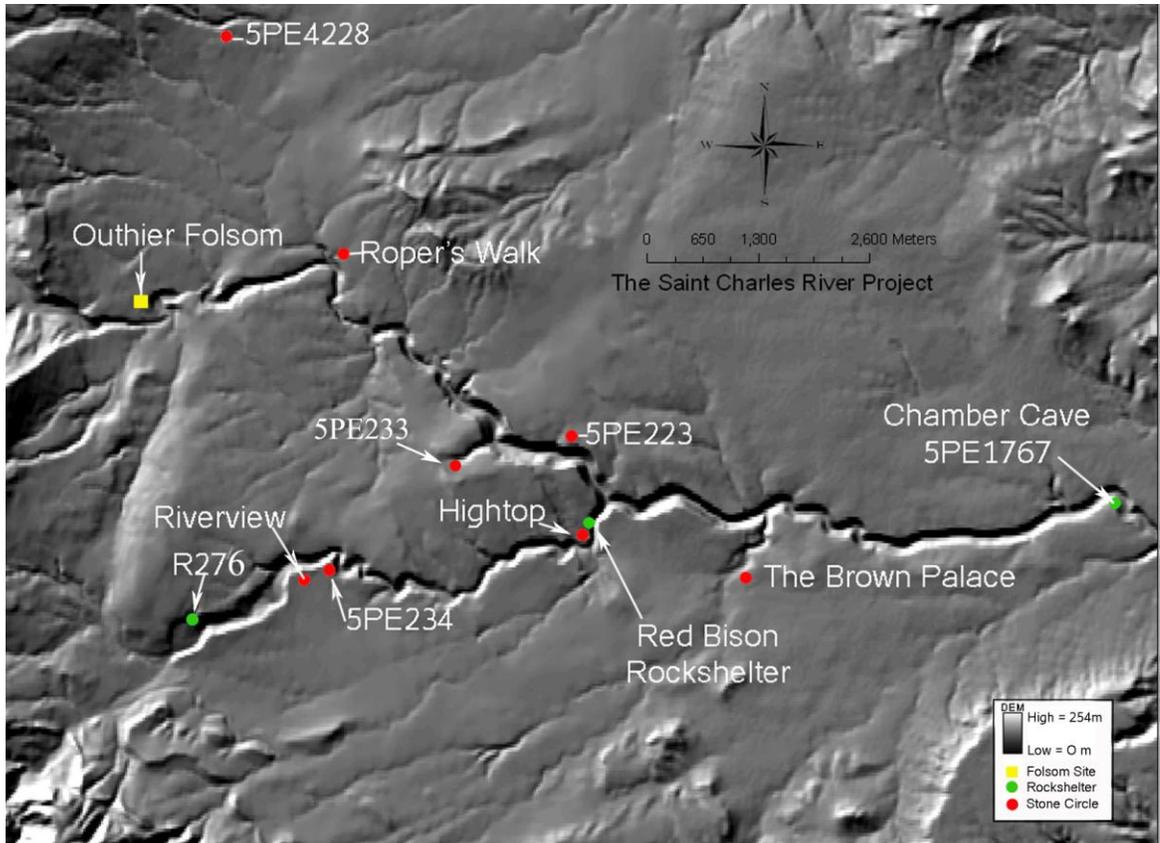


Figure 7. Digital Elevation Map illustrating the location of the sites recorded during the SCRCP

Table 2  
Previous research along the Saint Charles River

Site Number	Recorded by	Date	Rock shelter	Rock Art	Lithic Scatter	Architectural Features	Description
R275	E.B Renaud	1932	X	X			Perishable materials
R276 R278	E.B. Renaud & C. Steen	1932	X	X			Perishable materials (this report)
5PE223	E.B. Renaud A. Withers	1933				X	9 stone circles, 4 rock alignments
5PE232	A. Withers	1949					Ceramics fragment
5PE233	A. Withers	1949					Rock wall and stone circle
5PE234	A. Withers	1949			X	X	4 architectural features
5PE4228	Pueblo CAS	2001				X	5 architectural features
5PE1767	C. Nelson	1969	X				Perishable materials

### **Site - R275**

During the survey of the Beulah District in 1932, Renaud and Steen partially excavated a rock shelter designated R275 along the north Saint Charles River canyon across the canyon and river northeast of the Outhier Folsom site. Coiled basketry, yucca sandals, and numerous bone tools were among some of the artifacts recovered. The site overlooks the SCR and is in close proximity to several other rock shelters investigated but not reported here.

### **Site - R276**

R276 is a large rock shelter containing multiple bedrock metates. It was erroneously identified by Renaud as being “on the face of a sheltered cliff of the same Middle Saint Charles” as R275. In the third report of the Archaeological Survey of Eastern Colorado, this site was briefly described by Steen, and noted only for its rock art (Renaud 1932:27). Based on the reference to the red anthropomorphic figure, the present author believes that the rock shelter he describes is actually on the 3R ranch, over two and a half miles south of R275.

### **Site - 5PE223**

5PE 223 (R278) is an architectural site containing nine stone circles and four substantial rock alignments which are orientated roughly parallel to the canyon rim. The present author was granted access to the site, but was not allowed enough time to fully record the features.

### **Site - 5PE232**

Withers (1949) investigated and reported this site based on a single piece of pottery found by Floyd Coleman, and concluded that “nothing really found to indicate a site except Coleman’s purported finds” (Withers 1949). Based on the hand drawn sitemap on file at the OAHP and Withers’ description of the site, the exact location of the area investigated by Withers is still unclear. It is assumed here Withers may not have gone far enough south along the canyon rim to encounter the site that is designated Roper’s Walk (discussed below), because it a significant cluster of architectural features and a large open lithic scatter which would be hard to miss by a trained eye.

### **Site 5PE233**

5PE233 is an open architectural site consisting of an isolated wall alignment and a stone circle. The site is located on the western side of the Saint Charles River canyon on very small side-cut of the canyon wall.

### **Site - 5PE234**

This site was reported by Arnold Withers in 1949, and consists of a cluster of four stone circles, which are positioned in a cloverleaf pattern 10 meters from the cliff edge overlooking a serpentine stretch of the Saint Charles River. When initially investigated in 1949, there were very few artifacts found. The architectural component is comprised of four distinct rooms with a concentration of rocks at the junction point of the four semi-circular rooms. The rocks are buried up to 38 cm and the fill within the rooms is deeper than any other site along the SCR.

### **Site – SPE4228**

This site was recorded in 2001, by the Pueblo chapter of the Colorado Archaeological Society. The site consists of nine circular architectural structures built with dry-laid sandstone slabs and is positioned in the middle of a very shallow canyon that runs approximately east /west off of Siloam Road. Several of the stone circles are deeply buried and there was a limited amount of lithic material observed by the Pueblo group. Artifacts included 3 sandstone metates, two sandstone manos, 1 quartzite unifacial scraper, 5 chert flakes, and 9 quartzite flakes.

### **Site - SPE 1767 - Chamber Cave**

Chamber Cave is located on the southeastern end of the Saint Charles River Canyon and is outside of the “Beulah District” as Renaud loosely defined it. In 1969, this rock shelter was excavated by Ed Gregory and was later written up by Charles Nelson in 1970. The excavations produced artifacts that were interpreted as being the result of a single occupation (Nelson 1970:10). Based on the inventory of artifacts recovered, it was suggested that the occupation was Apishapa in age, however no radiocarbon dates were obtained confirming this assumption. The faunal assembly included one wapiti, one canine, and the remains of two bison. There was evidence of intensive processing of the bone elements, which were either “split or pounded” (Nelson 1970). The lithic material types of the artifacts were not recorded in the report published by Nelson (1970). In total, there were 51 side notched points, six corner notched points, two stemmed points, and various drills, scrapers, knives and shaft smoothers. Included in the artifact inventory are 63 beads, 2 pieces of basketry, 2 pieces of leather, and 17 pieces of cordmarked ceramics. One of the more important finds was a complete fletched arrow, (with a foreshaft) that had a small side notched point still attached. In addition to the rich inventory of material

excavated from this rock shelter there are three examples of rock art in Chambers Cave. At the time of this writing, most of the artifacts collected from Chamber Cave are on display at the Heritage Museum, in Pueblo, Co. and are owned by R. Archuletta, a former sheriff in Pueblo.

### **Summary**

The preceding chapter has outlined the culture chronology and previous research in the Saint Charles locality. Based on morphological characteristics of the architecture, as well as the physical placement on the landscape as described by Renaud (1933), Campbell (1969), Lintz (1986), Gunnerson (1989), as well as Zier and Kalasz (1999), many of these features appear to be Apishapa in origin.

The use of the term “District” by Renaud is very appropriate by modern standards when talking about the concentration and variety sites in the Beulah locality. There are prehistoric occupational expressions along the Saint Charles River which fall into in three general categories: open air camps, open air architectural sites, and rock shelters. While the integrity of many of the open lithic scatters has been significantly impacted by looters and collectors over the past 90 years, the preservation of perishable materials in rock shelters is remarkable. Most of the architectural features are still relatively intact. These sites represent a significant clustering prehistoric inhabitants and a focused level of land use along the Saint Charles River indicative of a settlement pattern that should be interpreted as a cultural landscape and not just a collection of isolated sites.

## **Chapter Four**

### **Project methodology**

#### **Introduction**

Various techniques utilized during the SCRP include Geographic Information Systems (GIS), Global Positioning System (GPS), pedestrian survey, as well as the utilization of remote imagery from Google Earth. A Class I literature review was conducted based on intersecting data within a specified grid of UTM coordinates and the SHPO database listing of sites that are within the Beulah District. Whenever possible, these sites were visited firsthand, to determine their extent and relative importance to the SCRP based on the presence and extent of architectural features. Unfortunately, due to the scale of the landscape covered during the SCRP, not every site was fully recorded, but at minimum, the sites were mapped using a GPS, which allowed for further geospatial analysis and hypothesis testing. All GPS data was collected with a Thales / Magellan Mobile Mapper and subsequently converted to shape files for transfer to ESRI ARC GIS applications.

#### **Survey techniques**

Roper's Walk (described below) was surveyed and recorded over a period of 7 days between May 15<sup>th</sup> and May 22, 2007, with a volunteer crew from the Pueblo Chapter of the Colorado Archaeological Society. These volunteers include: Charles Booms, Georgine Booms, Anne Whitfield, Joel Hurmence, Jo Washburn, Fran Cosyleon , Eva Tucker, Paul Burton, Hamp and Sherrie Howe, Mark Yaeger, Michael Ketchen, Jeff Witters, and William Tilley.

The remainder of over 3,400 acres along the SCR was surveyed by the current author. The survey techniques used for each architectural site were consistent, in that the canyon rim was always a defining edge of the survey area. Transects were walked at 20 meter intervals and

artifacts were flagged as they were encountered. The extent of the site, in all cases, was defined by the distribution of artifacts, after which a 50 meter buffer zone was established between the last marked artifacts and where artifacts were no longer encountered. For each site surveyed there was also a survey conducted in large tracts of land surrounding, and away from the canyon rim. This was done in order to identify potential sites that were not associated with the canyon rim, or conformed to the GIS model (see Chapter 6) regarding distance from water and proximity to river access.

### **Measurement of Architectural Features**

The measurement of small architectural features containing one to four rooms was conducted the same way. The center point of the feature was determined visually, and a pin flag was positioned at this point. North was then established by using a Brunton compass that was set at 0 degrees declination (magnetic north). From this central point, a metric tape was pulled along each of the cardinal directions (four tapes in all). Working with a fifth tape I would record each rock by measuring the distance from the central north south line, to the southern base of the rock and then the distance to the northern tip of the rock (Figure 8) The width of the rock was measured and sketched to scale on graph paper. This method was repeated for each of the four quadrants, 0-90 degrees, 90 to 180 degrees, 180 to 270 degrees, and 270 degrees to 360 degrees.

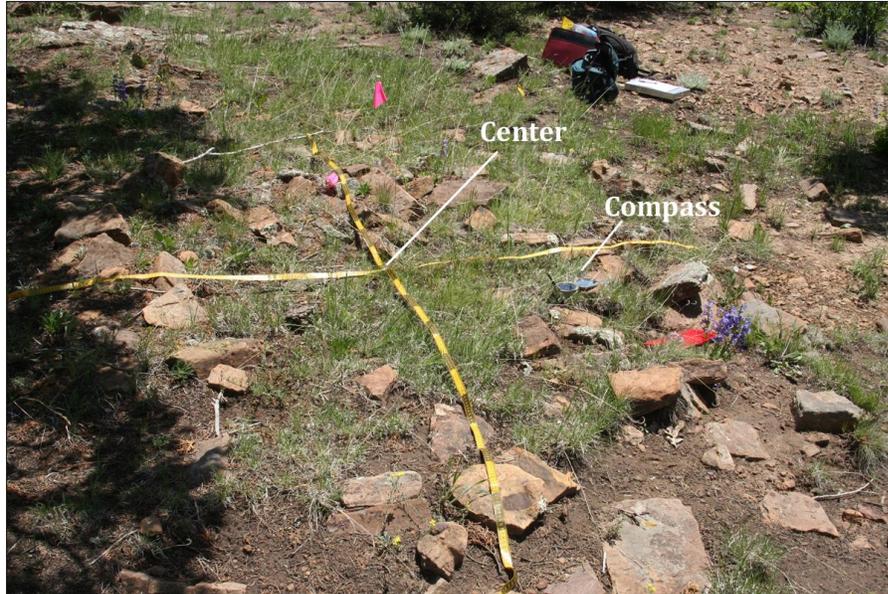


Figure 8. Photo of metric tapes placed along the cardinal directions, each rock was then measured from the central point and recorded on graph paper

The measurement of larger features with multiple rooms was done by establishing a baseline with a datum placed at the southwest corner. From this datum point, a metric tape was pulled due east of the datum, the entire length of the feature being measured. Also from the same datum point, a tape was pulled north to the northern most extent of the features. Two different tapes were then used to measure the distance east of the north/south line, and the distance north of the west to east base line. These measurements were made to each individual rock around the perimeter of the feature.

The sketches of the architectural features were later traced to scale on a light box (Figure 9) using plain white paper. Floor area measurements and calculations are taken directly from the field diagrams and are only as accurate as the quality of the field measurements. Although the scale is correct, the actual depictions of stones may not perfectly reflect the “real rock” in length, width, and thickness. The accuracy of the drawings and the level of precision executed through fieldwork is high enough for subsequent spatial analysis, which was done by taking measurements from the drawings.

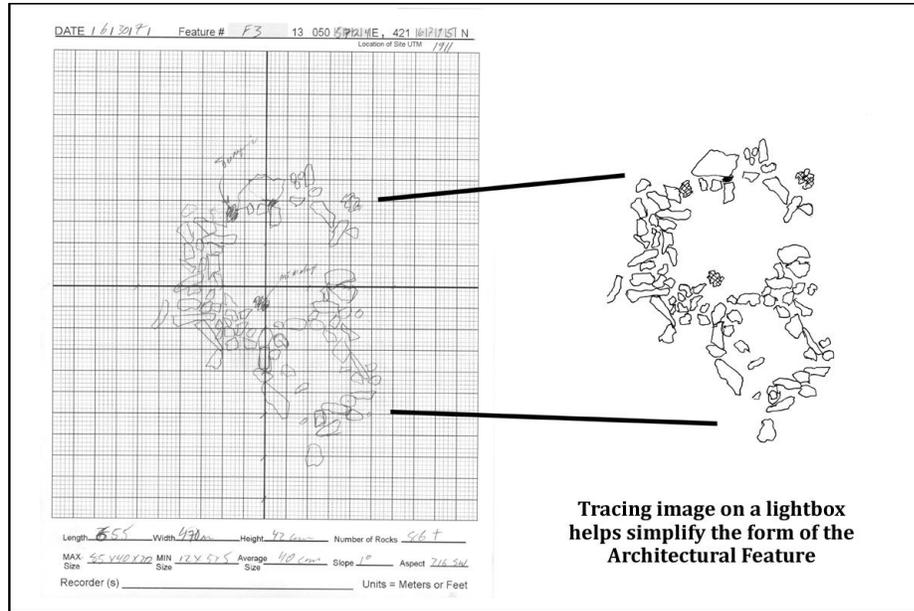


Figure 9. Example of a simplified diagram produced by tracing original field drawing

### Recording of Artifacts

Most materials recorded during the SCRP were surface finds, and as encountered, they were measured, traced, sketched to scale, and then photographed with a digital camera. Artifact positions were recorded with a GPS unit in the field, and later transferred to maps utilizing a combination of ARC GIS, Topo USA, and Magellan Mobile Mapper software. These data were then used in part to help visually describe river access from the canyon rim down to the SCR, as well other geospatial analysis.

Throughout the project, debitage was recorded based on size class, material type, and the description of other attributes such as the presence or absence of cortex. The position of each piece of debitage was also recorded with a GPS unit and then transferred to the sitemap where a cluster analysis was performed in Arc GIS. The spatial distribution of debitage and architectural features can be clearly seen through these maps and will be used to help determine site function, complexity, and to make inferences about human agency at the sites. Identification of material

types for lithic analysis involved handheld magnifying lenses, as well through comparison with known geologic specimens. The only artifacts collected during the SCRP include: one Catlinite pipe fragment, obsidian debitage from Roper's Walk, obsidian debitage found on the 3R Ranch, and the Alibates Folsom point found at the Outhier site. The obsidian debitage found on the 3R Ranch is presently in the possession of the current ranch owners. Other artifacts collected during the SCRP will be curated by the Southeastern Colorado Heritage Center in Pueblo, Co. These artifacts include a Folsom point found at the Outhier site, obsidian debitage and Catlinite pipe fragment found at Roper's Walk.

### **Excavation, Testing, and Analysis**

Excavation was limited to the collection of hearth material from Feature 6 at Roper's Walk, as well as fill material from Feature 1 at the Brown Palace site on the 3R Ranch. Neither site had more than 20 cm X 20 cm X 40 cm area of dirt removed, with the intention of leaving the features as intact as possible for future research. Bone was collected from two different rock shelters. The first piece of bone was collected from an erosional channel in a rock shelter designated R278, and the second bone fragment was collected from a packrat midden in the back of the Red Bison rock shelter.

All fill material was sent to the Paleoresearch Institute (<http://www.paleoresearch.com/mainsite/contact.html>) for analysis. This analysis included pollen as well as Fourier Transform Infrared Spectroscopy (FTIR) on three samples.

Infrared spectroscopy (IR) is the study of how molecules absorb infrared radiation and ultimately convert it to heat, revealing how the infrared energy is absorbed, as well as the structure of specific organic molecules. One of the primary advantages to the FTIR is that it measures all wave lengths simultaneously. It has a relatively high signal-to-noise ratio and a short measurement time. Each peak in the spectrum represents either a chemical bond or a functional group.

Molecules can absorb electromagnetic radiation if the frequency (wavelength) matches the frequency of the electromagnetic radiation. Bonds between atoms in a molecule vibrate with a frequency that is specific to different types of chemical bonds. Carbon-hydrogen bonds, oxygen-hydrogen bonds, and carbon-carbon double bonds each have unique vibrational frequencies. Since molecular structures absorb the vibrational frequencies or wavelengths of infrared radiation, the bands of absorbance can then be used to identify the composition of the materials under study. In the case of the current research, the portion of the electromagnetic spectrum between 4000-400 cm is used for identifying organic materials. (Cummings 2008).

### **Geochemical Analysis**

Geochemical analysis was conducted on all of the obsidian collected during the SCRP.

Obsidian flakes and two obsidian tools were sent to the Geoarchaeological XRF Laboratory (<http://www.swxrflab.net/newlabintro.htm>) for spectral analysis. One of these tools analyzed is an obsidian biface fragment, which was further analyzed by Origer's Laboratory (<http://www.origer.com/obsidian-hydration.htm>) for the existing hydration rinds. These hydration studies were successful in estimating two separate dates from the same artifact. Another form of geochemical analysis was conducted on a piece of pipestone found at Roper's Walk. The sample was sent to Dr. Jeff Ferguson at the Archaeometry Laboratory associated with the University of Missouri Research Reactor (<http://archaeometry.missouri.edu/information.html>) for instrumental neutron activation analysis.

### **Population Estimates for Architectural Features**

Population estimates based on floor area within architectural features was based on the formula derived by Naroll (1962:588), which states that Population (P) = 1/10 X area of floor in square meters. In this thesis, any calculation that resulted in a fractional outcome is rounded up under the assumption that there are no fractional equivalents for people. For example, if the

measured floor area were 12.7 square meters, then the formula would dictate an outcome of  $1/10 \times 12.7$  or 1.27 people, this would be rounded up to 2 people.

### **Summary**

The preceding chapter outlined the methodology utilized throughout the SCRP and highlighted several techniques that were unique to the project such as the mapping and measurement of architectural features utilizing a sub-meter accuracy GPS. Survey was conducted in 20 meter transects and artifacts and features were recorded as encountered. It took a little over 6 months on the ground to complete the project as it is presented here, and it is by no means a complete inventory of all the sites that contain architecture or lithic scatters along the SCR canyon rim. The author visited three other sites that contain in aggregate an estimated 15 or more stone circles, but these were not recorded due to time constraints and private property/access issues. It is mentioned here, only to highlight the importance of looking at the SCR canyon as a landscape of use, rather than individual sites that may not be related.

Geochemical analysis was undertaken with a piece of Catlinite, 24 pieces of obsidian, and the obsidian hydration dating of one biface fragment. Finally, the formula utilized for predicting population estimates for each site was presented and explained in terms of its use.

## **Chapter Five The Sites**

### **Introduction**

The following chapter will describe the sites visited during the SCRP. While several of the sites along the SCR are rock shelters, many sites along the SCR reflect a modification of the natural landscape in the form of architecture. This modification of living space by the construction of walls and stone enclosures indicates a high investment in labor and is indicative of the inverse relationship between mobility and residential occupation (Binford 1990:120). This energy investment reflects an occupational strategy that could be in direct response to environmental and climatic factors. For example, the SCR floods periodically and runs from canyon wall to canyon wall, the safest place to invest energy in the construction of architectural features would be along the canyon rim. Likewise, the availability of big game in the immediate area is predicated on good foraging/browsing and is directly linked to climatic variables. If there were plenty of rainfall then it would be reasonable to assume that there will be more grazers and browsers within immediate area, which would in turn, would be available for the prehistoric hunter-gatherers within the SCRB. The labor investment in building architectural features could also reflect the value of a refuge from the oppressive summer heat, or shelter from rain, snow or other environmental factors relating to game patterns and their watering habits. Consequently a detailed analysis of the source material of the artifacts and tool-stone combined with a comprehensive analysis of the floral and faunal remains may produce a fuller picture of the temporal placement, seasonality of use, and logistical organization of the people who lived there (Binford 1979:266).

The following pages address the first research question, regarding the nature and variability of the archaeological sites along the SCR? Each site recorded, is done so through

documentation of the same attributes (when possible) regarding discovery, site size, complexity, debitage characteristics, and a detailed description of features. These data will help to define and further illustrate the complexity and nature of the archaeological sites recorded and visited during the SCRP. Site complexity is defined here as the physical size of the site divided by the number artifacts found. Although flawed by many limiting factors such as ground visibility, past collection by looters, surface exposure of artifacts and architecture vs. time, and the “real” duration of use, this number allows for a relative comparison of the intensity of use between sites.

Roper’s Walk, the Outhier site, and the Riverview site represent new discoveries made by the author. The other sites reported here have been previously recorded, or were known to local informants and will be apparent to the reader as they are designated with either a Smithsonian trinomial, or an RXXX number that was assigned by Renaud. The previously recorded sites were revisited during the SCRP and consequently contain new data.

### **Site Description 5PE233**

5PE233 is a cluster of nine architectural features and three rock wall alignments positioned on the canyon rim above the SCR. These rock wall alignments contain several large slabs of sandstone, some of which weigh in excess of 250 pounds (Figure 12). This implies a level of cooperative effort among the architects in the construction of these features, and an investment in the landscape that points toward the intention long-term occupation or reuse over time. The site is located on a large flat area which is bounded on the south and west sides by the Saint Charles River Canyon. There is an excellent view of the surrounding terrain to the south and it is possible to see large portions of the Saint Charles River bottom. The closest travel corridor down to the Saint Charles River is located north of the site at a distance of 479 meters. The river itself is 671 meters away making this site the furthest from the SCR of any of the sites

recorded during the SCRP. The rock wall alignments are generally positioned parallel to the canyon and do not appear to be defensive in nature.

### **Discovery**

E.B. Renaud first visited the site in the late 1930s and made note of the architectural features, but did not conduct a formal survey or recording of the site. The site was visited a second time by A. Withers in the 1950s, but again no formal work was done. This site was visited by the author during the summer of 2008 with William Roper, the grandson of Roy Roper who originally homesteaded along this portion of the North Saint Charles Canyon in 1898. The architectural features at were recorded with a GPS (Figure 10), but again not formally mapped and recorded, nor was a systematic survey completed.

### **Site size**

The site covers approximately half an acre and has very few groundstone or chipped stone artifacts visible. As mentioned before, this site was not fully recorded, and the data presented below in no way is meant to be a definitive description of the archaeological resources contained within the site. It is only a representation of what was observed during the short time the author visited the site.

# Site Map

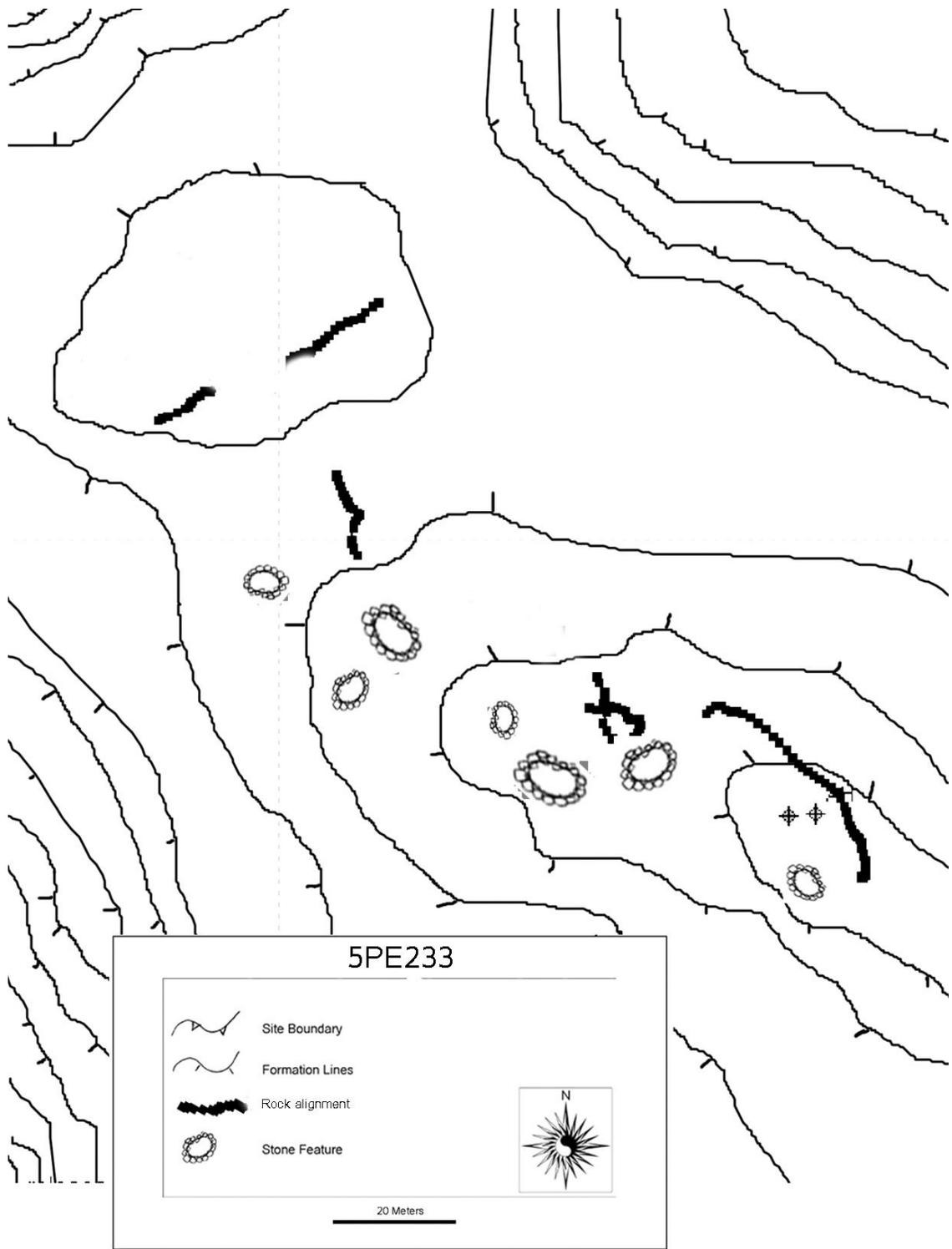


Figure 10. Site map of 5PE233 showing rock walls and stone circles

### **Debitage characteristics**

Several small, late stage quartzite reduction flakes were found along the southern portion of the site approximately 15 meters south and east of the largest rock alignment. No measurements were made due to time constraints and subsequently the complexity of the site was not calculated.

### **Tools**

The only diagnostic artifact found was a small, Washita-style side notched, projectile point made out of petrified wood. Washita style points (Figure 11), are found in archaeological contexts dating between A.D. 1000 and A.D. 1500 (<http://www.kshs.org/p/archeology-collections-middle-ceramic/15666>). The projectile point is located along the southeastern edge of the site and was exposed on the surface when it was found.

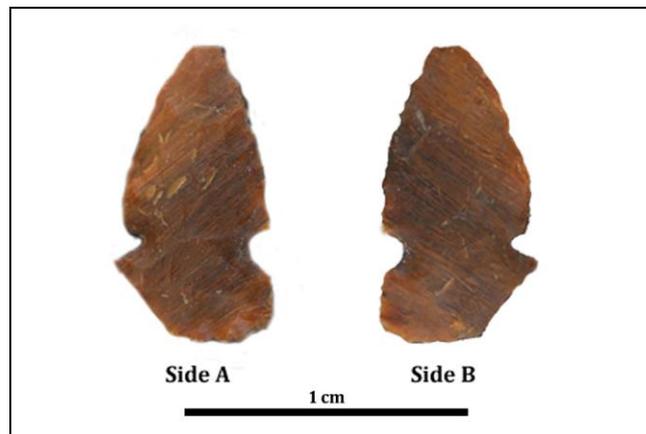


Figure 11. Late Prehistoric side-notched, petrified wood projectile point found on the southeastern edge of 5PE233

### **Groundstone**

Two manos were noted along the northern most rock alignment, which runs approximately east/west towards the canyon rim. There were no other artifacts, bone, or other culturally modified materials found at the site

## Description of Features

The features consist of six rock alignments, and nine very shallow depressions which were rock lined. The clear areas in the center of these features were the result of the removal of the larger slabs of sandstone, pushing (or lifting) them to define the outline of the semi-circular structures. Rock was piled up to four courses, horizontally positioned without the use of any mortar or jacal. Two features utilized the existing bedrock to help define several “walls” (Figure 12), but for the most part the features were built independent of natural rock exposures. By visual inspection, features were only 5 to 20 cm in depth, but this was not verified by any excavation.

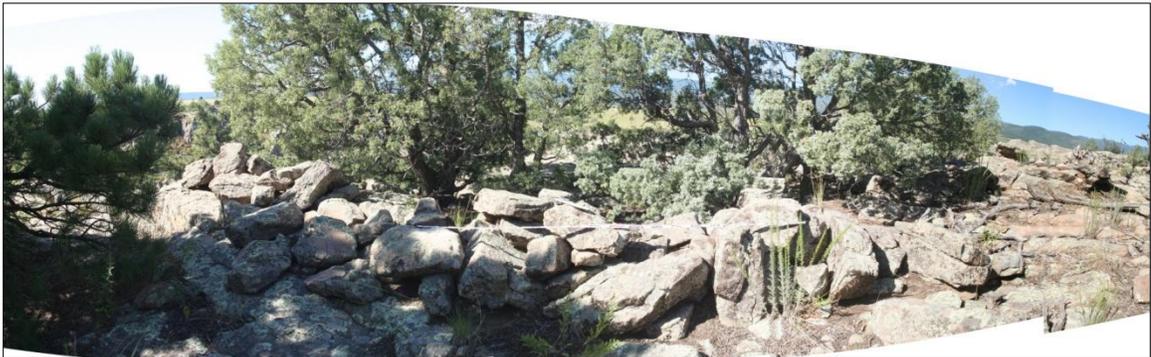


Figure 12. Photo taken looking northeast at a rock-wall alignment found on the southern edge of 5PE233. Note the size of the boulder in the center of the frame.

Due to time constraints, the total number of architectural features were not conclusively quantified, nor were the dimensions of the identified features accurately measured, so no estimate of population based on Naroll’s formula is ventured here.

## Site Description - 5PE234

This site overlooks the SCR and consists of a cluster of four circular house bases, which are constructed in a clover shaped pattern 10 meters from the cliff edge, overlooking a serpentine stretch of the Saint Charles River. The 2 to 3 courses of masonry are dry laid and appear to be

placed in a random pattern as opposed to being carefully stacked. Located directly below the site is a very narrow section of the canyon with small terraces of potentially arable land. The proximity to water is 261 meters and the distance from the travel corridor down to the river is 196 meters. There are four distinct rooms with a configuration of rocks at the junction point the four semi-circular rooms. The rocks are buried up to 38 cm and the fill within the rooms is deeper than any of the other sites investigated during the SCRP.

### **Discovery**

The site was initially reported by Arnold Weathers in 1949, and was roughly drawn on the back of a 3x5-index card. There was a reference to another stone circle site close to this one but it was not found through systematic survey south of the site. Survey was conducted in 20 meter transects with the canyon rim being the defining boundary on the northern and eastern edges of the site (Figure 13). No artifacts were found anywhere within 100 meters of the site, so a 50 meter buffer around the footprint of the architecture was used determined the extent of the site. Other than the architectural features themselves, no other culturally modified mater such as tools, bone, debitage, or groundstone was found.

Site Map



Figure 13. Site map of 5PE234

### Site size

The site occupies less than half an acre, and If all of the features were occupied simultaneously, using Naroll's formula (1962:5:88) for predicting population based on floor size ( $P = 1/10 * \text{area square meters}$ ) there could have been 4 people occupying the site.

### Description of Features

The three of the four rooms at 5PE234 are roughly the same size while the fourth room is decidedly smaller (Figure 14). The collapsed pile of rubble that defines the intersection of the four rooms was heavily filled with loess, so no cleared area was identified that may represent a floor. Unlike The Brown Palace and Roper's Walk sites, there were no thermal features identified within, or around the structures.

Neither artifacts or hearths were found during the surface survey conducted in 2008, consequently the seasonality of occupation is unclear and the function of the site remains obscured by the lack of data.

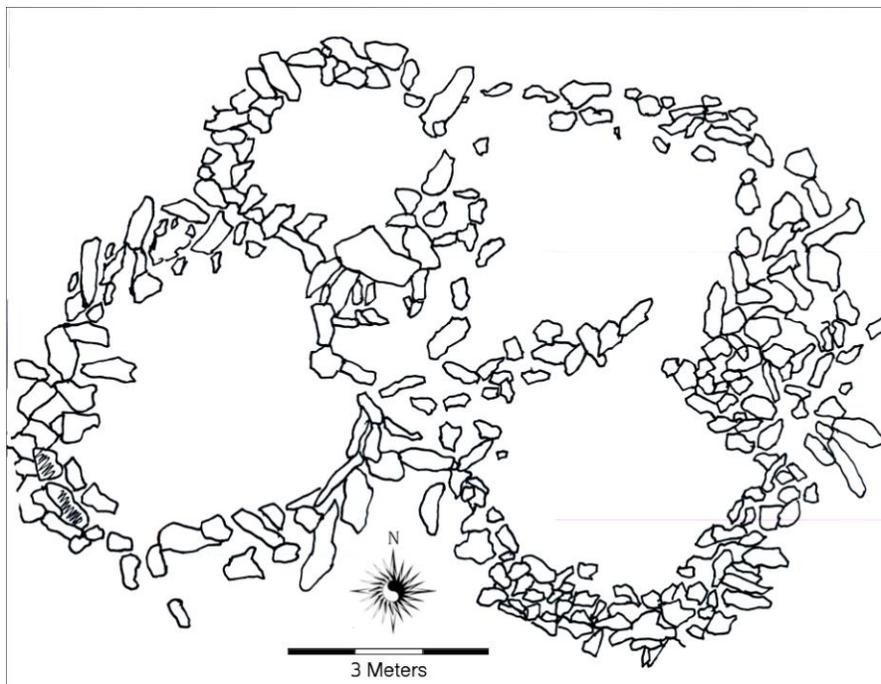


Figure 14 . Drawing of architectural cluster at 5PE234

## **Site Description – River View**

The River View site is a cluster of four architectural features, with one small rock alignment approximately 23 meters to the south of the main cluster. Three rooms are built sharing the same walls, while the fourth feature appears to be detached from the main location.

### **Discovery**

The River View site was discovered by the present author while initially trying to locate 5PE234. With a copy of a rough site map of 5PE234 made by A. Withers in 1949, the author began survey along the canyon rim some 400 meters above 5PE234 and discovered an obvious architectural cluster overlooking the SCR (Figure 15).

## Site Map



Figure 15. Drawing of architectural cluster at 5PE234

## Site Size

The site occupies less than a 30 square meter area in plan-view and may be associated with a fifth feature (small rock alignment) located 23 meters at an azimuth of 178 degrees southeast of the main cluster. Using Naroll's formula the site would accommodate four people. As with 5PE234, other than the architectural features, there were no artifacts or culturally modified materials observed at the site.

### **Description of Features**

Three of the four rooms recorded appear to be built sharing a contiguous series of rocks on several sides (Figure 16). The features are constructed with sandstone blocks, some of which are positioned on edge. The site sits on a slope of 3 degrees at an azimuth of 138 degrees southeast.

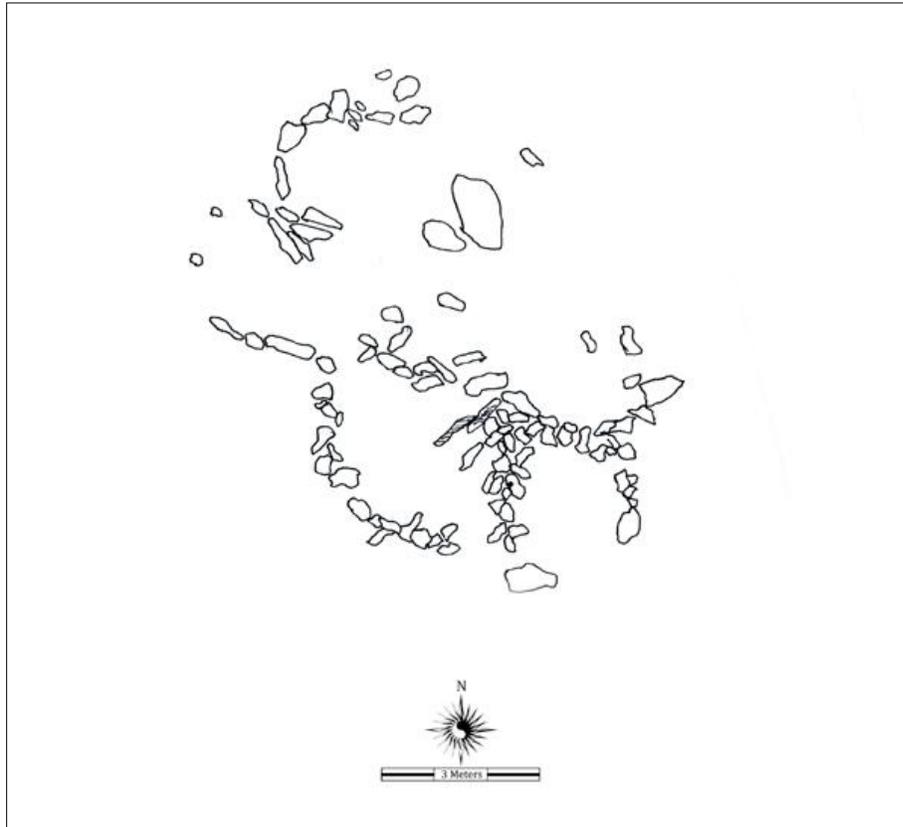


Figure 16. Plan view of the River View site

### **Site Description – Outhier Site**

The Outhier site is located on the northern branch of the Saint Charles River very close to the base of the Beulah Valley. The site overlooks a sinuous stretch of river and is located at the only possible river crossing with access to either side of the steep canyon walls. The site consists of a small lithic scatter, three manos, the base of a broken Folsom point, one small scraper, and a

possible hunting blind. The site is located on a 6° slope with a 184° southwest aspect. The ground surface is comprised mainly of aeolian, colluvial, and alluvial deposits.

### **Discovery**

The site was discovered by the author during a research expedition to locate several of the rock shelters mentioned by Corky Outhier, the grandson of the previous owners of the Spring Creek Ranch. While looking for an easy way across the Saint Charles River, and up to the canyon rim, a game trail was followed up and out of the SCR. This trail led to a small flat open area and the Folsom point was discovered at the bottom of a slight erosional feature where the soils pinched out to bedrock along the canyon rim. Subsequent, intensive survey of the area revealed the presence of a small lithic scatter and an architectural feature built on the edge of the canyon rim (Figure 17).

# Site Map

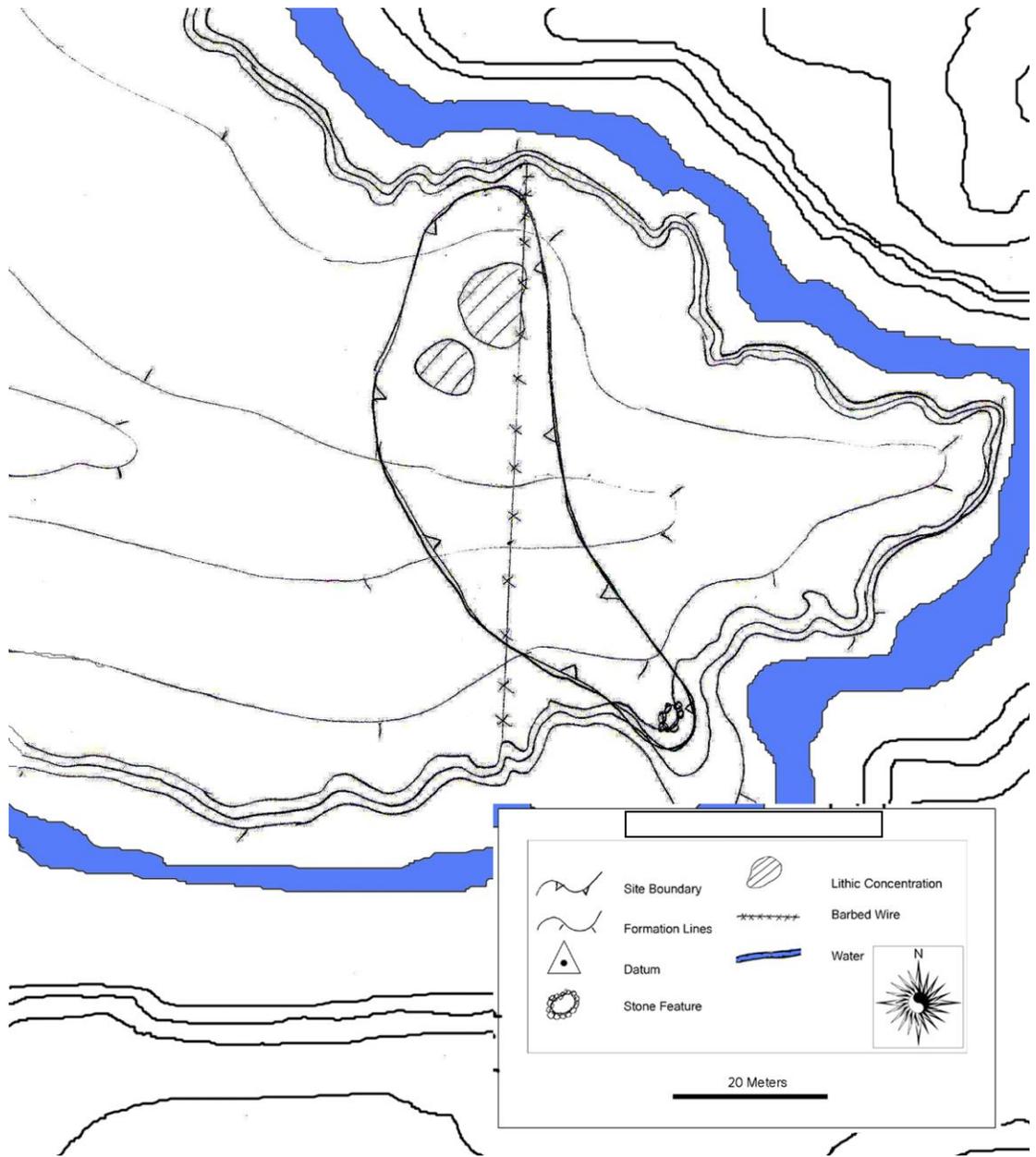


Figure 17. Site Map of the Outlier Site

## Site Size

The site covers roughly 1,400 square meters with an artifact density of .01 artifacts per square meter.

## Debitage characteristics

Table 3  
Debitage characteristics

<b>Outhier Folsom</b>								
	<b>Size 1</b>	<b>Size 2</b>	<b>Size 3</b>	<b>Size 4</b>	<b>Size 5</b>	<b>Size 5+</b>		<b>Percentage</b>
Quartzite	1	5	3	1	0	0	<b>10</b>	83.3
Chert	0	2	0	0	0	0	<b>2</b>	16.6
Obsidian	0	0	0	0	0	0	<b>0</b>	0.0
Petrified Wood	0	0	0	0	0	0	<b>0</b>	0.0
Chalcedony	0	0	0	0	0	0	<b>0</b>	0.0
Basalt	0	0	0	0	0	0	<b>0</b>	0.0
Quartz	0	0	0	0	0	0	<b>0</b>	0.0
Total	1	7	3	1	0	0	<b>12</b>	

## Tools

The only projectile point found, a basal section of a Folsom point, is made out of Alibates and exhibits a very high level of technical skill in manufacture. There is basal grinding and very fine retouch along the basal edge of the point (Figure 95). It was broken presumably where it was hafted, and then struck the ground as evidenced by the clean break and impact fractures.

## Groundstone

Three manos were found, two were made from sandstone and one from granite, all were of the single hand type and did not exhibit surface retouch in the form of pecking. The granite mano is 72.19 mm in length, 40.35 mm in width, with a thickness of 22.28 mm. This was used only on one side and evidenced by the rough and uneven portions that would be held in the hand opposite the use side.

## Other artifacts

A 60-year old barbed wire fence bisects the site and a road cut that was made in the late 1930s has produced what appears to be a stone alignment on the southern edge of the site. The

alignment was the result the construction of an old road that went down to this portion of the canyon (Corky Outhier, personal communication 2006).

### **Hunting Blind**

The hunting blind is considered part of the Outhier site due to its proximity, but it has not been determined to be Folsom in age. The stone slab hunting blind was found at a constriction point in the canyon wall adjacent to the Outhier site (Figure 18). The feature was constructed with up to four courses of very large blocks of sandstone. The sandstone slab to the right of the meter scale in Figure 18 is estimated to weigh in excess of 200 lbs. The base of the feature is a naturally exposed outcrop of Dakota sandstone. The feature has a significant amount of fill within it as well as a number of scrub oak growing around it. The feature is positioned less than 15 meters from a major game trail and appears to be too small for habitation (Figure 19).

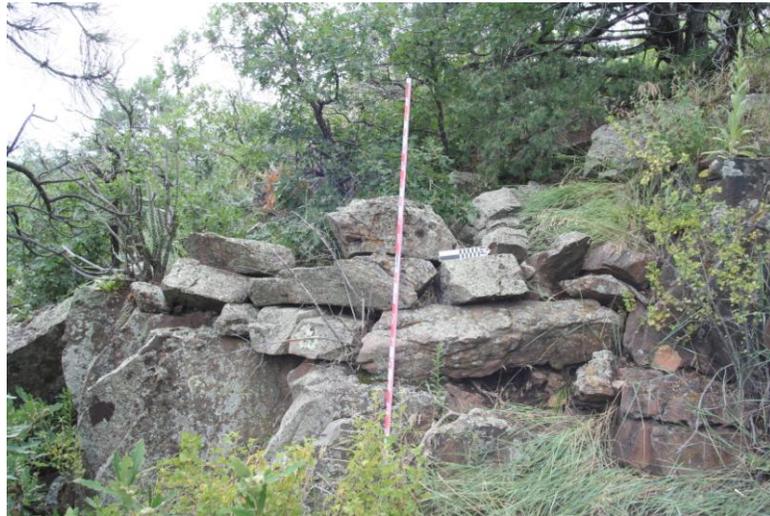


Figure 18. View of the Outhier hunting blind looking west.



Figure 19. View looking SW across possible hunting blind, Saint Charles River and game trails are less than 15 meters away from the architectural feature

### **Site Description - 5PE4228**

The site consists of five circular architectural structures with nine rooms built using dry-laid sandstone slabs and is positioned in the middle of a very shallow canyon that runs approximately east to west off Siloam Road. Within this canyon feature, there is little or no arable land, but the site is 98 meters from the closest water. Features two and three are buried quite deeply, and the other features are densely overgrown with scrub oak.

## **Discovery**

This site has been known locally for many years and was the location of a Boy Scout camp in the late 1950s (Bess Langdon personal communication 2007). The site was recorded in 2001, a project led by Bill Tilly and several volunteers with the Pueblo chapter of the Colorado Archaeological Society. The site was mapped again during the SCRP in 2007 (Figure 20).

## Site Map

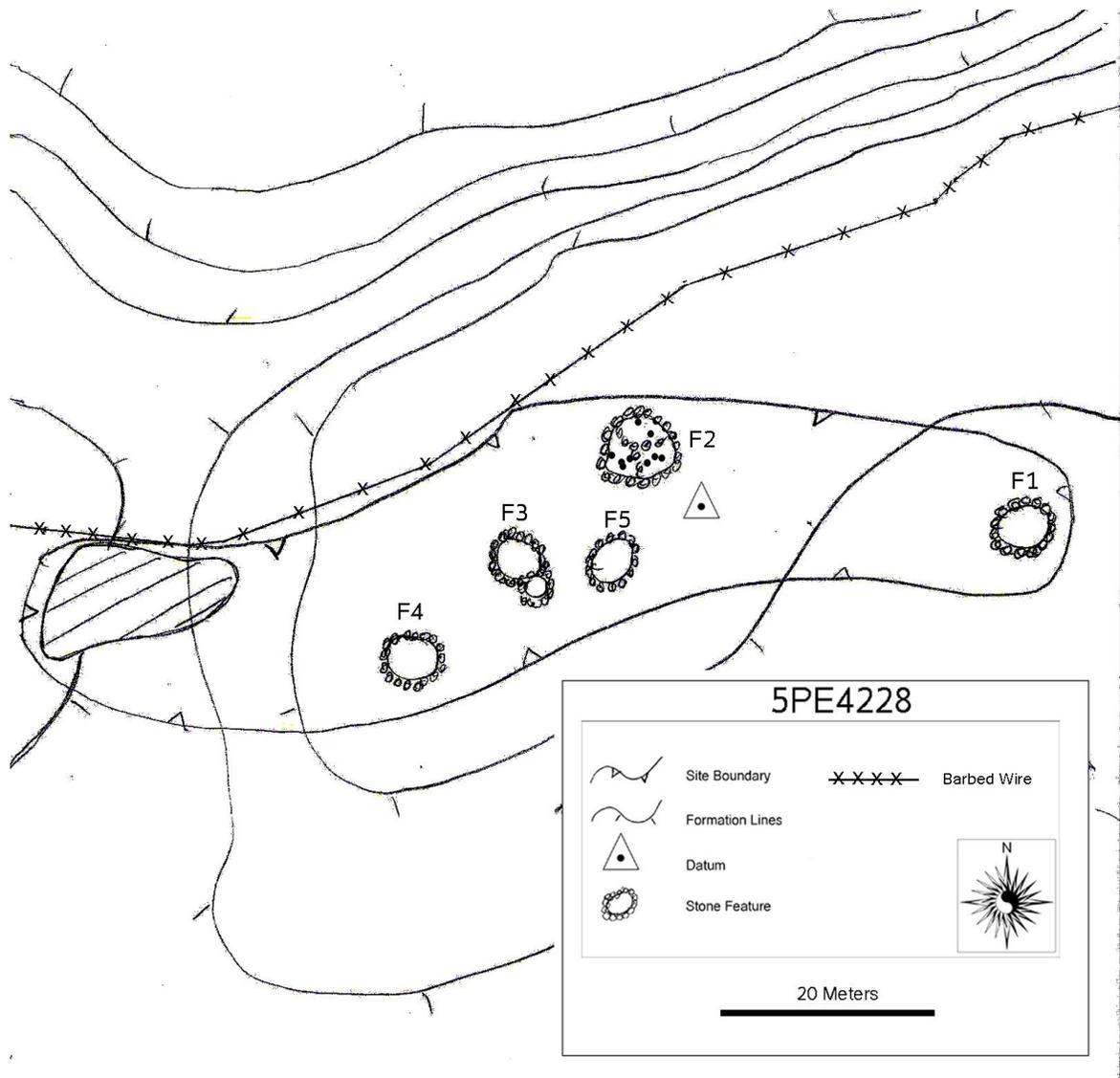


Figure 20. Site map of 5PE4228

## Site size

The site covers an area of 371 square meters and has 11 artifacts including 1 metate and 10 pieces of debitage. With an artifact density of .03 artifacts per square meter, and nine architectural features, it ranks third in complexity for sites along the SCR. If all of the features

were occupied simultaneously, using Naroll's formula for predicting population based on floor size ( $P = 1/10 * \text{area square meters}$ ) there could have been 8 people occupying the site.

### **Lithics**

The site has been heavily collected over the years due to the repeated use as a Boy Scout camp in the 1950s (Bess Langdon personal communication), consequently the only artifacts found were in a shallow depression 43.5 meters southwest of the largest architectural feature. This small lithic scatter contained a 4 cm piece of Alibates (Figure 25) as well as chert and quartzite (Table 4). When looking at the presence of exotic materials (chert, petrified wood, and Alibates) at 5PE4228, 40% is of non-local origin (Table 4).

No formal tools other than a large metate were observed during the survey of the site.

### **Groundstone**

One large (approximately 25 lb), sandstone metate was found just north of the largest cluster of architectural features, no photographs or measurements were taken due to a severe lightning storm and the site has not been revisited since the initial recordation.

### **Debitage characteristics**

Only 10 pieces of lithic material were observed in a small cluster located to the west of the habitation cluster. These pieces ofdebitage and material types were added to the lithics information provided by Pueblo CAS group and subsequent calculations were made on a total of 25 pieces ofdebitage, the assemblage is small, but 20% of thedebitage represents reduction with cortical material while 80% is non-cortical and is in a size class representative of late stage reduction. Interestingly, 60% of the lithic material observed is of local origin with the remaining 40% representing non-local material (Table 4).

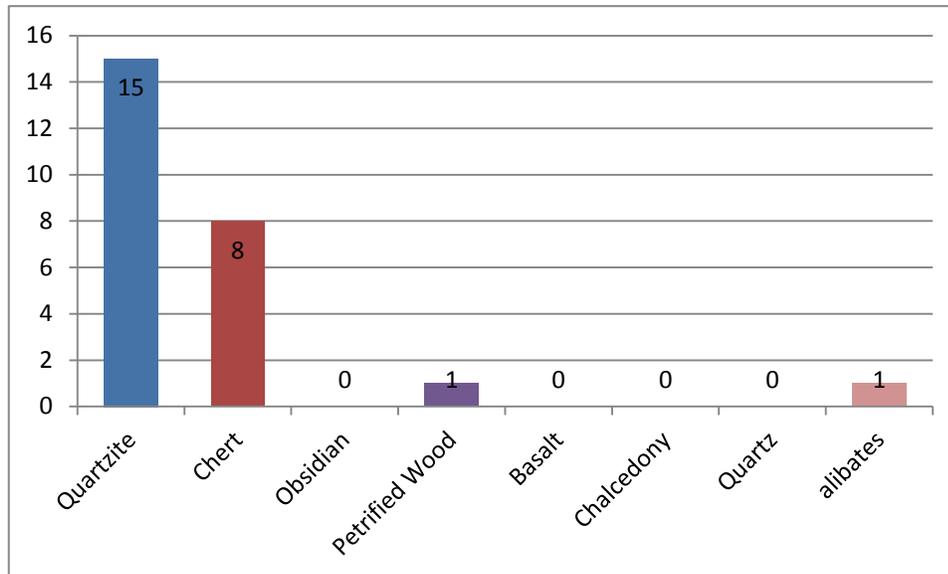


Figure 21. Distribution of raw material from 5PE4228. 60% of the material is local, with the remaining 40% being of exotic materials.

Table 4  
Material type and total of the assemblage

Material Type	Number	Percentage
Quartzite	15	60
Chert	8	32
Obsidian	0	0
Petrified Wood	1	4
Basalt	0	0
Chalcedony	0	0
Quartz	0	0
Alibates	1	4

### Description of Features

This site exhibits several different room configurations, and is positioned where a commanding view of the surrounding terrain is realized. From this site, you can see the majority of the open prairie as well as the position of two other architectural sites along the SCR: Roper’s Walk and 5PE233 (Figure 22). Many of the architectural features are constructed of dry-laid masonry, with large slabs of sandstone and placed 2-3 courses high, delineating the existing rooms.

### **Feature One**

Feature 1 is a single stone circle that measures 365 cm X 420 cm X 30 cm high and is constructed with 48 rocks. The maximum rock size is 52 cm with an average rock size of 32 cm. The rocks are buried up to 50cm below the modern surface. No hearth or thermal feature was found. A possible entry is represented by the lack of rocks in the northwest portion of the feature. This feature is located on the eastern most edge of the site and is isolated from the other features. Rocks are covered up to 90% with lichen.

### **Feature Two**

Feature 2 consists of 100+ rocks covering an area of 975 cm x 600 cm and a height of 32 cm. The maximum size of the rocks is 136 cm with an average size of 55 cm. It is located in the center portion of the site and contains the most rooms of all the features observed. The entryways to the architectural features are not clear and may be obscured due to the level of deposition around the feature. Rocks are covered between 60 and 80% with lichen.

### **Feature Three**

Feature 3 is an architectural feature which is constructed by the joining of 2 circles. The feature consists of over 86 rocks and measured 655 cm X 470 cm X with a height of 42 cm. The maximum size of the rocks in this feature are 85 cm with an average size of 40 cm. There are no artifacts associated with this feature and the rocks are buried 20 to 30 cm below the modern surface. There is no clear entryway into the smaller of the two circles. The smaller room is barely large enough for two people to lie down in, in a flexed position. Rocks are covered up to 85% with lichen.

### **Feature Four**

Feature 4 is a single room oval shaped architectural feature measuring 423 cm X 340 cm X 32 cm. It is constructed of 45+ rocks with the maximum size of 106 cm in an average rock size of 49 cm. The depth below modern surface is 15 to 30 cm and is located 217° southwest the

central cluster of stone enclosures and 56.2 m from Feature 2. The rock outline of the feature is very dispersed with no clear entryway visible.

### **Feature Five**

Feature 5 is a single stone circle measuring 380 cm X 440 cm X 27 cm and is comprised of 50+ rocks. The maximum rock size is 104 cm rock size of 44 cm. There is no clear entryway and all rocks are covered up to 80% with lichen. No hearths or fire-altered rocks were observed in either the interior or the exterior of this architectural feature.

### **Size characteristics**

The rooms are constructed with variability in size and orientation. And there is no clear pattern regarding the direction of the accretional growth but all of the multi-room features do exhibit accretional growth. This characteristic is shared by many other stone circle sites along the SCR.

### **Photos**

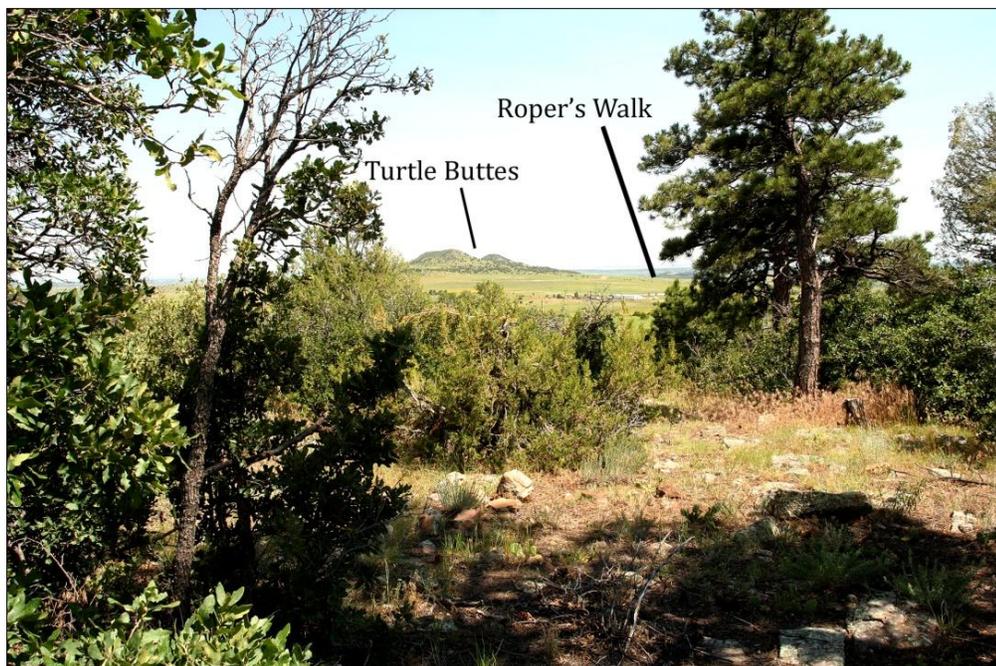


Figure 22. View of Turtle Buttes ad Roper's walk from the central cluster of architectural features at 5PE 4228



Figure 23. Paired circular features at 5PE4228 (Feature 3), show how the smaller room on the right, shares rocks with the larger circle, indicating accretional growth.



Figure 24. Looking north at the central cluster of architectural feature at 5PE4228



Figure 25. Alibates flake found on western side of 5PE4228, scale in 1 cm increments

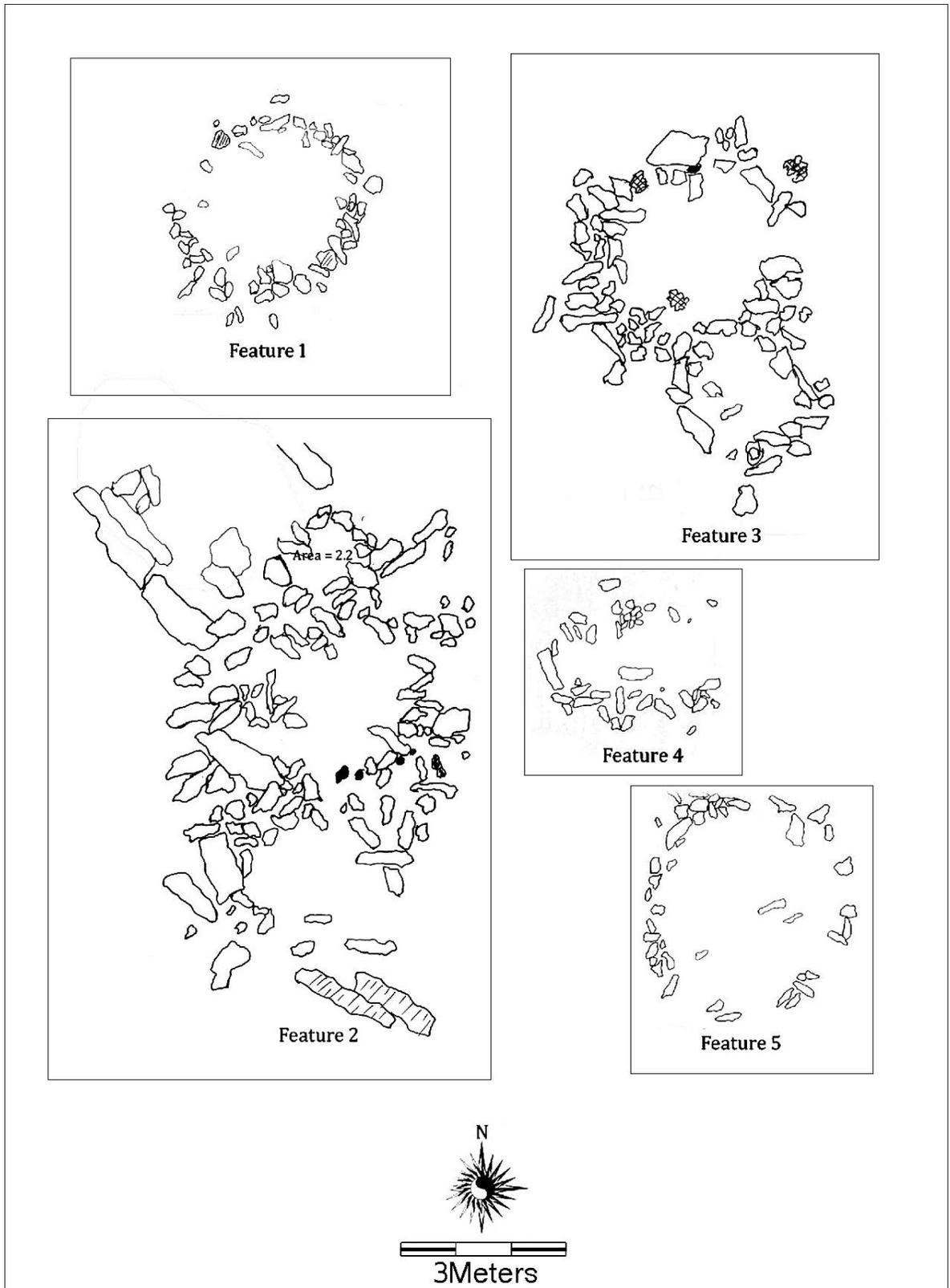


Figure 26. Atlas of architectural features recorded at SPE 4228.

## **Site Description - Roper's Walk**

Roper's Walk is an architectural site consisting of several different concentrations of architectural features that can be divided into two basic groups. The first being features that have large slabs of sandstone incorporated into their wall design. The second is a much more ephemeral design on the ground and is comprised of smaller rocks. Although the small-rock stone circles are insubstantial in terms of the rock size chosen for the definition of space, this type of feature repeats itself in multiple places along the western edge of the canyon rim covering an area of 1.3 km south of Roper's Walk. Roper's Walk is defined here as the architectural features confined within a 1,380 m<sup>2</sup> area bounded on the west by a low-lying cliff formation and on the southern edge by a drainage that comes directly off the northern peak of Turtle Buttes. Where this drainage pours off the canyon edge it forms a significant pool of water at the base of the cliff.

### **Discovery**

Roper's Walk (Figure 27) was found by the present author during a photographic excursion along the canyon rim in 2003. The objective of the photo survey was to find the location of the "Indian fort" that had been described by the Beulah Historical Society in 1979, in their book presenting the history of Beulah, Colorado.

In 2007, the site was surveyed in 20 meter transects and artifacts or features were flagged as encountered and the boundary of the site is determined by the extent of the artifacts. In order to sample landforms adjacent to the canyon and areas more representative of the surrounding prairie, a large area on Turtle Buttes to the east of Roper's Walk was also surveyed. No prehistoric artifacts were encountered, but an irrigation ditch and three water catchment tanks built in the 1930s were identified and mapped along the western side of Turtle Buttes.

# Site Map

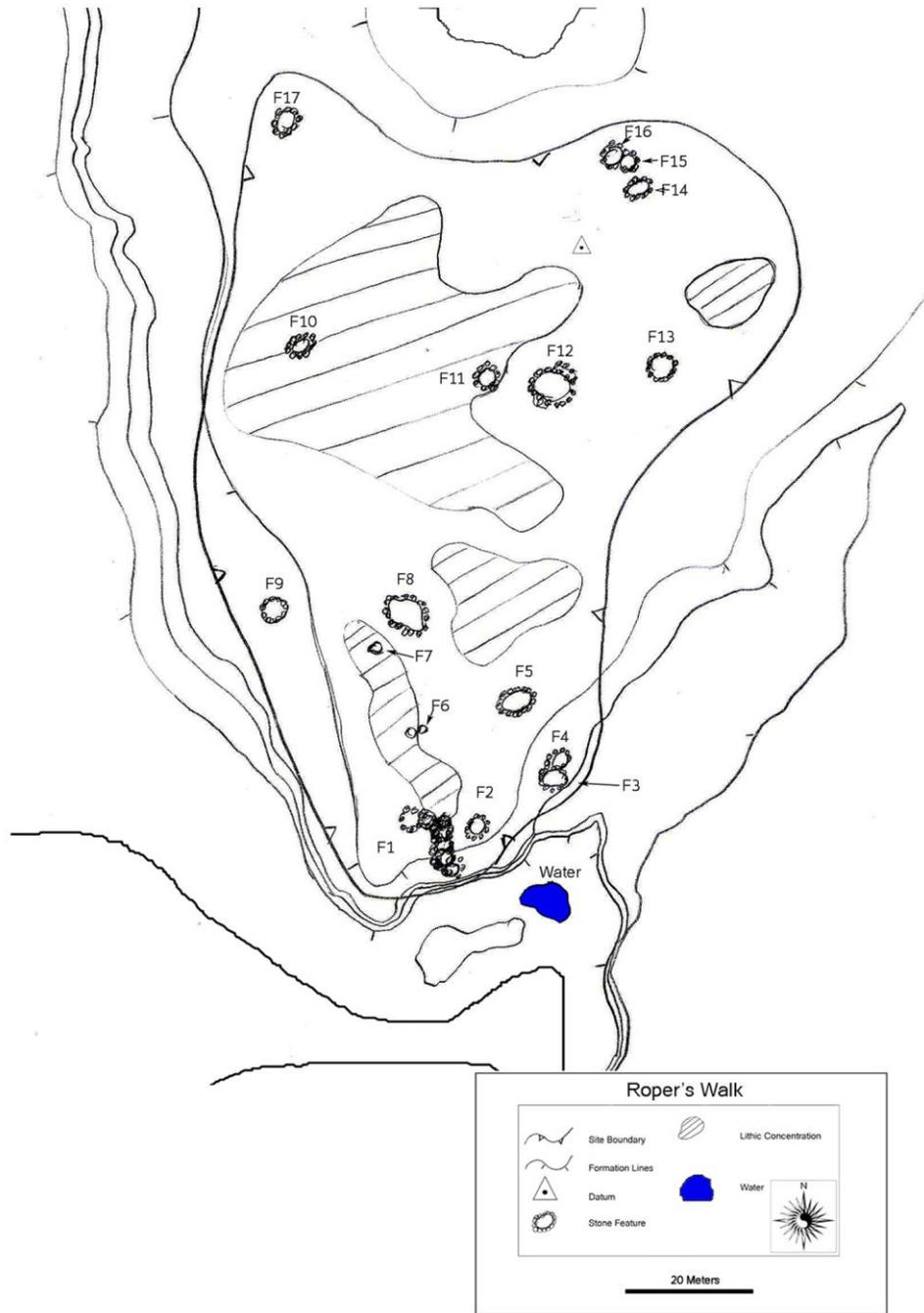


Figure 27. Site map of Roper's Walk

### **Site size**

Roper's Walk consists of 522 pieces of debitage within 1,380 m<sup>2</sup>, yielding an artifact density of .37 artifacts per square meter. This density, coupled with the temporal array of projectile points (Figure 95), is a good indicator of the intensity and longevity of the site's use. If all of the features were occupied simultaneously, using Naroll's formula for predicting population based on floor size ( $P = 1/10 * \text{area square meters}$ ), there could have been 25 people occupying the site.

### **Lithics**

Tool and material types found at Roper's Walk show that the groundstone is local, and that 53% of the chipped stone tools are made of exotic materials. In addition to the material types represented in the debitage lithic inventory, seven pieces of obsidian were identified and collected. After the length, width, and thickness attributes were recorded, the samples were sent to Dr. Shackley at the University of Berkley, where the samples were analyzed with a Thermo Scientific Quant X EDXRF spectrometer in the Geoarchaeological XRF Laboratory.

### **Debitage characteristics**

Based on various distance decay models and procurement strategies (Binford 1980, Kelly and Todd 1988, Andrefsky 1994), the high percentage of exotic material found at Roper's Walk may indicative of the relative logistical mobility of the people who built the architectural features. Although chert is found in cobble form in some of the remnant rock bars along the river terraces, it does not occur often enough to consider it a primary source. As such, chert is treated as an exotic material as well as petrified wood, obsidian, and chalcedony. At 48% of the debitage recorded at Roper's Walk, quartzite constitutes the majority of lithic material observed. When the percentage of all the exotic materials are added together, 52% is non-local material. Another significant trend in the signature of raw materials lies in the fact that of all the material recorded, only .03% represents cortical material, leaving 99.97 % of the material representing late stage

production and retouch of existing tools. This in turn suggests that the tools came into the SCR system as complete forms which were manufactured away from the habitation site. Another interesting signature from the raw materials is the relatively high percentage of obsidian found at Roper's Walk. Obsidian represents 1.5% of the raw material found here.

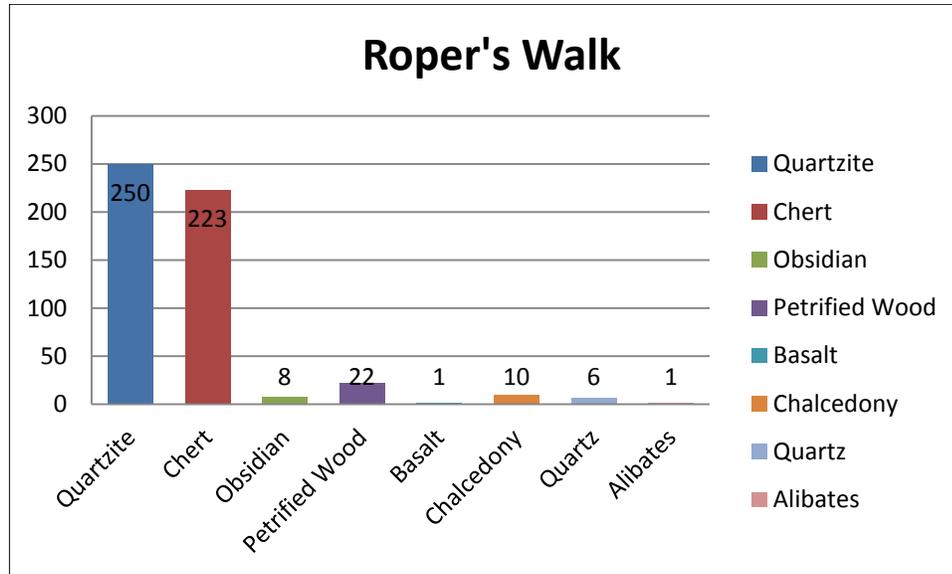


Figure 28. Distribution of raw material in the form of debitage at Roper's Walk including both cortical and non-cortical counts.

Table 5  
Percentage of raw materials

Material Type	Number	Percentage
Quartzite	250	48
Chert	223	43
Obsidian	8	2
Petrified Wood	22	4
Basalt	1	0.19
Chalcedony	10	2
Quartz	6	1
Alibates	1	0.19

### **Cluster Analysis of Artifacts and Architectural Patterning**

The utility of cluster analysis lies in its graphic ability to display “hot spots” or areas of high concentration of debitage, shown in Figure 29 as the darker blue regions of the map. These hotspots are the result of algorithms based on nearest neighbor parameters set at 1 meter intervals. This procedure produced a graphic image which allows for a visual interpretation of an association between lithic scatters and architectural features. As shown in the darkest blue areas in section 1 (Figure 29), the highest concentrations of lithics are on the northeastern corner of the room block in Feature 1. The next highest cluster occurs northwest of Feature 12. Between Feature one and Feature eight. The architectural patterning appears to be preferentially placed close to the edge of the cliff face on the western edge of the site where a commanding view of the surrounding grasslands is possible.

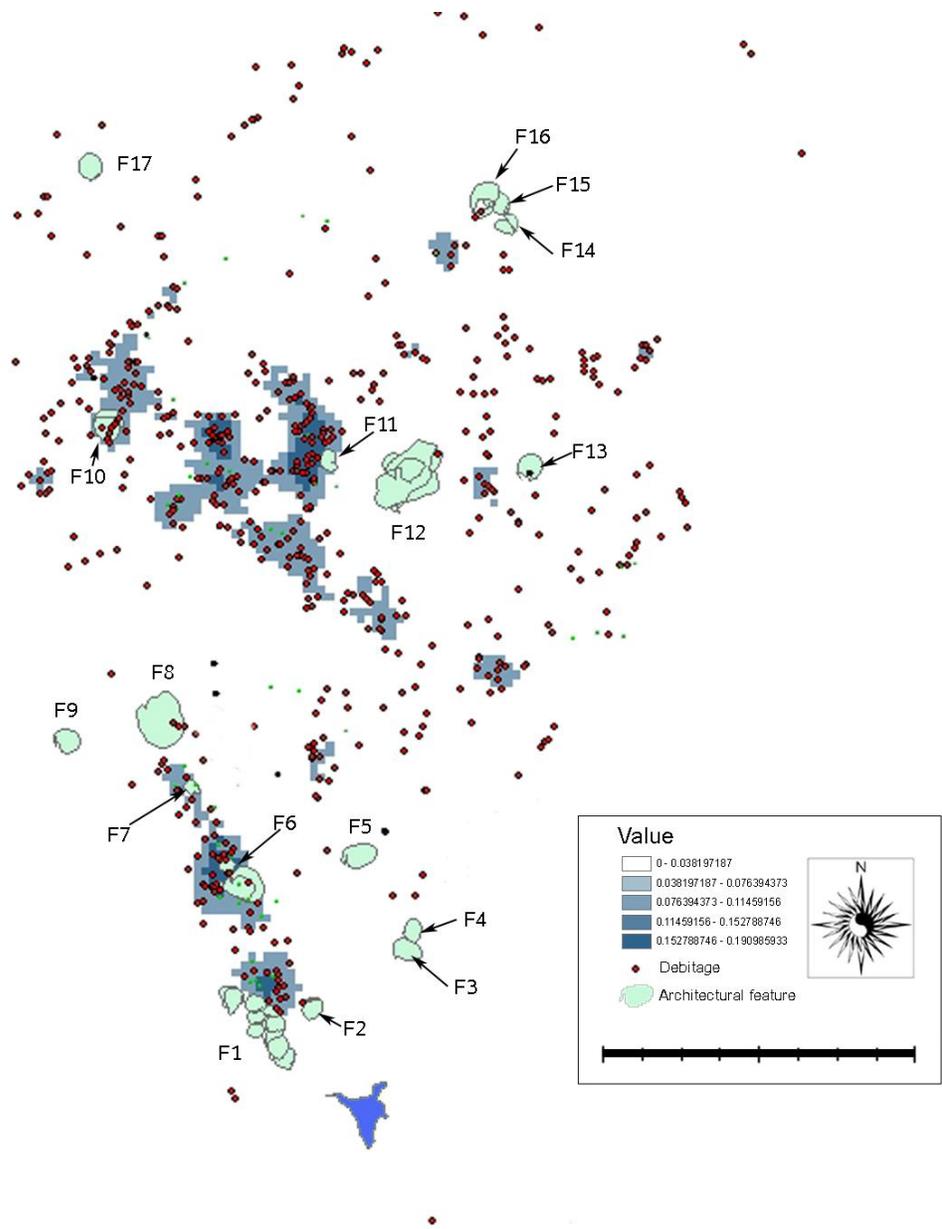


Figure 29. The extent of the clustering was defined by a nearest neighbor analysis that was re-classed to “compress” the artifacts into zones of intensive use. Artifacts are shown as red dots, architectural features are in green, and significant clusters are shown in varying shades of blue.

**Tools**

In the tool category, projectile points and scrapers represent the majority of chipped-stone artifacts found. Groundstone is represented by 8 manos and 10 metates and are made from local sandstone and river cobbles (Figure 30). The metates are typically slab forms with little shaping,

but exhibit pecking and retouch in all cases. Manos also show pecking on the ends, and are consistently of the “one hand” variety implying a low-level intensity of plant milling.

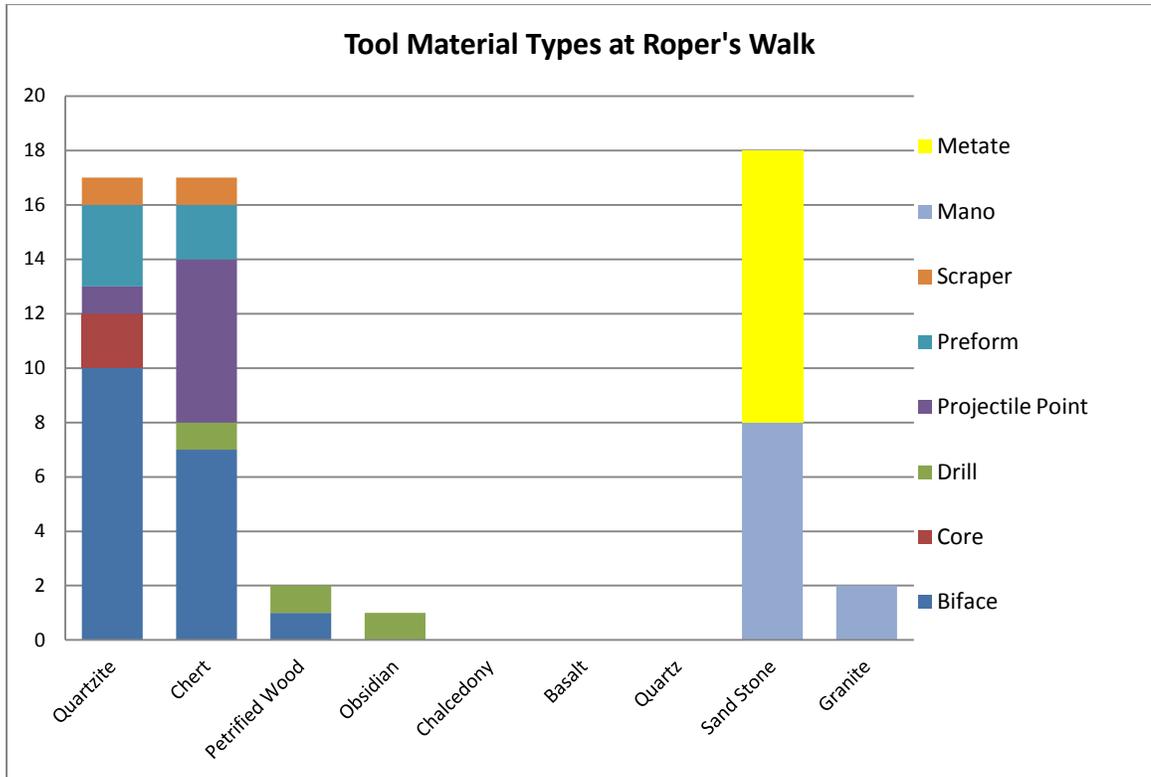


Figure 30. Distribution of tool and material types at Roper's Walk

### Groundstone

In total 10 metates were found, all of which were of a slab form and made from local sandstone. One metate was cached over the edge of a low-lying cliff just south of the water hole. This caching behavior may imply the intention of the prehistoric architects to return to the Beulah District at a future time. Caching behavior ultimately serves to conserve energy because the cost associated with production is necessarily reduced the longer the item is in use. Manos were of two varieties, a rocker style and a flat surface, but all were of the single hand variety. They were typically used on both sides and frequently had peck marks on their ends.

### **Other artifacts**

Two cores, two scrapers, five preforms, and three drills were found, each made from a fine-grained cryptocrystalline material indicating a material procurement outside of the SCR basin.

### **Bone**

Small bone fragments were recovered from hearth material in the paired hearth feature described below, but were too small for any species level of identification.

### **Description of Features (Figure 31 and Figure 32)**

#### **Feature 1**

Feature 1 is located on the southern edge of the site. This feature is constructed of a series of 6 contiguous rooms laid out in an L shape. Each room has only one course of rocks, and each room block is divided into roughly a 2.5 x 2.5 meter space. Without excavation and subsequent analysis of the sediment contained within the rooms, the function of these rooms will remain a question, but the layout is very different from all other architectural features recorded or observed during the SCRP.

#### **Room 1a**

Room 1a is 4.2 meters x 3.24 meters and consists of 13 rocks. The maximum size is 2 meters in length with an average rock size of 50 cm.

#### **Room 1b**

Room 1b is approximately 3 meters x 3 meters and consists 17 rocks. The largest of the rock is a 1.7-meter long piece of bedrock that all the other rocks were placed around. The average rock size is 30 cm.

**Room 1c**

Room 1c is 2.8 meters x 2.5 meters and is constructed around two large pieces of bedrock and consists of 9 rocks with a maximum size of 79 cm and an average rock size of 60 cm. The walls between rooms 1b and 1c, as well as between 1c and 1d, appear to have been added in an accretional manner indicating accretional growth over time, or a conservation of construction material. The room-blocks were filled scrub oak and other modern windblown material at the time of recording.

**Room 1d**

Room 1d is 3 meters x 2.7 meters and consists of 25 rocks placed around a bedrock outcrop. The maximum rock size is 69 cm with an average rock size of 30 cm. Two of the rocks used to delineate space were broken metate fragments.

**Room 1e**

Room 1e is approximately 2.5 meters x 2.5 meters and consists of six rocks joining the space between 1d and 1f. Average rock size was not recorded nor was the feature mapped.

**Room 1f**

Room 1f is approximately 4.5 meters x 4 meters and consists of 77 rocks. The maximum rock size is 60 cm with an average rock size of 30 cm.

**Feature 2**

Feature 2 is a stone circle that is 440 cm x 500 cm and consists of 33 rocks. The largest is 139 cm with an average rock size of 50 cm. It is filled with loess and more recent organic material representative of the current vegetation and is not constructed of blocks with any significant size. This feature overlooks a temporary waterhole and is surrounded by a small lithic scatter. It sits on a slope of 3 degrees at an aspect of 208 degrees.

### **Feature 3**

Feature 3 is a stone circle that is 240 cm x 270 cm and consists of 38 rocks. The largest rock size is 110 cm with an average rock size of 90 cm. It has two adjoining rooms and are designated on the map as Feature 3 and Feature 4. These stone circles are positioned 14.3 meters northeast of Feature 2. The two features are constructed in between the existing bedrock and sit on a gentle slope. The rocks along the downhill side of Feature 3 are stacked on top of each other up to four rocks deep. Feature 3 is the closest to the canyon rim, overlooking the water hole. It sits on a slope of three degrees at an azimuth of 152 degrees.

### **Feature 4**

Feature 4 is a stone circle that is approximately 400 cm x 400 cm and consists of 29 rocks. Several of these rocks are placed on edge. The largest is 54 cm with an average rock size of 50 cm. The site sits on a zero degree slope.

### **Feature 5**

Feature 5 is a stone circle that is approximately 600 cm x 400 cm in size and consists of more than 120 rocks. The maximum rock size is 80 cm with an average rock size of 35 cm. The feature sits on a slope of 4 degrees at an aspect of 170 degrees.

### **Feature 6**

Feature 6 is a paired hearth feature was identified on the western edge of Roper's Walk due to the presence of charcoal and the nonrandom clearing of stones out of the central area of both hearths, which appear to be two circles, overlapping in the center. The paired hearth feature is located 18 meters northeast of Feature 2, 11.8 meters southeast of the bedrock metate, (Feature 7) and 13.5 m northwest of the room block feature designated Feature 1 at the southernmost edge of the site. The hearth features have a contiguous row of rocks in the center where the two "cook areas" overlap. The rocks defining the hearths exhibit some discoloring, cracking, and other

indications of thermal alterations. The fill within the hearth was very shallow, sandy loam with significant darkening due to burnt and un-charred organic material.

Assuming that the hearths are contemporaneous, and were utilized simultaneously, there arose two fundamental questions about the function of each side of the paired hearths. Specifically are different things being processed in each hearth, or alternatively, is the same food type is processed in both hearths? In an attempt to answer these questions the fill material was analyzed for macro-botanicals, FTIR, and radiocarbon dated, the details of the results are found in special studies section below. Interestingly it appears that prickly pear cactus was being processed in one hearth, and the fatty lipids resembling duck was being processed in the second hearth.

### **Feature 7**

Feature 7 is a bedrock metate with three depressions resultant of use wear. The boulder the metates are found on measures approximately 200 cm x 190 cm. The depth of the metate basins are than 3 cm and are very smooth with little or no retouch present.

### **Feature 8**

Feature 8 is a slightly rectangular stone feature that is 700 cm x 900 cm and consists of more than 80 rocks. It is an architectural feature that that is deeply buried and difficult to make out, but represents one of the largest features at Roper's Walk. The central part of the feature contains an estimated 40 - 60 cm of sediment, and has 8 to 10 scrub oak growing along the southern wall. The downhill side of Feature 8 has large slabs of rock measuring up to approximately 1.5 meters in length, piled up to three courses tall. This site is located 7 meters northeast of a bedrock metate (Feature 7) and is positioned at the head of the lithic alley.

### **Feature 9**

Feature 9 is a stone circle that is 400 cm x 400 cm and consists of 56 rocks. The maximum rock size is 90 cm with an average rock size of 40 cm. The feature sits on a slope of 3 degrees at an aspect of 243 degrees. This feature is unique to the site in that it is isolated from the

other features. It is located along the edge of the cliff on a small shelf that bounds the main part of the site and has no associated artifacts.

### **Feature 10**

Feature 10 is a stone circle that is 300 cm x 300 cm with more than 120 rocks. The maximum rock size is 30 cm with an average rock size of 20 cm. The feature sits on a slope of 3 degrees at an aspect of 265 degrees. This feature is little more than an outline on the ground and may be the result of a collapsed superstructure that was covered with small rocks. It is decidedly less substantial in terms of the size of rocks utilized in its formation.

### **Feature 11**

Feature 11 is a stone circle defined by 50+ rocks, two of which are parts of a broken metate. The center of the feature has a large service berry bush growing in the middle. The rocks defining the outer edge of the feature are buried only 8-10 cm below the modern surface and may be the remains of a hearth.

### **Feature 12**

Feature 12 is stone circle that is approximately 700 cm x 950 cm, it consists of 85 rocks, and sits on a slope of 3 degrees at an aspect of 89 degrees. The largest rock size is 150 cm with an average rock size of 75 cm. This feature is one of the largest structures at Roper's Walk and is centrally positioned at the site. It has two rooms that are built in a manner that represents accretional growth. This feature is buried up to 40 cm below modern surface. There is a large juniper growing in the center of the feature and the surrounding shrubs are scrub oak and serviceberry. A chert scraper measuring 10 cm x 6 cm x 2 cm was found 1.2 meters away from what appears to be the entrance, located on the south side of the feature. The feature is centrally located at the site and is adjacent to a significant lithic scatter.

**Feature 13**

Feature 13 is a stone circle located northeast of feature 12. Attribute data was not recorded when the feature was mapped.

**Feature 14**

Feature 14 is a rock concentration that covers approximately 650 cm x 300 cm. It is located on the eastern part of the site. It is adjacent to Feature 15 and is constructed on bedrock. The rocks are not very substantial in size and do little else but delineate space. No attribute data was recorded when the feature was mapped.

**Feature 15**

Feature 15 is a rock concentration that covers approximately 650 cm x 600 cm. It is located on the eastern part of the site. It is adjacent to Feature 14 and is constructed on bedrock. The rocks are not very substantial in size and do little else but delineate space. No attribute data was recorded when the feature was mapped.

**Feature 16**

Feature 16 is a rock concentration that covers approximately 600 cm x 600 cm. It is located on the eastern part of the site. It is adjacent to Feature 14 and is constructed on bedrock. The rocks are not very substantial in size and do little else but delineate space. No attribute data was recorded when the feature was mapped.

**Feature 17**

Feature 17 is an ephemeral expression of a stone circle was located on the northeast section of the site. It consisted of 140+ rocks which are 5 to 10 cm below the modern surface. The feature has numerous pieces of debitage associated with it on the east side of the circle. The feature was constructed on a 2 degree slope at an aspect of 212 degrees. The rocks are very small and do little more than outline space. A bulldozer destroyed this feature when a road was constructed through the northeastern part of the Twin Buttes Estates development project.

## **Feature 18**

Feature 18 is a small hearth located between Feature 10 and Feature 11. The hearth was not defined by any rocks , but was evident due to the contrast between the charcoal rich darkened sediment , and the surrounding sediments. FTIR analysis (chapter 9) revealed the fatty lipids of duck.

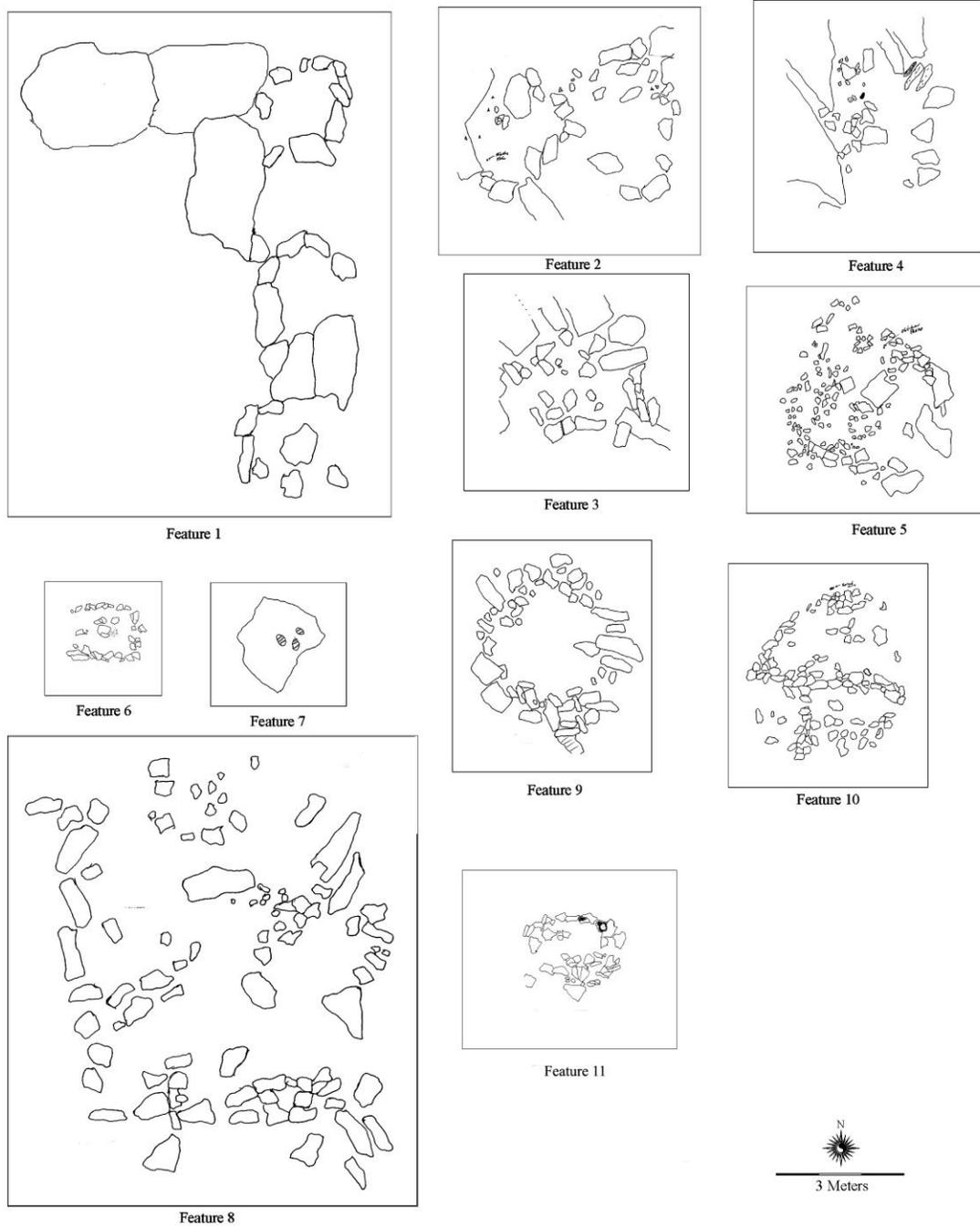
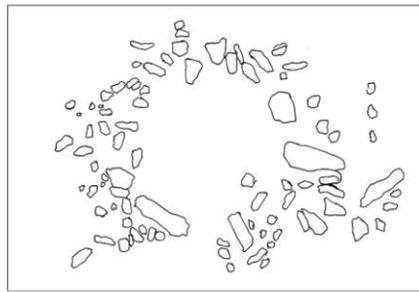
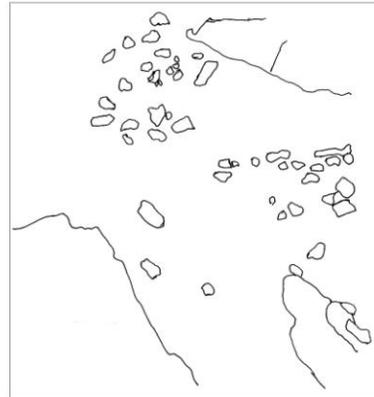


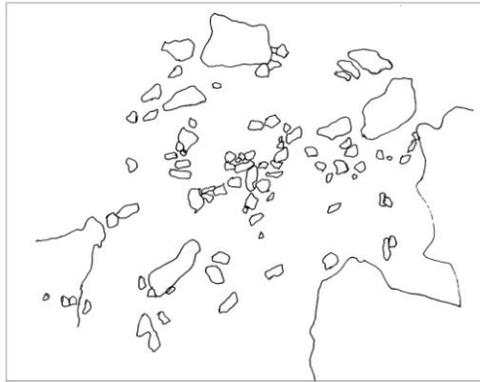
Figure 31. Features at Roper's Walk



Feature 12



Feature 14



Feature 15



Feature 16



Feature 17

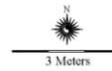


Figure 32. Features at Roper's Walk

## **Water**

Roper's Walk is bounded on the south side by a drainage that runs east to west and terminates at the base of a 6.5-meter tall cliff face. The erosional force of water due to this sudden drop over the cliff has sculpted a significant feature that is best described as a starfish shaped, large pool, at the base of the cliffs. This pool is a catchment reservoir for the drainage that runs directly off the western edge of the North summit of Turtle Buttes. At the time of the survey, which was in the early spring, the catchment area containing water had the following dimensions: 5.29 m X 4.22 m X .71 m. This area has a volume of 559.48 cubic feet and contained approximately 4,181 gallons of water. This is significant because the only source for recharging this reservoir is rain, and between rains, the levels would likely oscillate. To put this resource in perspective, this volume of water could support 25 people for 84 days at a consumption rate of 7.5 liters per person, per day.

Immediately adjacent to the catchment pool is a rock shelter measuring 9 meters long X 1.5 meters wide X roughly 1.6 meters high. Although this is a sizable rock shelter and a relatively protected space, there was no evidence of use. The floor showed evidence of water flowing across the entire surface as a sheet wash. This is likely due to water collecting along the back wall of the rock shelter, and then flowing across the floor. This rock shelter would be a great place to get out of the sun and rain, but not suitable for sleeping or long-term habitation due to the drainage issues.

Only four hearths were identified at Roper's Walk and all of them were external to the architectural features recorded. The paired hearth, Feature 6, was excavated to a depth of 40 cm and the fill was submitted for macrofloral, FTIR, pollen, and radiocarbon analysis (see Chapter Seven). A second hearth, which was found between Feature 10 and Feature 11, near the center of the large lithic scatter on the northern portion of the site, was partially excavated and the contents was analyzed for macro botanicals as well as FTIR (see Chapter Nine).

**Photos**



Figure 33 . Detail of Feature 2 looking north. Rocks are piled up on the downhill side of the Feature with a small clearing in the middle.



Figure 34. Cleared area in the center of Feature 3 at Roper's Walk The wall on the east side (top of photograph) has been built up by several "courses" of loosely piled rock and is currently acting as a retaining wall for the sediments within the feature.



Figure 35. Looking north at Feature 4 adjacent to Feature 3. Rocks on the outer area of clearing are placed on edge.

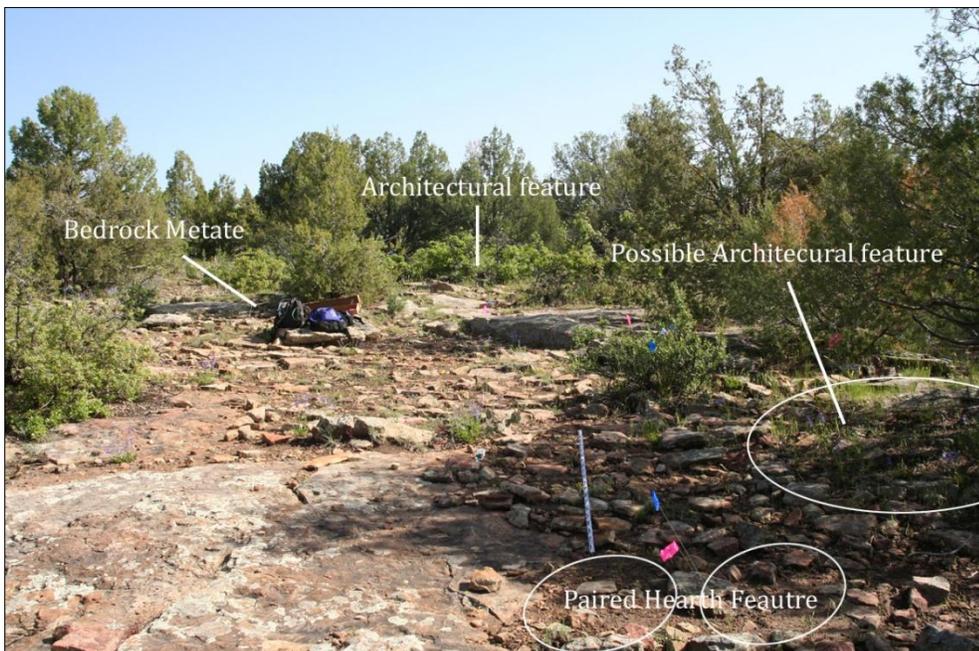


Figure 36. Looking due north at Roper's Walk. The "lithic alley" between Feature 1 and Feature 8. This section contains a large lithic scatter and a concentration of tools. Note the exposed bedrock indicating significant erosion and sheet wash when it rains.



Figure 37. Looking north at Feature 8, on the north side of the “lithic alley” at Roper’s Walk



Figure 38. Looking east at Feature 9. A hidden architectural feature found on a shelf feature off of the west ridge from the main cluster of sites



Figure 39. Looking north at Feature 10.

### **Site Description - The Brown Palace**

The Brown Palace Site is an architectural located on the southern edge of Spring Branch Creek, a small tributary to the Saint Charles River just four miles south of site 5PE232 and consists of 10 architectural features and 9 hearths (Figure40). The site overlooks the creek to the north, and has a long, commanding view of the surrounding short-grass prairie south and southwest of the site. Spring Branch creek flows from west to east out of the Greenhorn Mountains and begins canyon cutting directly adjacent to the site. The cliffs adjacent to the upper portion of the site are formed by this canyon cutting process. From the site location to the confluence of the Saint Charles River the stream drops 33 meters in less than a kilometer. The head of this small canyon feature is 540 meters wide and narrows to less than 200 meters where it joins the significantly larger Saint Charles River canyon. The land immediately adjacent to the

creek, and due north of the site is relatively flat and clear of brush on both sides of the tributary, it would be an excellent area for a garden plot.

### **Discovery**

Reeves Brown, one of the owners of the 3R Ranch, discovered this site while out running cattle 20 years ago, but he did not have any idea of the age, size or complexity of the site. In the summer of 2007, Mr. Brown showed Feature 6 to the present author, he thought it might be “kind of special”. A preliminary walk around the immediate area revealed six additional stone circles, with another four located below the central cluster of the site. Systematic survey of the upper portion of the site was conducted with almost 100% coverage in between the architectural features. Transects were walked at 20 meter intervals, but time spent mapping and recording features allowed for a much greater coverage of the survey area. Artifacts and features were flagged as they were found and recorded with a GPS by walking around the outer perimeter of the circular house bases. Linear features were also recoded using the GPS. The survey area was expanded until the outer perimeter was identified by the extent of artifacts.

Once the extent of the Brown Palace site was known, three other survey areas were chosen in the immediate area. The first area chosen was a small ridge southeast of the site. This area was selected for survey because the views from the top of this point may have been important to prehistoric hunters watching for bison or other game animals. Other than a modern .22 caliber rim fire cartridge, no artifacts were found. The second survey area was chosen for two reasons, one being that it had canyon exposure on two sides, and the other being that it is a significant geological feature that is well defined on the landscape and would be well known to prehistoric people. The junction of the two water courses forms a Y, and the land surveyed was within the middle of the Y. Survey was first conducted along the edge of the canyon rim which established the boundary of the survey area. Twenty meter transects were made along a northwest

and southeast vector between the two canyon rims. No artifacts or architectural features were found within the area described by the canyon rim.

### Site Map

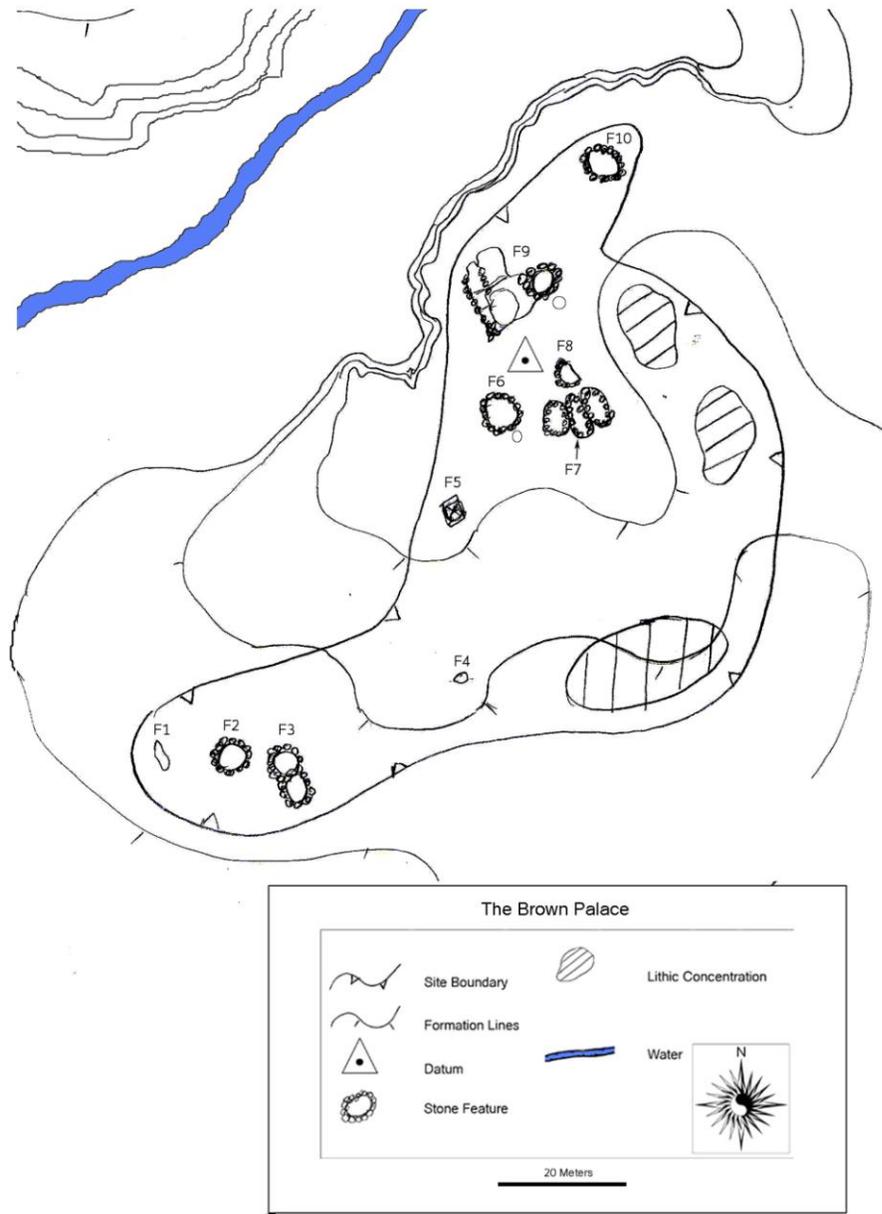


Figure 40. Site map of the Brown Palace site

### **Site size**

The Brown Palace site covers 12,241 m<sup>2</sup> and contains 10 architectural features. Seven of these features are located at the upper portion of the site, and the remaining three features are located 70 meters below the main cluster of stone circles. The Brown Palace site consists of 104 pieces of debitage in 12,241 square meters resulting in an artifact density of .008 artifacts per square meter. There is a continuous distribution of debitage and tools between the upper and lower portions of the site. Roughly midway between the upper and lower portions, a cluster of 3 metates were found near an eroded hearth and adjacent to a circular pile of rocks measuring 6.6 square meters. The rocks were too small to be used as walls like other architectural features seen at the site, and the function of this feature is unclear. If all of the features were occupied simultaneously, using Naroll's formula for predicting population based on floor size ( $P = 1/10 * \text{area square meters}$ ) there could have been 25 people occupying the site.

### **Lithics**

In general, the lithic material found at the Brown Palace represents retouch and maintenance vs. primary manufacture. Roughly half of the lithic material is imported and the remainder reflects the locally available materials along the SCR. There are several interesting trends in the lithic material observed (Figure 41). First, there is a very high percentage of obsidian (15%) in the debitage counts. Second there is a relatively high percentage of quartz flakes (10.83%).

## Deb characteristics

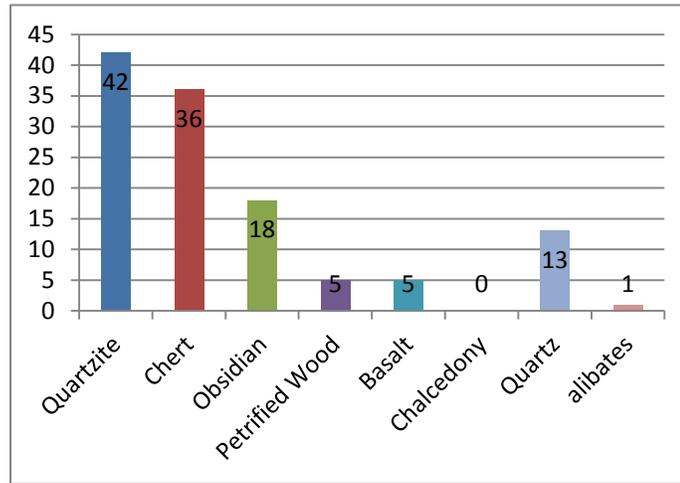


Figure 41. Distribution of lithic material types at the Brown Palace

Table 6

Percentage of raw materials for all cortical and non-cortical debitage

Material	Number	Percentage
Quartzite	42	35
Chert	36	30
Obsidian	18	15
Petrified Wood	5	4
Basalt	5	4
Chalcedony	0	0
Quartz	13	11
Alibates	1	1

## Tools

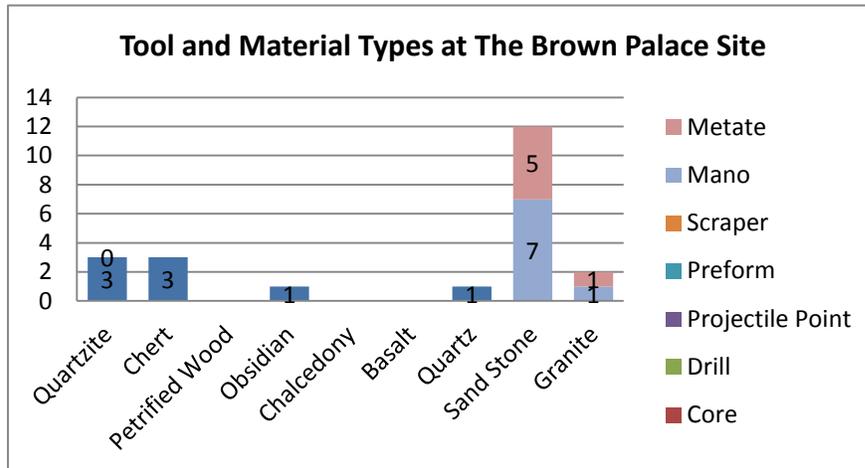


Figure 42. Half of the tool forms found at the Brown Palace Site are made from non-local material and all of the groundstone found is made from local materials.

## Groundstone

Five metate fragments were found. One was broken, and utilized to help define the outer edge of a hearth near Feature 9. Another metate was made from a granite boulder (designated Feature 4 due to the proximity to the remnants of a hearth), and exhibited significant use wear. There were eight manos, one of which was made of granite.

## *Other artifacts*

A small crescent shaped chert scraper was found on the eastern edge of the central plaza (Figure 43). One backed knife (Figure 44) made of white quartz was found just north of Feature 9. An artifact density map was created in GIS and helps to illustrate the centers of activity (Figure 45)

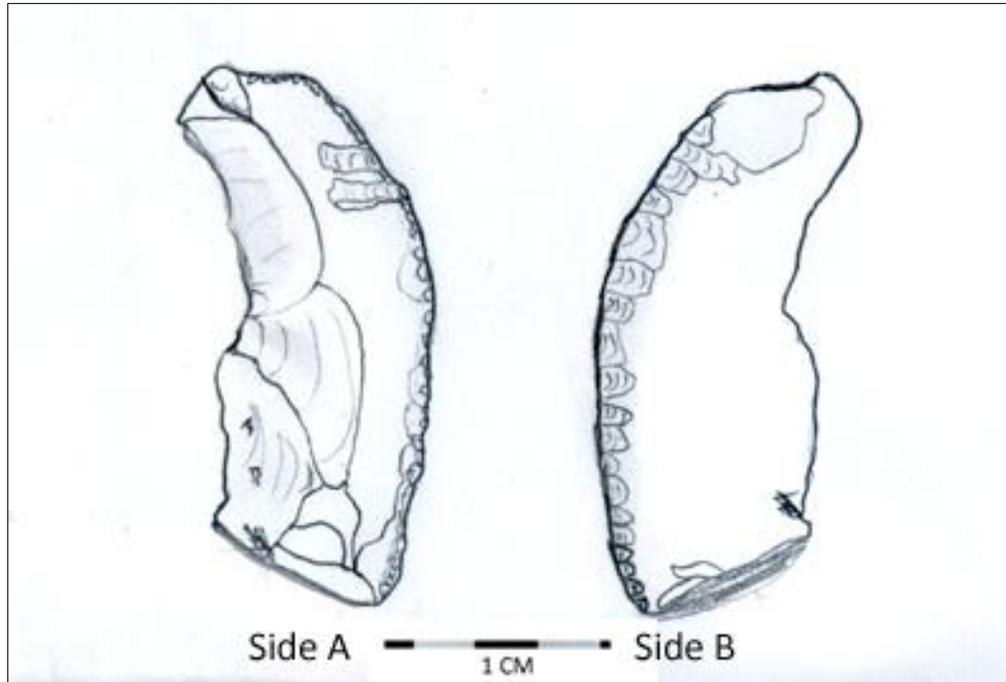


Figure 43. Crescent shaped blade found on the east side of the central plaza at the Brown Palace

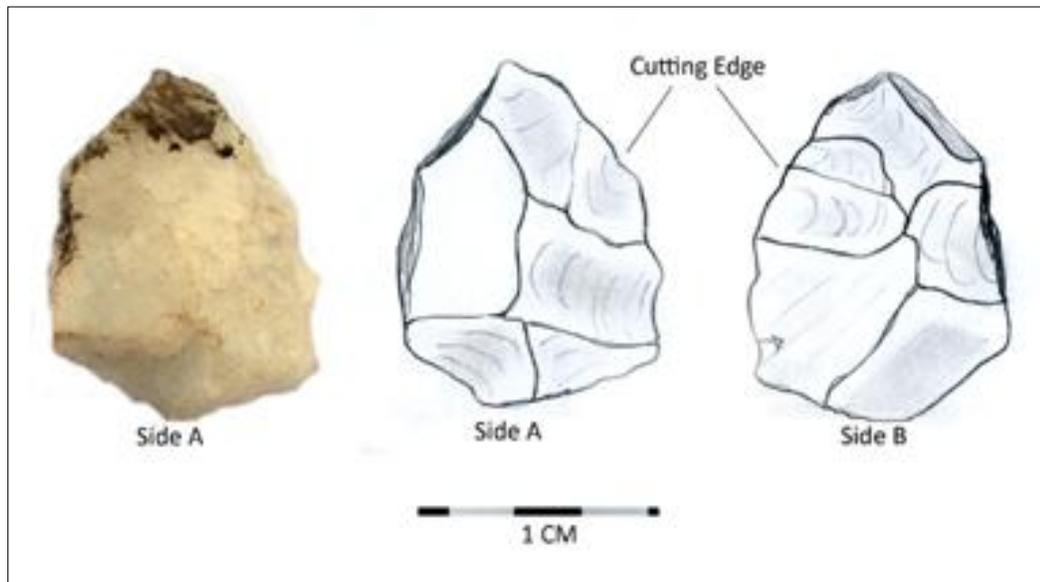


Figure 44. Backed Knife found just north of Feature 9

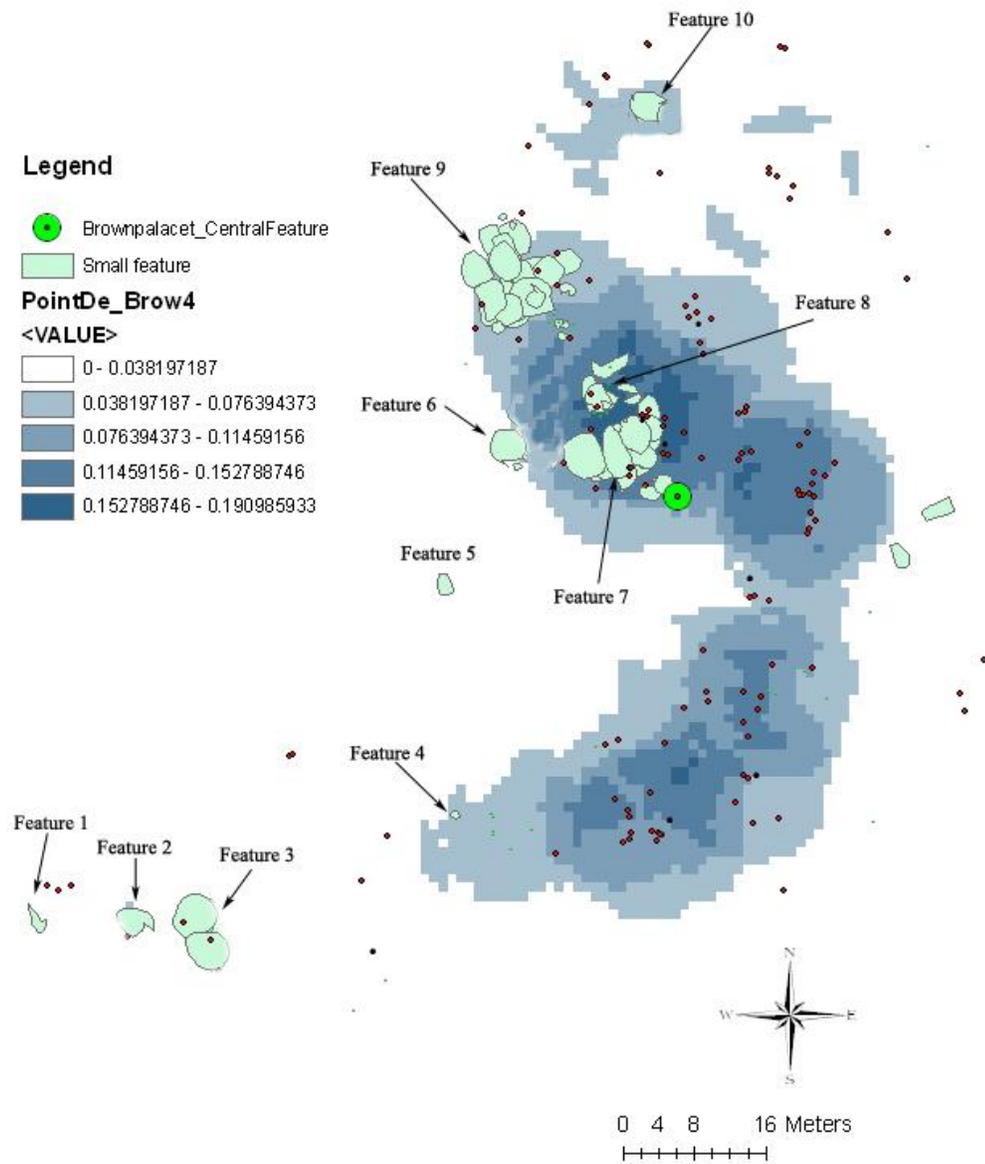


Figure 45. Artifact density map showing areas of activity at the Brown Palace site. Features one and two have very few artifacts associated with them while the greatest density of debitage is seen around the other architectural features in the northern portion of the site.

## **Description of Features at the Brown Palace**

### **Feature One**

Feature 1 is a hearth that is built against a large outcrop of bedrock (Figure 48). It measures 67 cm X 36 cm X 45 cm deep, and is constructed with rocks up to 58 cm in length. It is located against a large boulder that represents the back wall of the feature. The center of the feature was excavated by the author, to 25 cm with material being removed from under and around the rocks that had fallen into the structure and covered with fill. Dried roots were found attached to the underside of the rocks. Samples 4 and 5 were collected from the storage/cache feature for pollen, macrofloral, and FTIR analyses (Chapter 9). The results are presented below in the special studies section. As with the hearth at Roper's Walk there was a fatty lipid signature that appears to match duck.

### **Feature Two**

Feature 2 is a stone circle measuring 350 cm x 380 cm x 35 cm deep. It consists of 28 exposed rocks with the western edge of the circle defined by existing bedrock. The maximum rock size is 85 cm with an average rock size of 60 cm. There are few artifacts surrounding the feature, but 3 m to the west is a thermal feature (Feature 3) built against a large slab of bedrock. Feature 1 is 12 m NW of Feature 2. The circle is defined by loosely placed rocks with a few stacked two courses high. There is no identifiable doorway or entrance and the rocks used in construction of the feature are covered up to 40 % by lichen and appear to be undisturbed.

### **Feature Three**

Feature 3 consists of two joined stone circles that measure 840 cm x 460 cm x 57 cm deep. The feature consists of 90+ rocks, the maximum size is 108 cm with an average rock size of 40 cm. The circles are "stacked" against each other in a north-south orientation. The southernmost circle had no artifacts within it, but the northern circle had a single 3.5 cm quartzite

flake near the center of the feature. This feature consists of loosely stacked rocks up to three courses high and there is no identifiable doorway or entrance. Rocks are covered up to 40 % by lichen and appear to be undisturbed.

#### **Feature Four**

Feature 4 is a small hearth located in the center of the site between the lowest portion of the site and the larger architectural features found at the highest point on the site. There were two metates and 1 mano found adjacent to the hearth Feature. The feature is located northeast of Feature 3.

#### **Feature Five**

Feature 5 appears to be either a small quarry site or a sitting area that was purposefully constructed by moving several blocks weighing an estimated 200 lbs. and placing them in a bench-like fashion along the south edge of the feature. It measures approximately 3.5 meters x 2.5 meters in diameter and is located southwest of Feature six. No images are available as the file was corrupted on my digital disk and no feature map was made.

#### **Feature Six**

Feature 6 is a single room stone circle measuring 550 cm x 650 cm x 47 cm deep. It contains over 100 rocks with an average stone size of is 45 cm in length and a maximum size of 1.2 meters in length and weighing an estimated 150 lbs. The site is located approximately eight meters northwest of Feature 6. This feature is very well preserved compared to others along the SCR and is constructed in courses of dry-laid masonry up to four layers high. There appears to be an entryway on the north side of the feature. Lichen covers 60% to 90% of the rocks. Exterior to the southeast edge of the feature are the remains of a hearth. This hearth feature consists of a clearly defined circle of fire-altered rock but unfortunately, the fill material has eroded almost to bedrock precluding the possibility of radiocarbon dating.

### **Feature Seven**

Feature 7 consists of three to four rooms of loosely positioned rocks covering roughly 14 meters on the east-west axis, by eight meters on the north-south axis. It is constructed of loosely positioned rocks that are stacked up to three rocks high on the northern wall. The rooms are built with contiguous walls which may represent accretional growth. The largest slabs are 220 cm in length with an average size of 50 cm. There are several large areas of exposed bedrock with debitage and two mano fragments found within. The room division within the feature is not entirely clear, but there does appear to be a series of three thermal features along the exterior of the northern wall. These features are not very clearly defined as well, but there is a continuous scatter of darkened soil, which may be the result of charcoal. It was not excavated or tested but may yield enough charcoal to successfully date this feature. This feature is located in the central portion of the site and may represent a communal workspace. The entrance to the features appears to be on the southern side.

### **Feature Eight**

Feature 8 consists of a C shaped alignment of rocks with the eastern edge being devoid of any rocks. Based on observations of other architectural features at Owl Creek near the Beulah locality, this structure may have been purposefully built in a semi circular shape and may have been utilized as a work area that functioned as a wind or sunscreen. The feature is 387 cm x 425. cm and constructed with 55 rocks. The maximum rock size is 135 cm with an average rock size of 30 cm.

### **Feature Nine**

Feature 9 consists of a complex division of space which combines both circular and linear elements. It covers approximately 10.8 meters on the north-south axis and 10.5 meters on the east-west axis. There are well over 150 rocks with a maximum size of 1.5 meters and an average size of 60 cm. The depth of the rocks, which delineate room divisions vary from being right on

bedrock, to 1.60 meters deep on the southeast side. The deepest feature is circular in shape and is located on the southeast side. It has an external hearth, which is in part defined by a broken metate, and like the hearth in Feature 7, it is eroded nearly to bedrock. The architectural footprint of this feature is very similar to Alibates # 28 located on the Alibates quarry north of Amarillo, Texas (Figure 56 and Figure 57).

### **Feature Ten**

Feature 10 is a single room stone circle measuring 300 cm x 360 cm x 27 cm deep. It contains over 150 rocks with the maximum size of 50 cm and an average size of 42 cm. This feature is a well-defined shape and contains fill up to 40 cm in depth. On the northern side of the feature there is a mano fragment as well as a few flakes of debitage. The entry appears to be on the north side of the feature but there is no definite clearing. The site is located 16 meters away from the circular feature seen in Feature 9. This feature is the furthest north of all the features at the Brown Palace site.

### **Photos**



Figure 46. Panoramic view of Feature 9, looking north.



Figure 47. Feature 6, cluster of rooms in the central plaza of the Brown Palace site.



Figure 48. Feature 1 in southwest portion of site.  
The portion of the feature sampled is located on the right side of the frame.



Figure 49. View of excavated area within Feature 1 at the Brown Palace.



Figure 50. Feature 3, looking north at a paired architectural feature in southwest portion of the Brown Palace site.



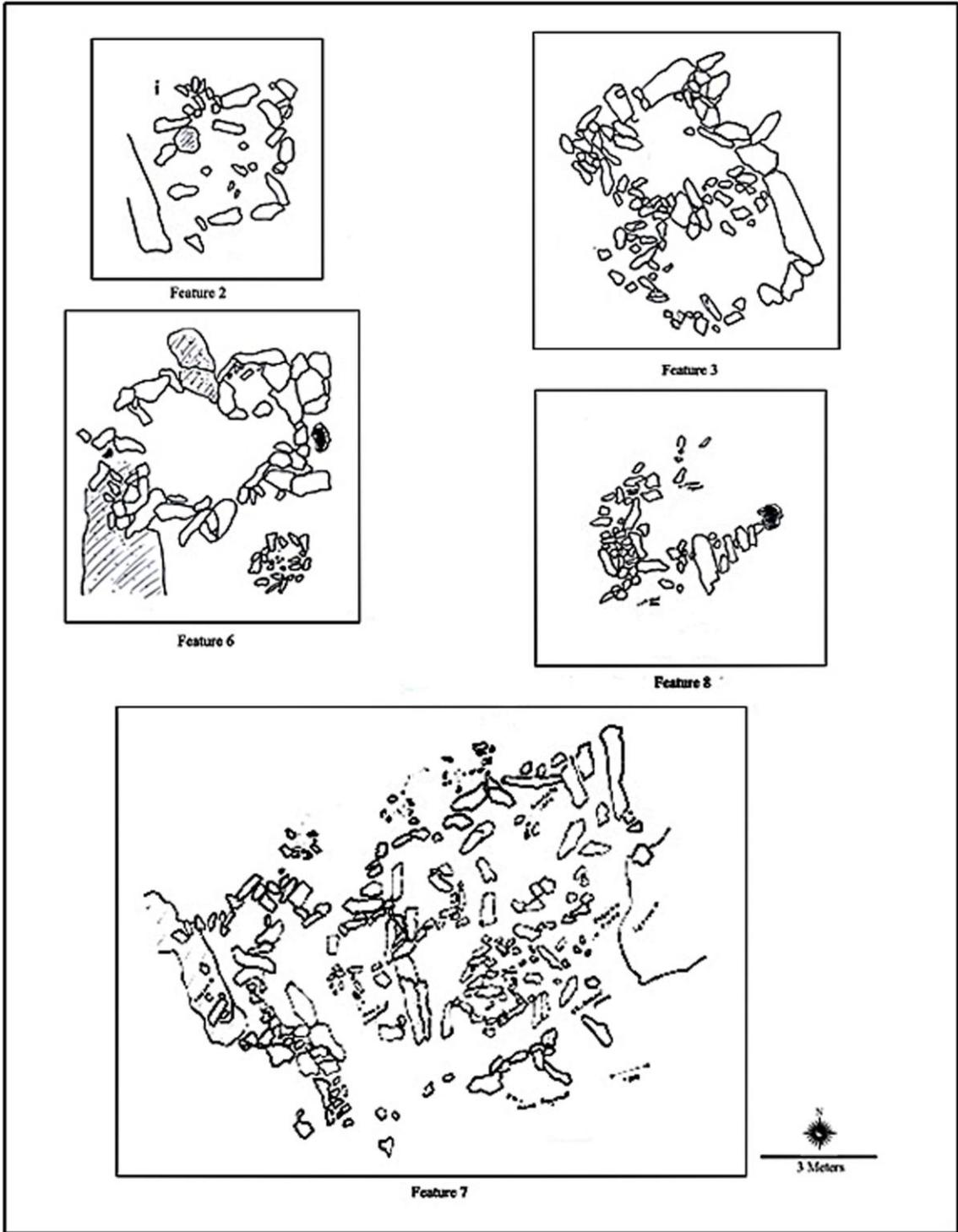
Figure 51. Feature 6, the hearth in the foreground of the architectural feature is almost eroded down to bedrock precluding any fill material analysis.



Figure 52. Feature 4, granite metate and possible hearth found in central portion of the Brown Palace



Figure 53. Side A and B of a shaped and pecked sandstone metate found in hearth adjacent to the circular feature on the southeast side of Feature 9



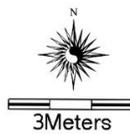
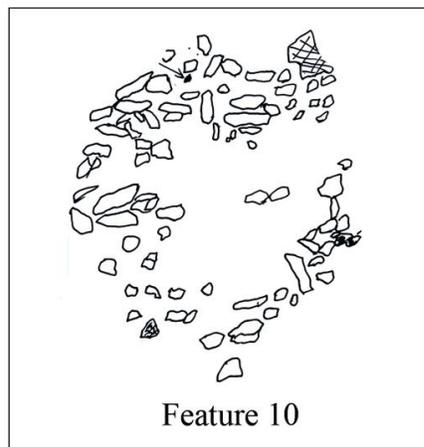
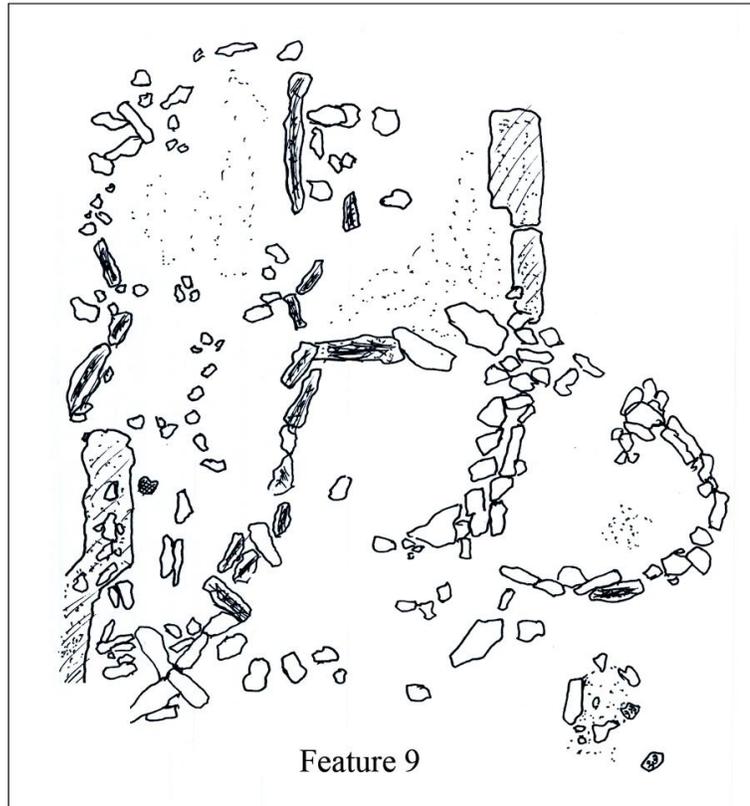


Figure 55. Plan view of features at the Brown Palace site

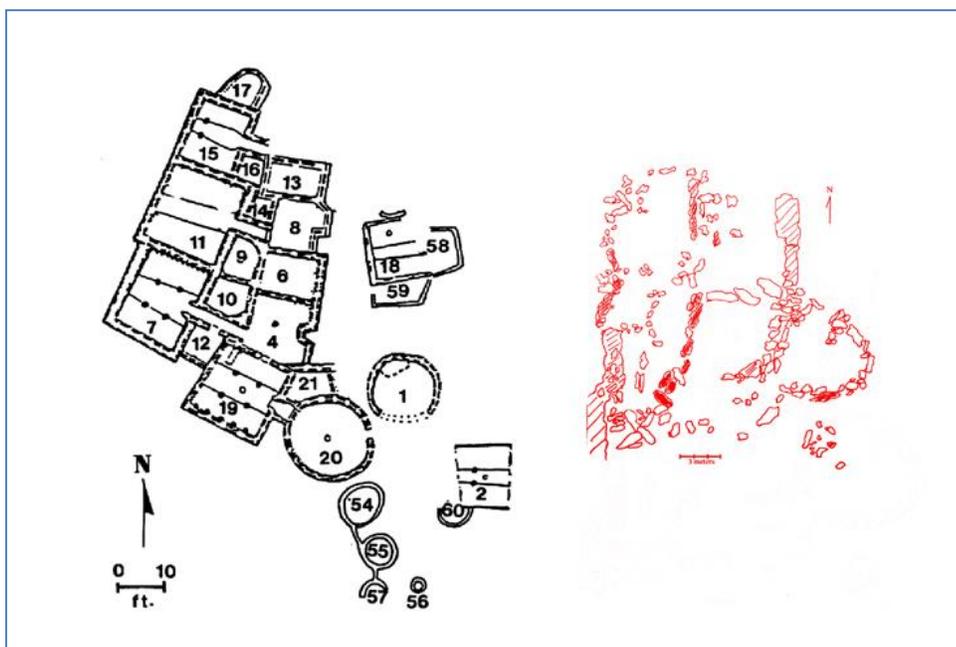


Figure 56. Comparison of Alibates #28 (on the left) and Feature 9 at the Brown Palace site

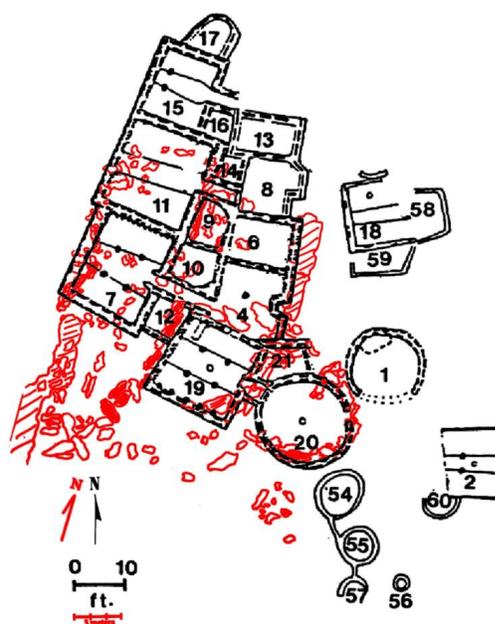


Figure 57. Overlay of Alibates #28 and Feature 9 at the Brown Palace

## **Site Description – Hightop Site**

The Hightop site consists of two large C-shaped stone circles positioned at the edge of a significant cliff face (Figure 58). The site overlooks a wide portion of the river canyon and is positioned above a major travel corridor down to the SCR. From the site you can clearly see the location of the Brown Palace site, and large expanses of the short grass prairie to the southeast.

### **Discovery**

In 2007, Mrs. Brown, one of the owners of the 3R ranch showed the site to the present author. Locals have known this site for some time as evidenced by the weathered remains of a tree stump cut inside of Feature 1.

## Map of site

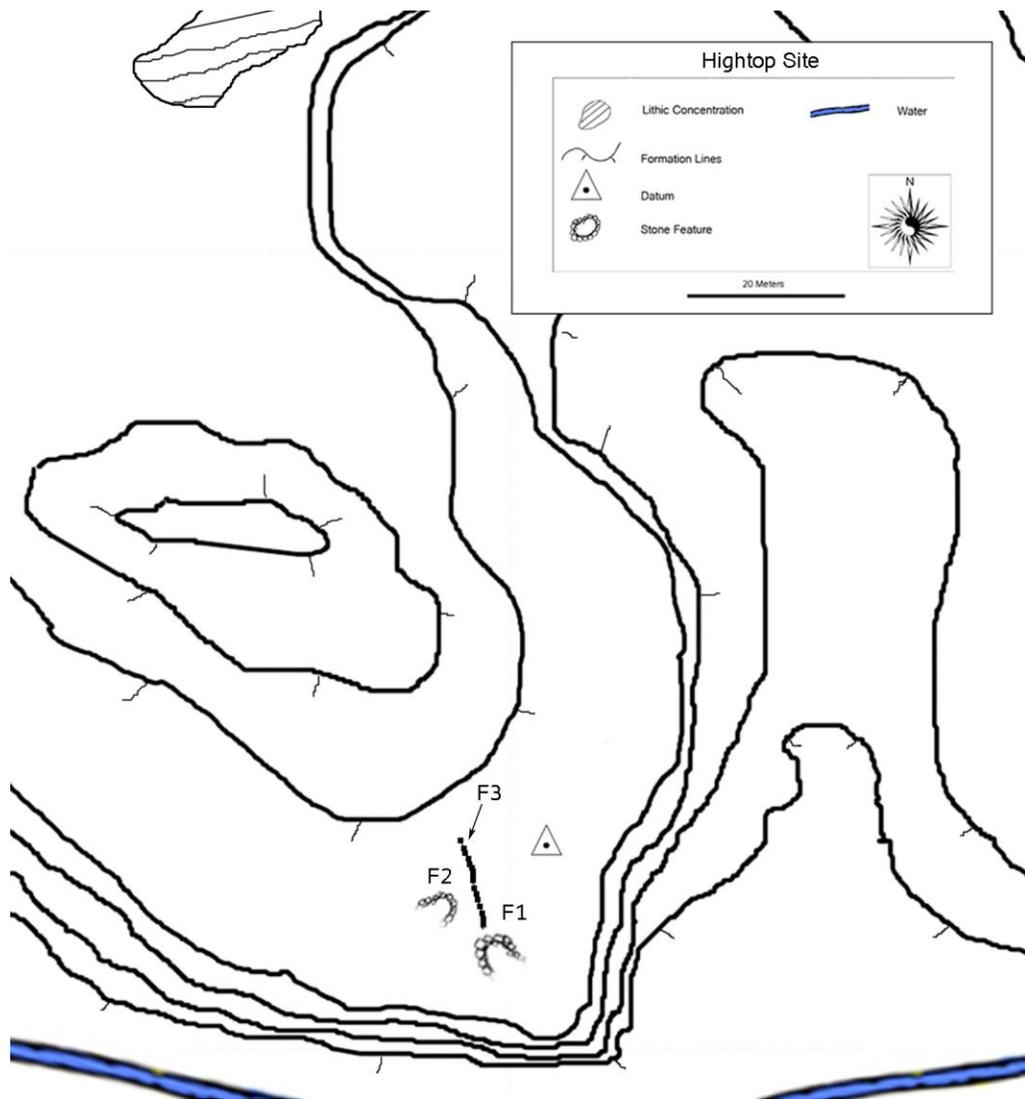


Figure 58. Site map of Hightop Site

## Lithics

Due to time constraints, attributes of debitage were not recorded in the field, only their position was recorded with a GPS.

## Tools

Two Washita style projectile points (Figure 59) were found in a small lithic scatter to the north of the architectural features. There were also two metate fragments found north of Features 1 and 2.

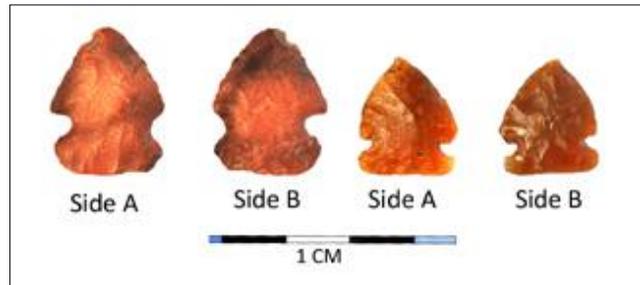


Figure 59. Small projectile points found near Hightop architectural features

## Groundstone

Two slab metates were located with limited pecking and retouch. Due to time constraints no other attributes were recorded.

## Description of Features

### Feature One

Feature 1 is an open ended, C-shaped stone pile measuring 460 cm x 660 cm x 67 cm tall and is constructed out of more than 58 rocks. The largest rock measures 86 cm with a mean rock size of 48 cm. The feature has two junipers in it that were cut with a modern saw indicating that it has been visited in historic times. There is a rock alignment running 12.8 m long at a bearing of 331 degrees from the top edge of the C-shaped feature. The floor of Feature 1 is exposed bedrock and may have eroded to this point, or it may have been originally constructed on the cleared bedrock.

## **Feature Two**

Feature 2 is a circular architectural feature measuring 500 cm x 458 cm x 65 cm deep constructed out of 47 sandstone blocks. The largest rock size measures 88 cm with an average rock size of 54 cm. There is no definite entryway into this feature. One single quartzite flake was observed at the southern side of the feature floor. The floor of this feature has limited fill and is stabilized by some grass growing in the shallow fill. Features 1 and 2 are among the largest single room features recorded along the SCR.

## **Other Possible Features**

Immediately adjacent to the site at a distance of 42 meters at a bearing of 19 degrees, are eight depressions of what were presented to the author as prehistoric house bases by the owners of the 3R Ranch. There were no artifacts, hearths, or the stacking of rocks in multiple courses observed in any of these depressions and thus confused the validation of these as prehistoric features. Although no discounting the possibility of these being prehistoric features, there were numerous tree throws in the immediate vicinity, which leave circular depressions with some rocks left standing on edge (Figure 62), an attribute that could easily be mistaken as a product of cultural agency.

**Photos**



Figure 60. Looking north at Feature 1, a large C-shaped structure at the Hightop Site.



Figure 61. Looking north at Feature 2, a large semi- circular structure at the Hightop Site.



Figure 62. Example of a tree throw that has cleared a small circular depression on the ground. As the tree fell over, it has turned several stones on edge through the levered action.

### **Site Description - Red Bison Rock shelter**

The Red Bison rock shelter is located approximately 308 meters east-northeast of the Hightop site. It is a small rock shelter associated with both pictographs and petroglyphs and is in close proximity to open air lithic scatters on the canyon rim above and to the south of the site.

#### **Discovery**

Red Bison rock shelter has been known to locals for a long time and was shown to the current owners of the 3R Ranch when they purchased the property over 20 years ago. The site was shown to the present author in the summer of 2007. An intensive survey was done in the immediate area but no artifacts were found other than a pictograph panel northeast of the rock shelter (Figure 64). Movement was hindered around the site due to very dense stands of scrub oak

and thigh-high patches of poison ivy, which the present author chose not to navigate through in search of other rock art.

### **Site size**

The rock shelter is 17 m long by approximately 6 m deep at the deepest point. A large portion of the roof has collapsed blocking off easy access to the back of the rock shelter (Figure 65). It is difficult to tell if the site has been previously excavated or if the small amount of back dirt outside of the drip line of the rock shelter is the result of floor maintenance by the prehistoric inhabitants. The back dirt however is very rich in organic matter as well as charcoal particles.

### **Thermal Features**

There are two thermal features within this rock shelter. One is located on the northern end of the rock shelter and the second is built near the center of the rock shelter, against the bedrock cliff face (Figure 65).

### **Groundstone**

In the center of this rock shelter was found in large slab metate (Figure 66), which was pecked/ roughened in the center. This particular metate was too big to move and was set at approximately 35° to the floor making an ideal work surface where ground plant materials would easily roll off and collected at the base. Another boulder metate was found on the floor of the shelter and it also exhibited shaping and peck marks.

### **Rock Art**

The rock art at the shelter represents both petroglyphs and pictographs (Figure 63). The petroglyphs are located approximately 8 m north along the canyon wall outside of the rock shelter. They consist of sinuous lines pecked into the wall about 1 m above ground level. They were difficult to get close enough to photograph or measure because of a thigh- high patch of poison ivy in front of the rock art.

The two pictographs were found in the Red Bison rock shelter and occur above the first protected area within the drip line on the south end of the rock shelter. Both objects were painted in red ocher and are located within 50cm of each other. One figure is a red spiral and immediately adjacent to it is a zoomorph representing either a deer or a horse.

### **Bone**

In the central part of this rock shelter a well used packrat midden was found which was likely built after abandonment of this particular site as evidenced by the modern looking debris such as the presence of juniper branches with berries still on them. Although some material in the midden appears to have been collected from the greater surrounding area by packrats, some of the material within this packrat midden may have been moved less than 300 cm from the central hearth mentioned above. The nest contained the long bones of an antelope which are highly calcined, and appear to have been fractured when green. This bone was radiocarbon dated to  $490 \pm 40$  beta 248357 which corresponds to the end of Apishapa occupation within the Arkansas River basin. There were other skeletal elements found representing a juvenile bison or elk, along with antelope remains (L. C. Todd, personal communication 2009). These bones were also fractured when they were green, and then burned to varying degrees. After analysis and identification, the skeletal elements that were not destroyed during radiocarbon were returned to the Red Bison shelter, and placed within the packrat midden where they were collected from.

**Photos**



Figure 63. Enhanced image of red ochre spiral and zoomorphic Figure at the Red Bison rock shelter to the right of the spiral

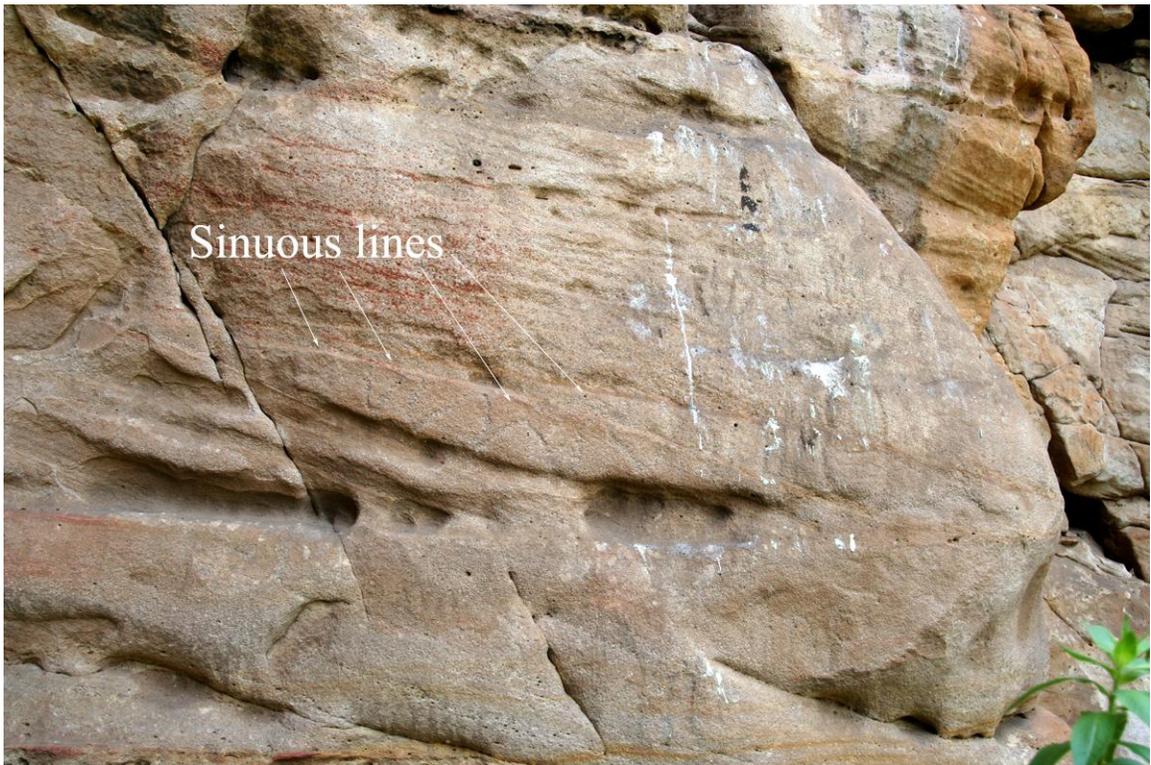


Figure 64. Petroglyphs north of the Red Bison rock shelter

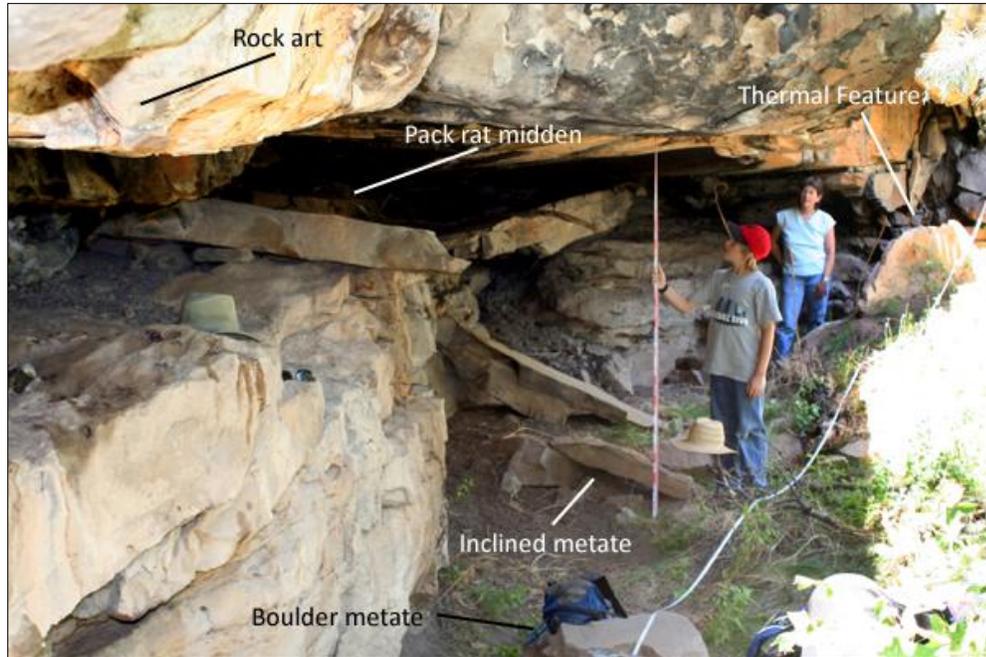


Figure 65. Location of features within the Red Bison Rock shelter, second thermal feature is located in the center of the frame against the bedrock cliff face.



Figure 66. Pecked boulder metate in the Red Bison rock shelter



Figure 67. Calcined antelope bone from the Red Bison Rock shelter

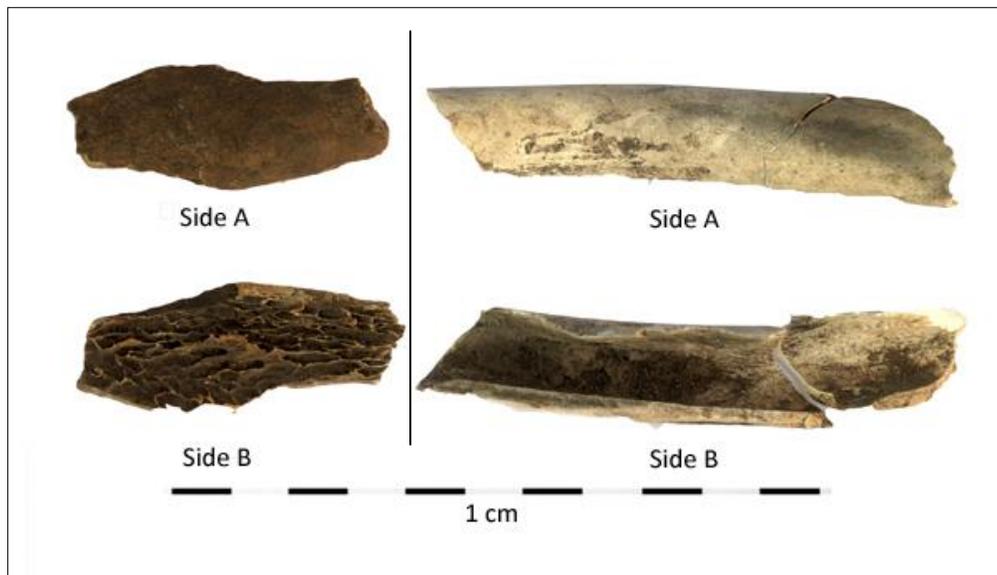


Figure 68. Elk (pictured on the left of photograph) and Pronghorn bone elements found in a pack rat midden in the back of the Red Bison rock shelter

## Site Description – R276

R276 is a large rock shelter with multiple bedrock metate features present. It has two distinct areas of occupation/activity. One appears to be a work area where intensive grinding activities have taken place contained within a space that is 6 meters wide x 4.15 meters deep. Within this space is concentration of six bedrock metates on a working surface that is approximately 176 cm x 250 cm (Figure 70). Some of these metates exhibit incised lines in a crosshatch pattern that may have served to function as retouch, roughening the surface so that it would be more effective at grinding (Figure 72).

The second portion of the site appears to be a habitation area located roughly 17 m away to the north east along the rock wall (Figure 76). Physically this area is a second rock shelter and is directly adjacent to, and below the bedrock metate concentration. This rock shelter is easily accessed by climbing down the boulder on the northeast side of the upper rock shelter. It measures 9 meters wide X up to 2.60 meters deep X 1.40 m tall at the opening. The roof quickly tapers down to less than ½ meter at the back. The floor area appears to have been excavated, leaving a dirt pile that extends the entire width of the rock shelter. The overall depth of this dirt pile was not determined, but there is a significant amount of charcoal and organic material contained within it.

### Discovery

Locals have known the site since at least 1917, as evidenced by graffiti present above one of the bedrock metate features. Charles Steen, employed by E.B. Renaud, was the first professional to investigate the site in the mid to late 1930's, and Renaud visited the site during the same period. In 2007, Betsy Brown, one of the owners of the 3R Ranch first showed the site to the present author. It was during this initial investigation that the owner mentioned that she found

a corncob near the lower habitation area. This cob and four others were recovered from three different packrat middens immediately adjacent to the rock shelter's drip line.

### **Site size**

The upper portion of the site is approximately 14 m long by 4 m deep at the deepest point. This rock shelter also contains a significant crag like feature which is approximately 7 m long by 3 m deep and contains rock art depicting 4 horned dancers three of which are shown in Figure 74. The open crevice dissects two distinct work areas where there are twelve bedrock metates or mortars. The lower portion of the site is a very low hanging rock shelter that is approximately 10 m x 3 m x 1.75 meters high. This portion of the site continues around the corner of the low overhanging sandstone cliff, which is adjacent to what may be yet another habitation area. To the south and west, and approximately 30 meters in front of and below this rock shelter, exists a dispersed, yet consistent distribution of flakes, manos, and some bedrock metates indicating that most of this bench feature above the SCR as well as the area directly below the rock shelter may have been utilized as work areas.

The map of the site (Figure 69) is a broad view of the area and is important because it puts the variety of sites in the immediate area in a better context, rather than showing only the location of the rock shelter. The artifact distribution appears to be between the Saint Charles River and R276 with several of the manos and bedrock metates being found relatively close to the Saint Charles River itself. There is a large rock art panel located 137 m southwest of the rock shelter (see below). In addition, on a terrace/bench feature above the rock art panel is an open lithic scatter which has several nether stones that was not fully recorded, but is close enough to the other features to note. There are also other processing areas that are between the rock shelter and the river. At one of these sites was another bedrock mortar that was positioned on top of a three meter tall boulder.

## Map of Site

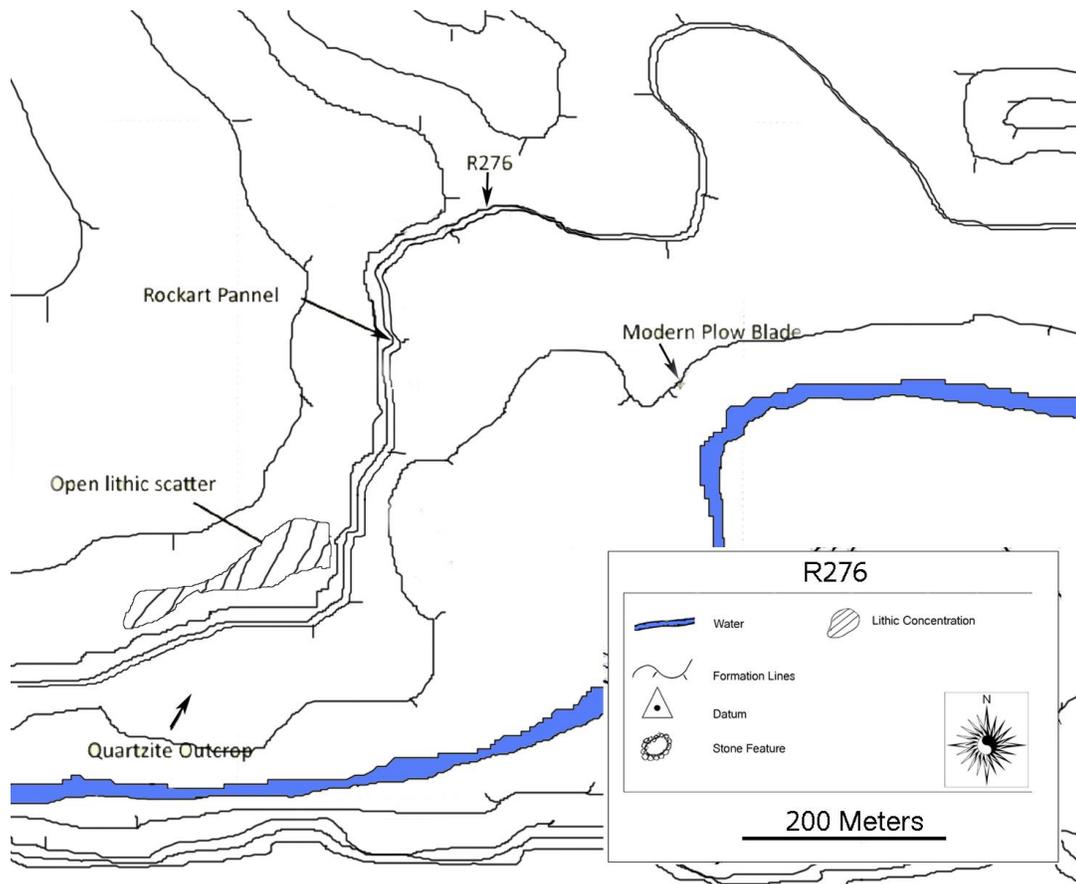


Figure 69. Map of R276 and surrounding archaeological features

## Bone

Numerous pieces of bone were observed in an erosional feature on the far-western side of the lower habitation area (Figure 76). This section is actively being eroded from water entering the rock shelter from the cliff face above. The water is channeled through a narrow opening in the rocks and is being accelerated to point where it is incising the modern floor level within the rock shelter (Figure 77). One piece of bone was collected from this erosional feature for radiocarbon dating and is described below in the chronology of the SCR (Chapter 7).

## Photos



Figure 70. Panoramic overview of upper work area in relation to the lower habitation area at R276



Figure 71. Overview of bedrock metates with cross-hatching



Figure 72. Cross hatching in retouched metate at R 276, there is a significant level of polishing around this feature indicating the intensity or longevity of use.



Figure 73. Overview of upper work area at R276 looking east, rock art depicting horned dancers is located down in the crevasse on the left side of the photograph.



Figure 74. Enhanced image of horned dancers in R 276.



Figure 75. Anthropomorphic figure made with very heavy lines in red ochre, this was first described by Steen in the 1930's.



Figure 76. Overview of the lower habitation area, bone was found in situ on the left part of the frame.



Figure 77. Close-up of erosional feature incising the modern rock shelter floor at R276, exposing elk bone and charcoal.

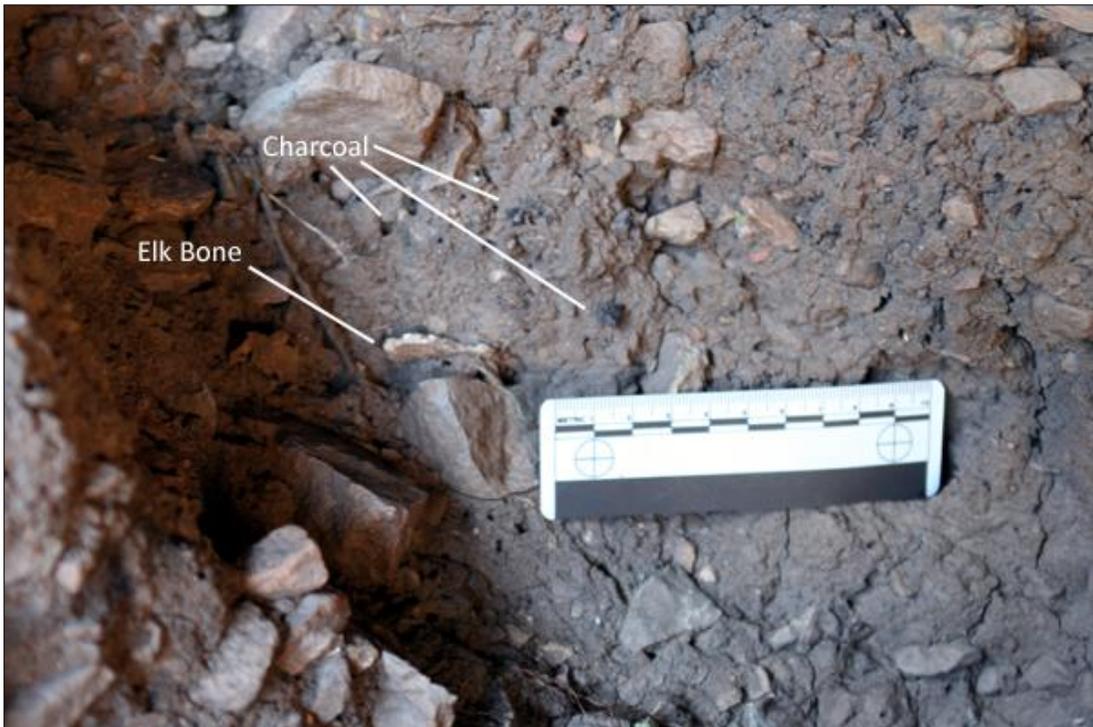


Figure 78. Possible Elk bone found in situ in erosional feature at R278

## Site Description of Rock Art Panel

Site boundaries are often arbitrarily assigned based on natural land breaks such as streams, ridges, cliffs and thus may not accurately reflect the true nature or the scale of the landscape being utilized by prehistoric people. To the current author, the rock art panel located 144 m southeast of R276 should be considered part of the site designated R276. The fact that there are several bedrock metates present within R276, clearly demonstrates this site was not only a known feature on the landscape, but it was a central foci of specific task related behaviors that serve as a gathering place which helps define a social landscape (Lynch 2007: <http://saa.org/Portals/0/Lynch.pdf>).

There are several styles of pictographs present at this site, some with red ochre and others completed with charcoal. There is one red ochre anthropomorphic figure made with thick, heavy lines in similar to the one found in R276 (Figure 84). Also found at the site are five red ochre zoomorphic figures that resemble deer, three of which are pictured in detail. Most noteworthy is a shield-bearing warrior depicted in charcoal, an icon that is present in rock art, from Mexico to Alberta, and from Kansas to Oregon (Rogers 2003:247). This style may also represent an Athabaskan influence (Loendorf 1990). There are also some depictions of tepees found along the eastern portion of the rock art panel (Figure 85). Notably, there are several horse and rider motifs represented here.

### Discovery

Locals have known the site as early as 1930 as evidenced by modern graffiti on the east side of the panel. The panel was shown to the present author by Mrs. Brown, one of the owners of the 3R Ranch in 2007.

**Site size**

The drip line of this feature is less than 1 meter wide and the panel itself measures approximately 3 meters wide x 2.5 meters high. In the area immediately below or surrounding the rock shelter there were no artifacts found in the form of lithics, tools, groundstone, or bone.

**Photos**

Figure 79. Overview of rock art panel near R276 that depicts horses with riders.

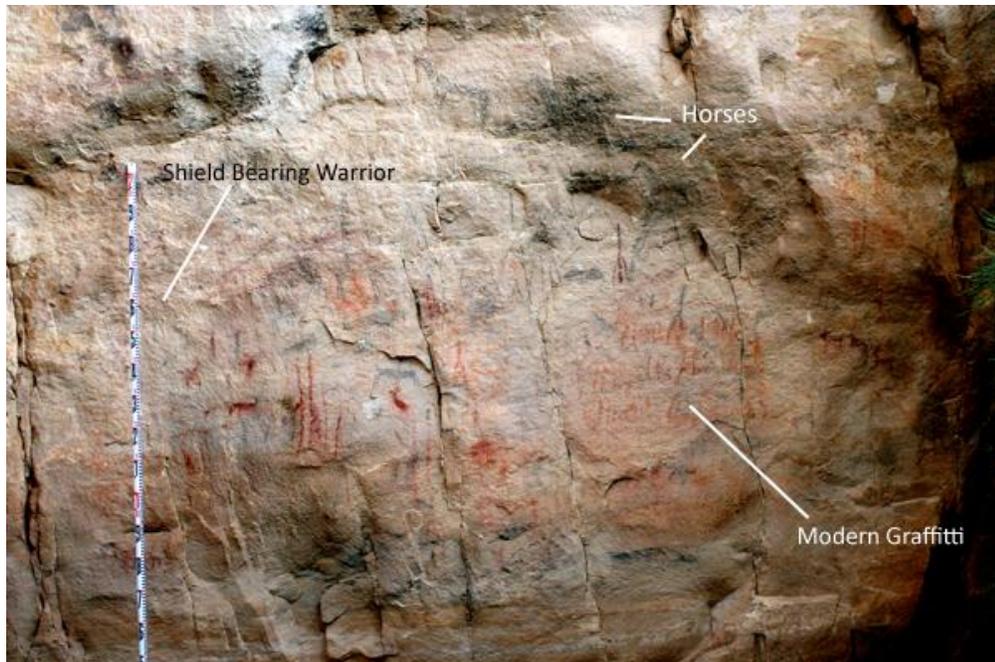


Figure 80. Rock art panel with horse motifs, shield bearing warrior and modern graffiti.

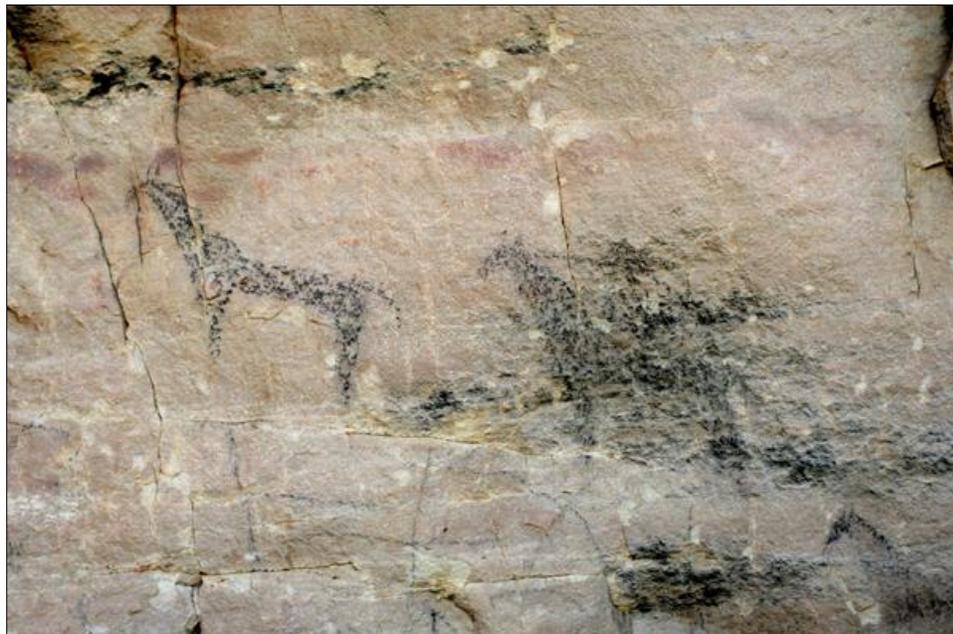


Figure 81. Two horses with stylistic necks and bodies at rock art panel near R276, the figure on the right may represent a rifle bearing rider.



Figure 82. Possible deer figures in heavy red ochre

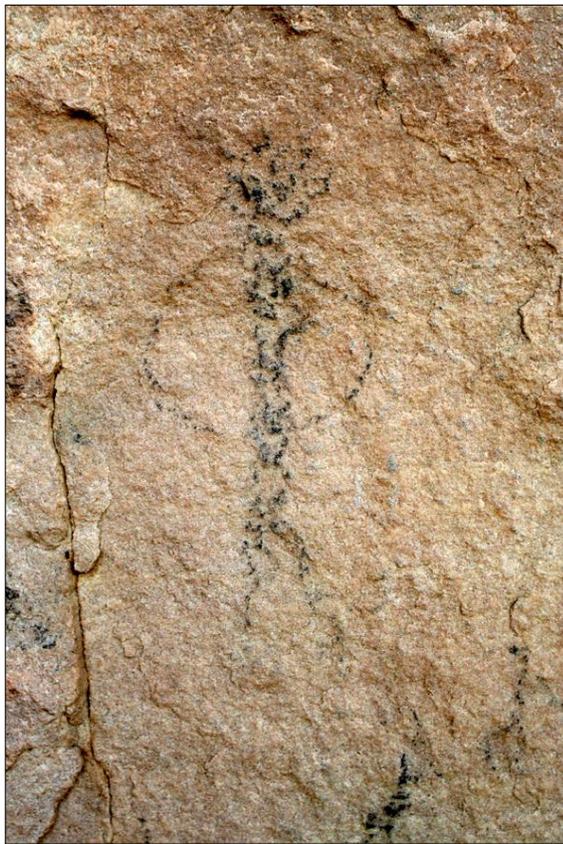


Figure 83. Depiction of a shield-bearing warrior.



Figure 84. Anthropomorphic figure similar in style to that found at R276.



Figure 85. One of several possible Tepee motifs seen on the rock art panel near R276

## Summary of Sites

The preceding chapter has taken the reader through 80 years of research representing over 10,000 years of occupation and land use along the SCR. In general, there has been a paucity of temporally diagnostic materials associated with each site, but collectively, these data allow us to explore some interesting trends in land use, site selection, and to infer aspects of the intensity of use. These data will be analyzed below and will allow us to explore questions regarding some of the behavioral patterns of the architects of the stone circles detailed above. The architectural features occur in clusters or singularly around the periphery of the central habitation areas and at times are nothing more than faint traces, delineating space along the ground. Thermal features in all cases were found external to the habitation structures hinting at the seasonality of use, which was likely during the warmer months of the year. The positioning of these architectural features on the landscape is always along the canyon rim of the Saint Charles River, and is near river access down to the river itself. Population estimates, and the complexity estimates for each site were calculated in order to pursue other lines of analysis detailed in the following chapter.

Two rock shelters, R276 and the Red Bison shelter, hold evidence of habitation as well as the presence of intact, stratified deposits. Evidence of the cultural modification and green fracturing of elk, bison, and pronghorn bone indicates intensive processing which is consistent with the remains from nearby Chamber Cave (Nelson 1970).

## **Chapter Six**

### **Synthesis of Architectural Data**

#### **Overview**

It is argued here that the prehistoric material remains studied throughout the SCR represent pulses of occupation from the Pleistocene through the Proto-historic and supports the idea that the Beulah District was a known geographical area that was utilized possibly as early as 10,800 B.P., and into historic times. It further argued, that if the prehistoric inhabitants of the Beulah District were descendants of a long standing local tradition as suggested by Campbell (1969:428-499), then there should be a continuous record of this occupation seen through projectile point morphology, radiocarbon dates, and rock art. The data collected along the SCR do not definitively show that there are founding and descendant populations unequivocally linked to their each other, but it is posited here, that the presence or absence chronological information may help to illustrate the time depth represented within the Beulah District as well as human interaction with the canyon along the SCR from the terminal Pleistocene and well into the Holocene.

The climate of the initial Pleistocene/Holocene transition is important to understand to properly put into context the earliest occupation and utilization of the surrounding Great Plains and the Foothills of the Rockies. The climate was one of reduced seasonal extremes, which may have contributed to a larger biotic community of both plants and animals (Kelly and Todd 1988:232). This stability changed as time progressed, and the resultant increase in seasonality that played out on a latitudinal scale in the Holocene may have been the initial “organizing” factor in the distribution of animals and people into more favorable ecological niches (Kelly and Todd 1988, Bender and Wright 1988, Benedict 1992, Meltzer 1999). Over the Holocene in general, populations that employed “specialist strategies” found that any variation in productivity presents

the possibility for failure (Larson 1996:220). Resource fluctuations may be responsible for innovation that is reflected in the changing technology and tool kits of the prehistoric inhabitants of the SCR. For example, one can see technological changes represented by a dart based technology transitioning into the adaptation of the bow and arrow, or the growing presence of ceramics in the archaeological assemblages throughout the greater ARB.

A natural aggregation and alignment of species around well-watered areas would have had a tremendous impact on the land use and subsistence strategies employed by humans adapting to that changing environment (Bamforth 1988). If there were a north to south trend in the reduction of annual precipitation throughout the Great Plains as suggested by Meltzer (1999), then it would be logical to see people migrate along watercourses and expand into new territories as population pressure on local resources increased. The major waterways ultimately lead to their source in the foothills and mountains and may have led people to the Beulah locality. Some human groups fled into the mountains where the abundance of water, wood, animals, and lithic resources served to alleviate the resource deficiencies seen in the semi-arid regions of the Great Basin, Colorado Plateau, and the Great Plains (Benedict 1979, Bender and Wright 1988, Meltzer 1999). Other groups sought residence in ecological environments along major waterways, rivers, and streams that may have been more economically advantageous than the plains counterpart (Meltzer 1999:416). The long-term settlement strategies along the SCR may be the result of the aforementioned organizing principals of water and other resource availability, and as suggested by Campbell (1969), “by A.D. 450 the inhabitants may have developed a local variant of the widespread Plains Woodland tradition...” (Campbell 1969:370) which was essentially a hunter-gatherer population.

## **Nature and Variability of Architectural Features along the Saint Charles River**

The primary research question in this thesis is directed at the nature and variability of the archaeological resources along the SCR. As such, the following analysis of the architectural features was undertaken in order to better understand the positioning of these structures along the SCR canyon rim. According to Campbell (1969), the appearance of architecture along the terraces and benches of the major waterways in the Arkansas River Basin may mark the transition from a nomadic lifestyle, to one of an increasing dependence on cultigens and the need to establish residential bases. Many archaeologists have predicted that nomadism is followed by varying degrees of pastoralism and agriculture, with a corresponding increase in the investment in architecture, the landscape, and the exploitation of local resources.

If the architectural features along the SCR represent a seasonal land use pattern, then the investment in the landscape in terms of building relatively large architectural features would be indicative of an anticipated reuse of these resources. Indeed, arguments put forth in Apishapa Phase research (Withers 1954, Campbell 1969, Lintz 1986, Gunnerson 1989, Zier and Kalasz 1999), all suggest that there is an apparent increasing trend in sedentism throughout the ARB from AD 450 to AD 1450 growing out of an indigenous, local population (Campbell 1969). This trend is interpreted as having occurred due to the increasing presence of cultigens through time (Campbell 1969:398). This increase in the appearance of cultigens in the material remains as seen in Apishapa contexts such as the Pyeatt rock shelter (5LA550) containing 41 maize cobs, and Medina rock shelter (5LA22), which had 203 cobs (Campbell 1969:136). However, it is important to note that without the evidence of the cultigens found in Medina and Pyeatt rock shelters, “inferences regarding indigenous horticulture would be negligible” (Lintz 1986:28).

## Architecture

At the author's first impression, the construction loci of the architectural features along the SCR seemed to be dispersed with no discernable pattern or predictability. This seemingly random distribution raised a question regarding the selection of architectural site location by prehistoric people, and why they chose the construction sites they did along the canyon rim. Because of the harsh, near-desert environment surrounding the Beulah District, it is assumed that the river bottom would be the only place that cultigens could be produced, as such, it is defined as "potentially arable land". It is hypothesized here that sites will show greater complexity in architectural patterning near larger sections of potentially arable land, and that diminished expressions of complexity will be seen near smaller plots of potentially arable land. The model this question plays against is the simple concept that the investment in energy in the construction of any habitation structures is justified by an investment in a landscape that is going to be utilized by families over an extended period of time, or seasonally over the course of many years. Therefore, it is assumed that the more complex and substantial an architectural site is, the longer the anticipated duration of stay (Binford 1980).

Along with the construction of the other architectural sites along the SCR, the energy required to construct the Outhier hunting blind indicates just such an investment in the landscape. This in turn, implies the anticipation long-term use as opposed to features constructed of less substantial material. It also is indicative of a cooperative effort to maximize the hunting and gathering productivity along a known ecosystem, the SCR canyon. Aggregation of cooperative foraging groups is predicted as an outcome of energetic efficiency, because through aggregation, there is a greater security of resource acquisition. Where resources are predictable, yet dispersed across the landscape, people will tend to aggregate, so "by matching site locations to the location of resources, mobility cost to each resource is reduced" (Winterhalder and Smith 1981: 164), and

is therefore positively correlated with the available biomass represented by deer, elk, bison, pronghorn, and the economically useful plants within the catchment area.

### **Architectural Proximity to Water and River Access**

When testing the hypothesis that architectural features are randomly dispersed along the canyon rim independent of their distance from the Saint Charles River (water), and that distance from the river was not an influencing consideration for site type placement, the null hypothesis was rejected indicating that site distance from the Saint Charles River (water) is important. In all, the architectural sites are constructed within an average of 317 meters from the Saint Charles River (Table 7), with 72% of the sites occurring less than 300 meters from the river (Figure 86).

When testing the hypothesis that architectural features are randomly dispersed along the canyon rim irrespective of their proximity to river access, the null hypothesis was rejected as architectural sites occur within a mean distance of 221 meters of river access, and 71% of these sites occurred less than 200 meters from river access (Figure 86). The proximity of architectural features to river access was determined in the field, and was defined where there was a significant transition between the relatively flat area surrounding a habitation or work areas, and the steepening transition in slope to the river. This point was somewhat subjective as each site exhibited varying transition points, but in general, the “head” of the travel corridor was defined when slopes exceeded 8 degrees, but no greater than 27 degrees.

Table 7  
Distance to water, and distance to river access from architectural features for all architectural sites recorded during the SCR.

Site Name	Distance to River in Meters	Distance to River Access in Meters
5PE4228	98	69
Brown Palace	161	63
5PE 234	246	156
River View	261	196
Hightop	298	110
Roper's Walk	486	460
5PE233	671	498
Mean Values	317.3	221.7

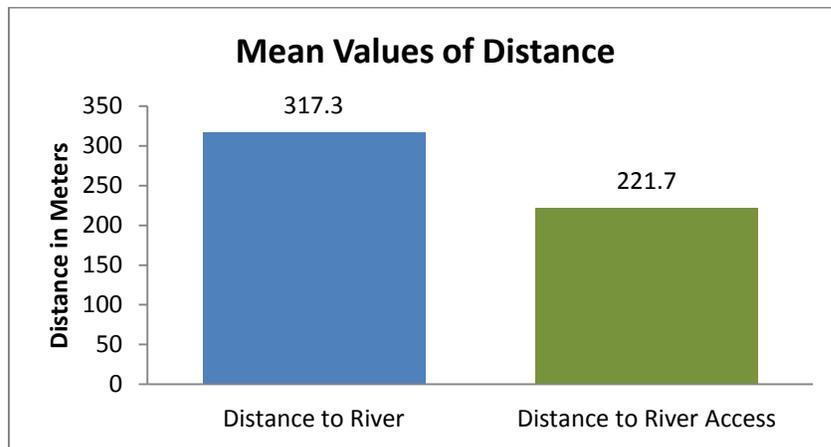


Figure 86. Comparison between the distance of all architectural features to the SCR, and the distance of all architectural features to river access.

When comparing the mean distance of the proximity of architectural features to both the river and to the proximity to river access, architectural sites are closer to the river access points in all cases.

### Architectural Size and the Proximity of Sites to Arable Land

When testing the hypothesis that sites will show greater complexity in architectural patterning near larger sections of potentially arable land, and that diminished expressions of complexity will be seen near smaller plots of land, it was found that there is no clear correlation

between the two. With 20 rooms and 521 artifacts, Roper’s Walk is the most complex site and it the second furthest site from arable land (Table 8). The Brown Palace is the significantly less complex than Roper’s Walk with 16 rooms and 104 artifacts and with the exception of 5PE4228, it is the closest to arable land of all the sites along the SCR.

Table 8  
Comparison of complexity based on artifact counts, number of rooms,  
and proximity to arable land

Site Name	Debitage/ Artifacts	Number of Rooms	Area of Floor Space in Square meters	Naroll’s Estimated Population = Floor Area X .10	Proximity to Arable Land in Meters
Roper’s Walk	521	20	246	25	486
The Brown Palace	104	16	195.44	20	183
5PE4228	10	8	63.1	6	98
River View	0	4	30.43	3	261
5PE234	0	4	69.83	7	246
Hightop	1	2	40.6	4	298

The estimates for population at each of the architectural sites along the SCR are made using Naroll’s formula where estimated population  $P = 1/10 \times$  floor area in square meters (Naroll 1962:587). The occupation estimate is valuable for understanding the potential number of people living along the SCR , however no analysis is made regarding carrying capacity of the area.

It is acknowledged here that without exact temporal placement of each individual feature at every site, the following calculations are subject to scrutiny. That being said, if all sites the considered in this calculation were occupied at the same time, then by utilizing Naroll’s formula (1969), Population = floor area in square meters  $\times .10$ , there could have been 65 people total occupying the SCR locality (Table 8). Because there is a decidedly confined physiographic area within the canyon system along the SCR, there would also be a correspondingly confined (and limited) number of big game animals to exploit. At this point it is important to consider the possibility that that all the architectural features along the SCR could not have been occupied

contemporaneously without some sort of agriculture, horticulture, storage, or trade to supplement the available faunal resources within the SCR canyon.

### **GIS and the Positioning of Archaeological Sites along the SCR**

There were numerous positive results realized during the SCRCP utilizing GIS technology. By implementing a GIS model that was based on a slope with a limiting factor of 27 degrees, it was possible to clearly identify 16 areas along the SCR where potential river access points would lead to the river bottom (Figure 87). The slope factor of 27 degrees was chosen as the cut off for determining a “hands free” mode of travel because slopes steeper than 27 degrees begin to require the use of hands. Of these 16 river access points identified below, 50% have architectural features, the remaining sites are comprised of lithic scatters. Importantly, 100% of these river access points have some evidence of archaeological remains.

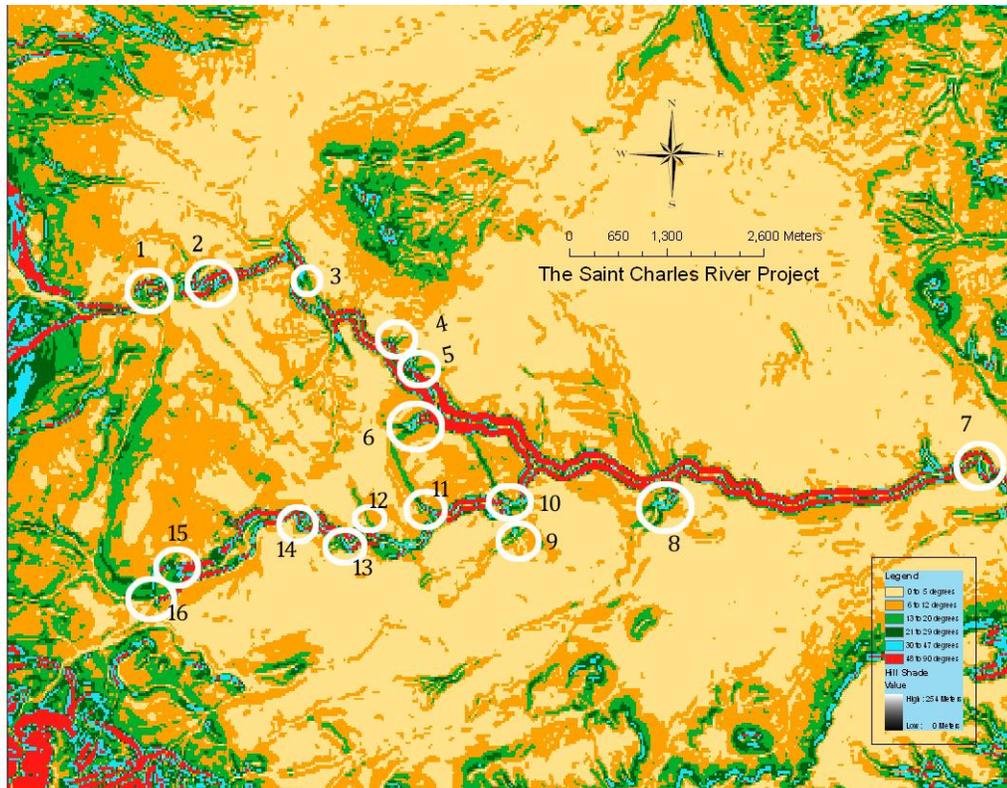


Figure 87. The 16 river access identified through GIS based on slope criteria are circled in white. Of these river access points, half contain architectural sites and the other half contains lithic scatters.

Site location is very closely tied to the river access down to the SCR and appears to be a major consideration in the selection of either open-air camps, or for the construction of architectural features along the canyon rim of the SCR.

The implications of these data are exciting in that they are testable against a much larger geographic area. Apishapa phase sites located elsewhere in the ARB can also be plugged into this model in order to build a more statistically comprehensive data set. While the process of building a “predictive” model is not the objective of this thesis, it is important to note that there are significant trends in site selection that go beyond the arguments about site placement based on some imaginary defensive strategy. There are statistically significant trends represented here that do not need conflict and warfare as their progenitors.

## Architectural Variability

Using multiple lines of evidence to address the primary research question regarding the nature and variability of the archaeology along the SCR, an in depth analysis of as many attributes of the architectural sites is pertinent. The variety of architectural site plans, room configurations, and overall placement along the SCR has produced the following results. By looking at all the sites and comparing floor space, there are several distinct size groups. Nineteen percent of the architectural features along the SCR have a floor space between 2 square meters and 6 square meters. Thirty-five percent of the architectural features are between 7 and 11 square meters, and twenty-one percent of the architectural features are between 12 square meters and 16 square meters (Table 8).

Table 8. Distribution of floor size for all architectural sites

Size Range in Square Meters	Number	Percentage
2 to 6	9	18.8
7 to 11	17	35.4
12 to 16	10	20.8
17 to 21	3	6.3
22 to 26	1	2.1
27 to 31	5	10.4
35 to 39	2	4.2
40 to 44	0	0.0
45 to 49	0	0.0
50 to 54	1	2.1

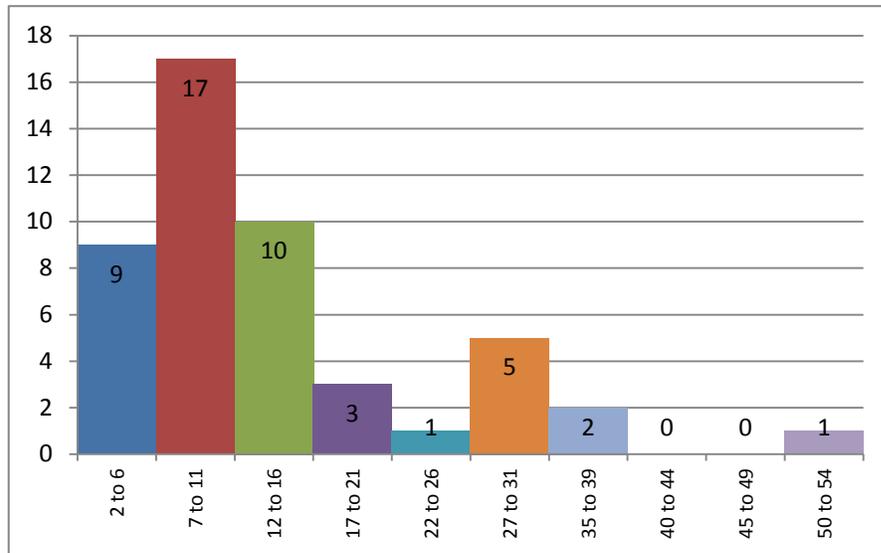


Figure 88. Distribution of floor space recorded in architectural features along the SCR

Each architectural site recorded has a cluster of one or two house bases that are larger than the other features at the site, but in general, the smaller the site, the smaller the difference between floor area of the largest rooms and the smallest room (Figure 89). These large features may represent gathering areas or communal workspace. Roper's Walk and the Brown Palace in particular have a similar patterning in the size and positioning of the architectural features. All sites except 5PE234 have a central foci of construction with one or more single-room structures positioned away from the central area. There is not enough spatial data to make a valid statistical comparison between the two sites, however it is important to note, as this may be a cultural trend specific to Apishapa phase sites. Indeed, a spatial patterning of architectural features, where there is a central cluster of house bases, will often have one or more single room features positioned on the periphery of the site, up to 60 meters away. This spatial patterning is seen in 5LA977, 5LA289, and 5LA847 at sites located in the southern portion of the ARB (Campbell 1969).

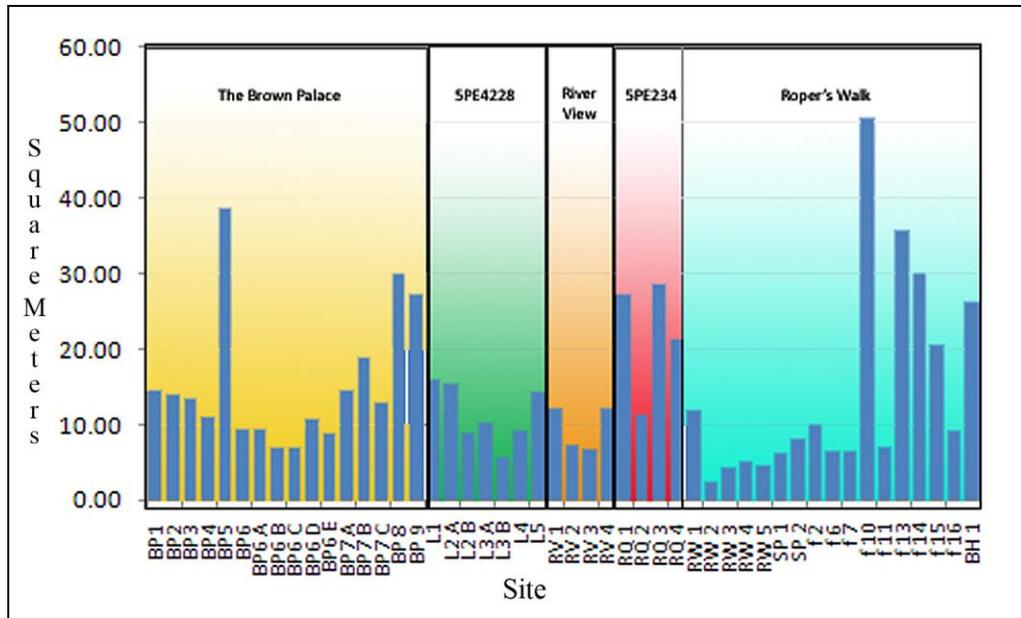


Figure 89. Distribution of floor size by site

Roper's Walk appears to have been inhabited by multiple occupations as evidenced by the projectile point chronology, and the architectural patterning may reflect a haphazard accretional growth rather than a more systematic construction pattern. Because of the limited number of artifacts observed, the Brown Palace appears to have been occupied by a more temporally discrete group, so the architectural patterning may be a closer reflection of one distinct cultural preference, not accretional growth, which warrants further investigation and comparison with other sites in the greater ARB.

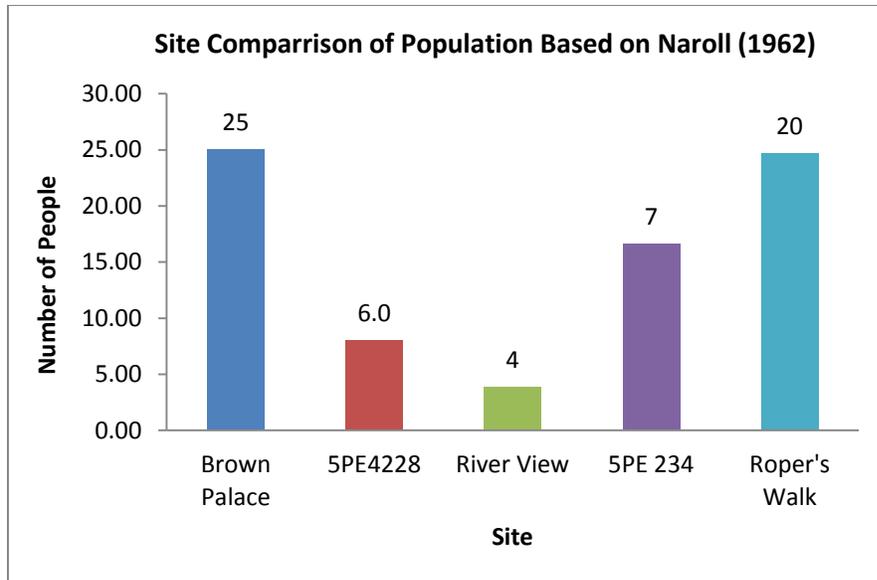


Figure 90. Potential occupational density based on Narrol's formula (1969)  
 Population = floor area x .01

### Depth of Features

On both the north and south facing features of the canyon rim, there is a similar margin of exposed bedrock, but in general, there is less exposed bedrock on the south side of the canyon than on the north rim. This differential depositional depth may be the result of windward and leeward forces. The differing depths of soil measured as fill within the architectural features on both the north and south-facing cliffs seems to substantiate this observation. In general this area exposed along the canyon rim within the 5 to 25 meter sediment reduction zone, seems to be the preferred location for many of the architectural features that have been recorded along the Saint Charles River. These depths vary between 12 cm and 163 cm of deposition within all the architectural features along the Saint Charles River (Figure 91). Importantly, on the south rim, architectural features tend to have more sediment, possibly due to windborne agents dropping sediments on the leeward side before transitioning to the open canyon. The features found along the north edges of the canyon rim exhibit less deposition due to the scouring action of the wind

blowing out of the canyon towards these features. Without stronger temporal control through absolute dating of the features on both sides of the canyon, implications of differential sedimentary depths cannot be resolved. The difference in deposition may instead be seen as the difference in age (i.e. the older the feature, the deeper it is buried).

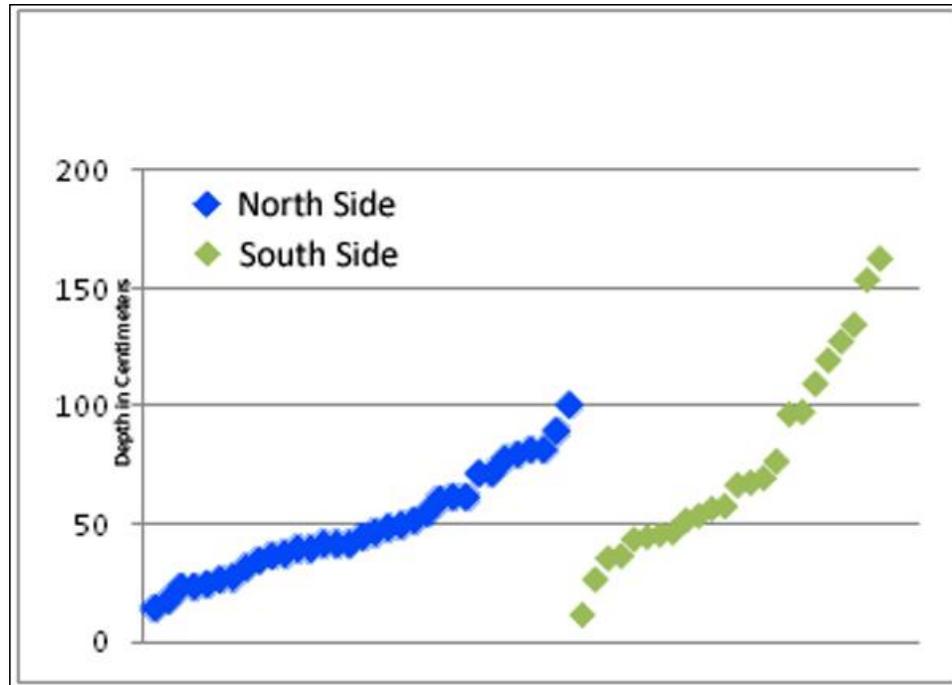


Figure 91. Differential deposition of aeolian material in archaeological sites along the north and south rims of the Saint Charles River Canyon.

### Summary of Architectural Features

The variability in the architectural features along the SCR as seen through multiple lines of inquiry has produced some interesting trends in settlement patterns. The first being no big surprise, proximity to water is an important factor to consider when looking at Apishapa architectural features along the SCR. Sites are found between 91 meters and 691 meters from the river with a mean distance of 317.3 meters (Figure 92). Of these sites, 72% occur less than 300 meters from the SCR (Figure 92) with only 2 sites (SPE234 and Roper's Walk), being located further than 300 meters from the SCR.

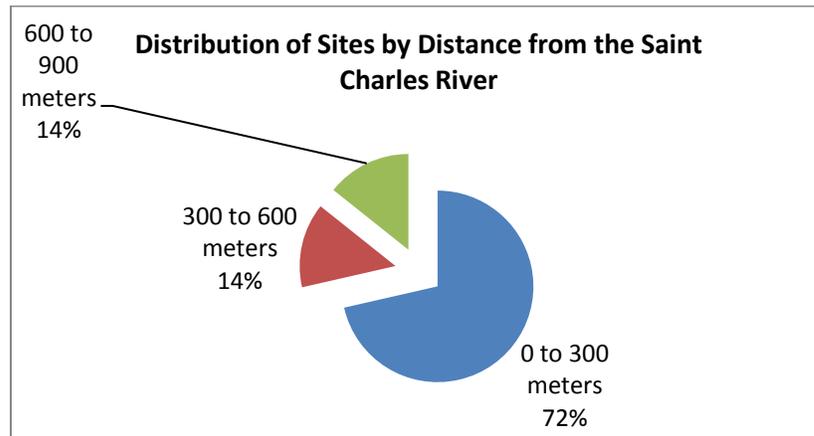


Figure 92. The majority of architectural sites recorded along the SCR occur less than 300 meters from the River

The second trend observed was the proximity of architectural features to river access points. 71% of the architectural sites occurred less than 200 meters from river access points (Figure 93). These data indicate that in general, architectural sites are located closer to river access points than they are to the river.

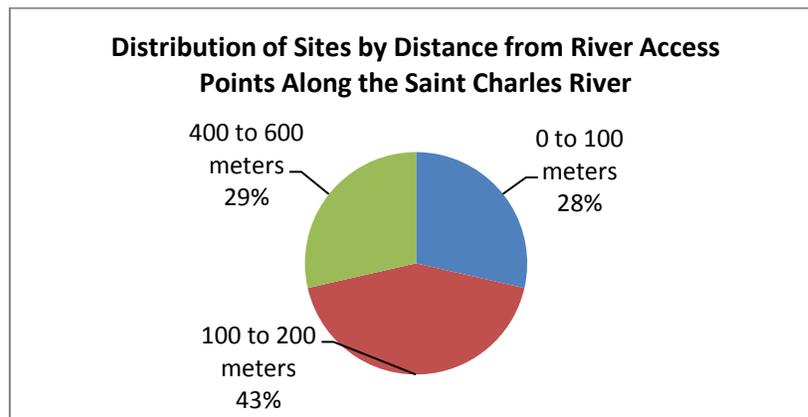


Figure 93. The majority of architectural sites located along the SCR are located less than 200 meters from access points to the river.

Through GIS analysis based on slope considerations, as well as the data collected regarding proximity of archaeological sites to water and river access points, there appears to be

significant relationship. Using a slope value of 27 degrees as the defining cut off point for hands free travel to and from the river, 16 access points to the SCR were identified. Of these 16 access points, 50% have architectural features, while the remaining sites are comprised of lithic scatters. Importantly, 100% of these access points have some evidence of prehistoric use.

The architectural variability between and within each site is considerable, and without the precise temporal placement of each individual architectural feature, it is difficult to analyze any sort of site structure or patterning. That being said, there are a few coincidental features observed when looking at floor size and site structure. Roper's Walk, 5PE4228, and the Brown Palace site have areas that appear to be central habitation/work areas with other architectural features being placed opportunistically as the physical setting allows. In general, sites along the SCR exhibit a pattern where the smaller the site, the smaller the difference between room sizes. The larger the site, the more likely there will be some discernable differentiation in room and habitation size. Although it is difficult to prove, this patterning may hint at some level of a hierarchy in social status. There also appears to be a pattern of site arrangement that includes the placement of single or two room features within 60 meters of the central multi-room architectural clusters.

## **Chapter Seven**

### **Chronology of Archaeological Sites along the Saint Charles River**

To answer the second research question regarding the chronology of archaeological sites along the SCR, the following data will be presented in the order of absolute dates to relative dates which are inferred by regional comparisons. In total, five radiocarbon dates were obtained during the SCRCP (Table 9), these data show occupation dates of two rock shelters, and the use of Feature 6 located at Roper's Walk.

#### **Radiocarbon Dates**

##### **Radiocarbon dates from R276**

R276 contains numerous bedrock metates and importantly is associated with a habitation area where corn and elk bone were collected. The elk bone was dated through the alkali extraction of bone collagen and yielded a date of 1170 +/- 40 BP (Beta 247420) or calibrated dates of A.D. 770 to AD 980 (Cal-pal). These dates coincide with the Developmental period as defined by Zier and Kalasz (1999) and coupled with the dates of the maize cobs (see below) indicate a long-term usage of the rock shelter. This clearly demonstrates that the rock shelter has been a known commodity on the landscape, and has been exploited repeatedly through time. The depth of the bedrock metates/mortars (Chapter 5) indicates a long-term and intensive use of the shelter as a processing area.

Four maize cobs were collected from R276, two of which were radiocarbon dated. The first cob yielded of 90+40 pMC (Beta - 248358) or a Calendric Age cal A.D. 1713 -1913 Cal-Pal (Table 9). The second cob yielded a date of 102.0 +/- 0.4 pMC (Beta - 247419) or A.D. 1708 - 1886 Cal-Pal. The highest probability for the radiocarbon dates from the two cobs, indicate a

modern date of less than 105 years, but the 2 sigma calibration curves for the maize yield dates between A.D. 1708 and A.D.1886. The modern date for the maize is perplexing in that historically, there has not been any intensive corn cultivation anywhere near the site. There is however modern graffiti dating to 1917 at the site which may indicate that it was the possible byproduct of modern picnickers, who came to enjoy a day at the rock shelter. The fact that it is maize de ocho, with eight rows of kernels (Figure 94), hints at an earlier origin which first shows up in the Southwest around A.D. 700 (Upham et al 1987:41-419). This date of A.D. 700 for the introduction of maize de ocho, coincidentally correspond with the radiocarbon dates of the elk bone fragment from R276 mentioned above. There are also historic accounts of Native Americans still living in the canyon (Norm Simonson, personal communication 2002) that may have been actively engaged horticulture up until 1895.

The bed rock metates coupled with the presence of the maize cobs may lead one to assume that maize was the plant material being intensively processed at this site, but the majority of the present vegetation within the canyon is scrub oak. This raises the possibility that acorns or other materials were being intensively processed, not maize. Future research should include pollen washes of the bedrock mortars and the various manos found in the immediate area in order to determine the exact plant materials being exploited.



Figure 94. Maize de Ocho and an unidentified variety of corn found at R276

### **The Red Bison Rock shelter**

Within this rock shelter a small, spirally fractured piece of calcined antelope bone (L.C. Todd, personal communication 2009) was found in a large packrat midden at the back of the shelter. This culturally modified piece of bone yielded a radiocarbon date of  $520 \pm 40$  (Beta 248357) or a calibrated date of A.D. 1320 to 1350. There were several other bone fragments scattered around the back of the shelter and in other pack rat middens. The floor of this rock shelter also contains a significant amount of burnt material but no excavation was undertaken nor was any other material collected for analysis.

### **Radiocarbon Dates from a Paired Hearth Feature at Roper's Walk**

Radiocarbon dating, macrofloral analysis, and Fourier Transform Infrared Spectroscopy (FTIR) were conducted on soil samples removed from both sides of the paired-hearth feature found at Roper's Walk. The fill material from each feature was removed from a 20 cm x 40 cm section was excavated to bedrock within each hearth. The western hearth yielded a radiocarbon

age  $1185 \pm 15$  B.P. (Pri -08-77-2) or a calibrated date of A.D. 1180-1060 which places it firmly within the Developmental Period, but on the early side of Apishapa phase sites.

Table 9  
Summary Table of the radiocarbon dates obtained during the Saint Charles River Project

Location of Sample Data	Type of Sample	Lab #	Measured Radio Carbon Age	<sup>13</sup> C to <sup>12</sup> C Ratio	Conventional Age	Calendric Age A.D. Calibrated
Rock Shelter R276	Corn	Beta - 248358	102 +/- .5 pMC	-9.8	90 +/- 40	<b>1708 - 1886</b>
Rock Shelter R276	Corn	Beta - 247419	105 +/- .4 pMC	-12	102.3 +/- .4 pMC	<b>1710 - 1884</b>
Red Bison Rock Shelter	Calcined Antelope Bone	Beta - 248357	490 +/- 40	-23.4	520 +/- 40	<b>1406 - 1436</b>
Rock Shelter R276	Elk Bone	Beta - 247420	1080 +/- 40	-19.5	1170 +/- 40	<b>905 - 991</b>
Paired Hearths Roper's Walk	Charcoal	Pri -08-77-2			1185 +/- 15	<b>1180 - 1060</b>

### Obsidian Hydration Dating

Friedman and Smith (1960) first developed obsidian hydration dating techniques in 1960 in an attempt to develop a cost effective method for determining absolute dates for archaeological sites based on the hydration bands found within obsidian artifacts. The method is based on the simple premise that as the outer surface of an obsidian artifact is exposed to moisture, it will absorb water at a predictable rate and thereby produce a measurable hydration band due to chemical weathering. Any new surface exposed through retouch, breakage, or reworking will reset the "clock", as this fresh surface will then begin weathering from the time of the new exposure. During analysis, the hydration band is exposed by removing a thin section of material perpendicular to the widest portion of the artifact, and is then measured, with the aid of an electron microscope. The initial premise of Friedman and Smith (1960), that all obsidian types would absorb water at a consistent rate has been shown to be inaccurate by Aiello (1969) and

again disproved by Kimberlin (1971). Later research (Freter 1993, Stevenson et al 2000) has also shown that beyond the geochemical composition, differential composition within the same flow as well as differential exposure to the elements can have a significant impact on the rate with which a given artifact will absorb water. Having noted the concerns with the accuracy of hydration dating due to differential exposure of an artifact to the elements, as well as the geochemical source of the material, there were some positive results obtained from the distal portion of a bifacially worked piece of obsidian found at the Brown Palace site on the 3R-Ranch.

This artifact was sourced to Malad, Idaho and the microscopic analysis of the cross section conducted at Origer's Obsidian Laboratory, resulted in the exposure of two distinct hydration bands. The thinnest band suggests a late date "perhaps on the order of 200 to 400 years before present ... and up to 1500 years before present for the larger band" (Origer 2008). The fact that there are two different hydration bands suggests to Origer that the tool was reworked or sustained accidental damage.

The earliest date for the hydration band placed it firmly in the Developmental Period, and the later date corresponds with dates associated with end of the Diversification period and the proto-historic rock art seen the rock art panel near R276. The importance of two hydration bands in one artifact lies in the idea that it indicates collection and reuse of this specific piece in prehistory. This in turn gives us a rare glimpse of two temporally distinct cultural events within the same artifact. Having been sourced to Malad, Idaho, it may also be another strong indicator that lithic materials in the SCR locality are being collected and recycled due to a lack of availability of local resources, rather than curation per se (Odell 1996:51-80).

## **Projectile Point Chronology**

The chronology of the Beulah District as seen through a change in projectile point typology, demonstrates that prehistoric people have utilized the area since the Paleoindian stage. The earliest date in the Beulah District is Folsom (10,250 B.P. to 10,950 B.P.), as represented by the fractured basal section of a fluted Alibates projectile point described in the Outhier site above. The overall trend in projectile point morphology is one from lancelet to corner and side notched, dart-sized points, progressing to very small projectile points commensurate with the introduction of the bow and arrow in the greater ARB around 1,680 B.P. (Zier and Kalasz 1999:142). These smaller points represent the late Prehistoric Period, (A.D. 100 to A.D. 1725), and are most representative of the Beulah district artifact inventory. This may indicate that the area was occupied by a larger population base in more recent history rather than a long standing indigenous population. A small corner notched projectile point base was recovered from the fill in the paired hearth feature found at Roper's Walk. The material was radiocarbon dated to  $1185 \pm 15$  (Pri -08-77-2), demonstrating that corner notched projectile points, and bow and arrow technology were in use along the SCR at that time.

## **Summary and Discussion of Projectile Points**

The morphological characteristics seen within the projectile points found along the SCR represent a change through time that follows a general trend from large dart sized points, to very small corner and side-notched projectile points (Figure 95). This trend is also seen in the greater ARB, specifically at Metate Cave (Campbell 1969), and Trinchera Cave (Wood 1974) where there is a clearly documented sequence of dates and projectile points associated with them. All of the projectile points were found in association with architectural features.

Unfortunately the complete tool kit of prehistoric people inhabiting the physiographic region around the SCR during a given period may never be known due to preservation issues, visibility, and especially due to collection and curation by various people in the past and present.

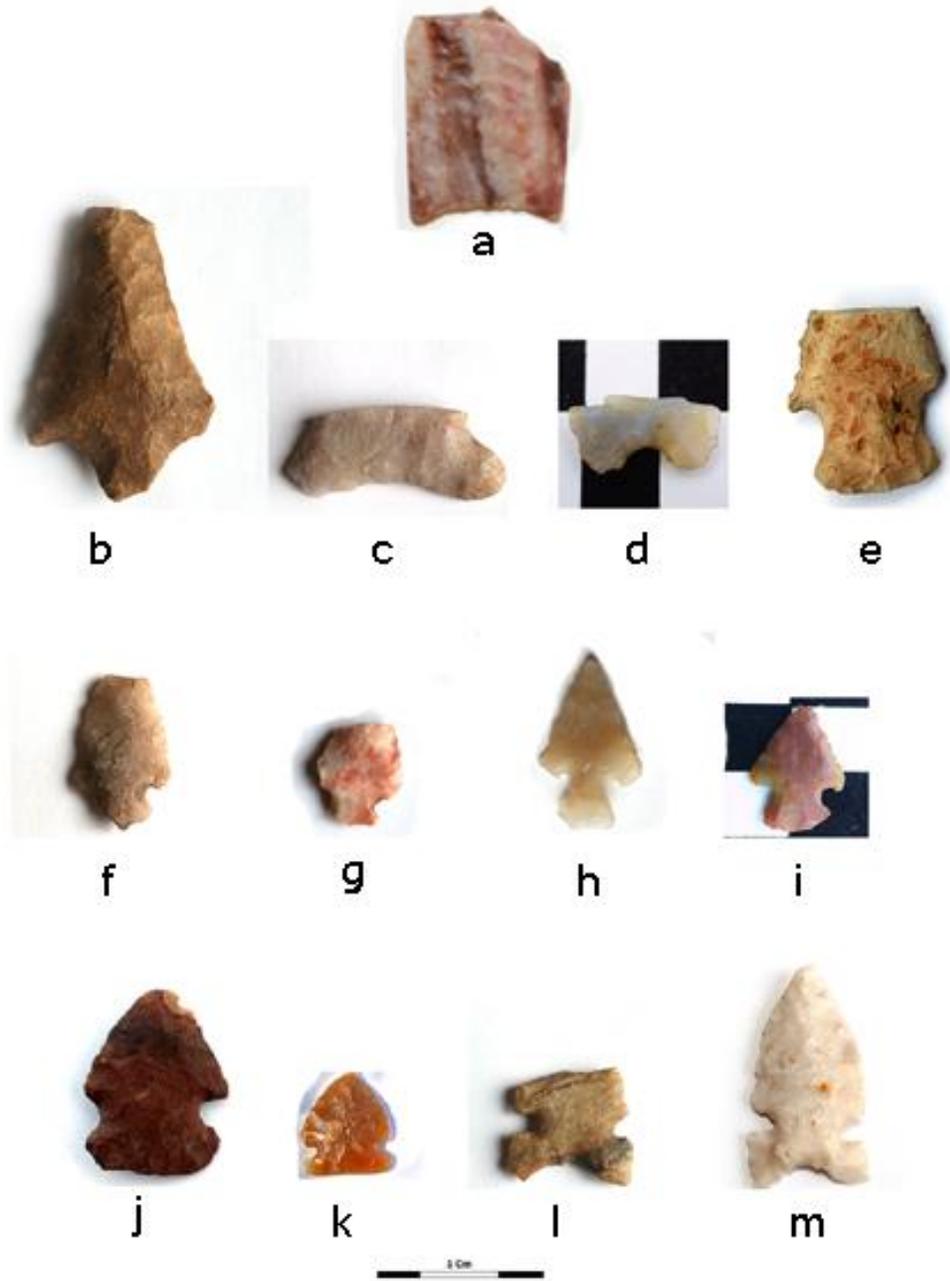


Figure 95. Projectile points and stemmed bifaces from the SCR. a) Outhier site, Folsom Point b) Roper's Walk, dart point 5,000 B.P. – 3,000 B.P., c) Roper's Walk, basal section of dart point 4,000 B.P – 3,000 B.P., d) Roper's Walk, basal section of stemmed dart point , e) Roper's Walk Basal section of stemmed dart point, f) f-h Roper's Walk corner notched arrow points similar to Scallorn Plain, 500-900 A.D., i) Roper's Walk, Corner notched, j and k, Hightop Site, Small side notched points similar to Reed, 900-1100 A.D., l and m, Roper's Walk, side notched arrow point similar to Washita, 1000-1700 A.D.

## Discussion of Dates

Radiocarbon dates from the maize cobs present several questions. Although it is not an ancient race of maize (Upham et al 1987:413), maize de ocho has been “recovered at the Medina Site and Pyeatte Site near the Great Plains and has been dated to A.D. 1140+125 and A.D. 1135+85”(Upham et al 1987:417). This begs the question why is there maize of this variety in this rock shelter when there has been no maize cultivation historically associated with the 3-R ranch? One possible explanation can be surmised from the 1917 date seen in the modern graffiti at the site. Perhaps this is the remnants of a picnic, where visitors discarded their lunch after enjoying the rock shelter. Another possibility may be that there was a small garden plot down by the river as evidenced by a modern plow blade (Figure 96), and packrats transported the corncobs over 235 meters to back of the rock shelter. This is highly unlikely because the estimated maximum foraging radius of packrats is “at most, 100 meters...” (Van Devender and Everett 1977: 339).



Figure 96. Front and back side views of plow blade found near R276

Another possibility lies in the potential for a small Apache farming community that was utilizing the numerous bedrock metates around the rock shelter for processing corn. This would correspond more favorably to the calendric age of the 2 sigma calibration dates for the maize cobs, or 1797+87. This date is also appropriate for the Plains biographical style rock art found at the rock art panel near R276 where there are six clearly identifiable horses depicted in charcoal. Importantly, of these six horse figures, three of them are clearly carrying riders indicating the earliest possible European contact date of 1706, with expedition of Juan De Ulibarri who traveled over Cuchara Pass, along the Wet Mountains, and up to the Arkansas River (Carson 1988:66-67).



Figure 97. Historical dates above bedrock metates at R276.



Figure 98. Plains biographical style rock art with a possible rifle-bearing rider at rock art panel near R276.

As posited above, there is indeed an expression of almost every period from the Paleoindian stage up until the Proto-historic period within the Beulah District. These dates are reflected both in absolute terms, as seen with the radiocarbon dates, and are fairly well represented in relative terms, as seen through the projectile point chronologies and rock art styles

outlined above. Any positive conclusions about continuous land use by “indigenous” populations are severely limited by several very large gaps in both radiocarbon dates and relative dating. For example, the span of time between the Mallory point at 4,000 B.P to 3,000 B.P and the Scallorn style projectile points at A.D.500. There is still a significant amount of work to be done in the future to refine the timing, intensity, and extent of land use by prehistoric people along the SCR.

## **Chapter Eight**

### **Analysis of Architecture, Lithic Material and Artifacts in the Beulah District**

#### **Introduction**

Many researchers have perpetuated the mantra that architectural sites built on cliffs are defensive in nature (Renaud 1933, Campbell 1969, Gunnerson 1989:90, Owens 2007), but the specific details of the arguments regarding the idea that Apishapa architectural sites are built in defensive or defensible locations is unclear because there has been no clearly identified hostile group or identification of pathologies associated with skeletal remains which would be indicative of lethal trauma resulting from armed conflict. To the current author, it seems that just because the sites are built on cliffs, it doesn't mean anything other than that may have been a cultural preference, proximity to river access without interfering with game travel to and from the river, or having an advantageous view for hunting, an activity clearly represented in the faunal remains presented above.

It is argued here that by looking at architectural proximity to river access, distance from water, proximity to arable land, coupled with slope considerations may be a more useful line of inquiry than trying to explain some sort of defensive poisoning against an undefined enemy for an undefined objective and will be discussed below.

#### **Architecture along the Saint Charles River**

According to Binford (1990:123), the shape of the architectural features such as the ones recorded at Roper's Walk, 5PE4228, 5PE232, 5PE234, the High Top site, and the Brown Palace site, River View all indicate that the architects are representative of mobile or semi-nomadic groups. In general, Binford (1990) argues that fully nomadic people tend to construct their houses

with a circular or semicircular floor plan, and that the floor plan will change towards rectangular shapes as the level of sedentism increases (Binford 1990:123-132).

Cached metates and manos found during the SCRCP may be indicative of this risk reducing behavior, and even more importantly, an ideology based on the anticipation of future use of the Beulah District which is consistent with the energy invested in the construction of the architectural features. This caching behavior may also hint at some level of political or social stability within the region. Intuitively speaking, it does not make sense to build houses and cache tools in an area that is in turmoil and may not be accessible in the future due to conflict or territoriality issues.

Occupation and use of the landscape by prehistoric people occurs regionally and locally at different scales (Binford 1979) and the regional importance of the sites in the Beulah District is still unclear. It is argued here that all the features along the SCR represent use that should be studied as a cultural landscape. The palimpsests of use over time, reflected in the material remains create differing vertical and horizontal distributions of lithic and faunal materials. They reflect not only the intensity of use, but are influenced by the duration of use. As evidenced by the projectile point chronology, Roper's Walk may have been utilized over a longer time frame than other sites along the SCR and may therefore be expected to show a greater complexity in artifacts and spatial patterning of architectural features.

The sites along the SCR appear to have been occupied only during the warmer parts of the year as evidenced by the hearths that were external to all of the stone circles recorded or observed during the SCRCP. If this is indeed the case, then it begs the question of where their winter homes are located. Possibly sites such as Cramer and Snake Blakeslee, with their substantial architecture and significantly high number faunal remains (Gunnerson 1989), may in part account for a centralized gathering place within the ARB, possibly during the winter months. These questions about seasonality of use cannot be fully answered in this thesis, but should be

included in future research, especially if the argument of Apishapa being the descendants of an indigenous population is a valid line of inquiry.

### **Synthesis of Lithic Materials Found Along the Saint Charles River**

Based on personal observation, in Pueblo County and along the Front Range in general, chert is found in small cobbles in the riverbeds, and in conglomeratic expressions throughout the surrounding areas. When found, it is small and consequently would be very difficult to produce larger tools. For the purposes of discussion, the complexity of the natural environment has been greatly simplified. Chalcedony, quartz, quartzite, argillite, and basalt are designated local materials, and obsidian, petrified wood, chert, and Alibates are assigned the value of non-local material. While the validity of the positive identification of Alibates in the lithic analysis during the SCRIP is tenuous, it is included in the exotic material category. In the authors opinion, the identification of Alibates or a chert look-alike, still has cryptocrystalline properties would place it in a tool-stone type that is not expected to be found in the predominantly sedimentary formations of Dakota Sandstone and the other expressions of siltstones, mudstones, and metamorphosed shale found around the SCR locality.

Site catchment analysis and energetic efficiency models are in many ways well suited to describing the human behavior that introduced artifacts into the system along the SCR. The energy equation in relation to resource acquisition, reduction, and tool manufacture is highly correlated with the material type selected for tools, the availability of lithic material (quarry sources), and the mobility of the group (Kelly 1988, Andrefsky 1994, Odell 200). Based on ethnographic work with the Nunamuit, Binford (1979) has presented several models for mobility and land use. He has argued that the interplay between logistical and residential mobility will leave different physical and material expressions on the landscape. The artifacts found along the

SCR are the result of either a single occupation, or the accumulation of debris over time from multiple occupations. Either way, it is argued here that the tool kit encountered at all architectural sites with external hearths, should represent a seasonal expression of hunting, or plant processing, and is not expected to be complicated by the presence of other seasonal gear (Binford 1980).

It is further argued here that the high degree of non-local lithic material found along the SCR points towards semi nomadic groups coming to the SCR locality from some other place, possibly during the onset of the warmer months. The seasonal occupation of the Beulah District is perhaps part of their logistical mobility patterns of land use within the greater ARB, and may be indicative of a general pattern of dispersal throughout the ARB during the warmer months of the year. This model may apply much the way Benedict (1990) has proposed the Grand Circuit model of transhumanance between the Foothills and North Park and South Park, with some remnant groups staying along the Foothills instead of continuing on to the high country during the summer. If the chert source for the majority of the material recovered along the SCR and in Pueblo County turns out to be from South Park, it would warrant further investigation of the possibility that this Rotary Model of land-use played some part in the introduction of chert into the SCR trade system.

These groups, being relatively mobile across the landscape, would tend to have very reliable and maintainable toolkits that are predicted to be of high quality, cryptocrystalline material (Bleed 1986). The cost/benefit relationship presented by Bleed (1986) explores the relationship between technological organization and efficiency by the adoption of reliable and maintainable systems. Reliable systems are defined as ones that are sturdy and at times “over designed” and function as a risk reducing strategy in an unknown landscape where raw material availability is an unknown quantity. Binford (1979) also notes that resources are collected as they are encountered, and are part of an embedded strategy that minimizes risk by procurement and caching behaviors. The cryptocrystalline material found as either debitage or as finished tool

forms indicates procurement outside of the SCR locality which infers either collection or trade as predicted by Binford (1979). The cached metate by Roper's Walk also has important implications about risk reducing behaviors.

Based on the information presented by Binford (1979) and Bleed (1986) in the arguments above, the first settlement by prehistoric people in Beulah District is assumed to have been done with little knowledge of the availability of local resources. As such, this model predicts that the tool forms found from discard or loss should be maintainable and constructed from high quality materials, which in turn predicts that the size class of flakes in the form of debitage should be small. This is indeed the case with the debitage recorded along the SCR. The relative high energy costs associated with the production of a reliable tools made from high quality cryptocrystalline material are offset by the benefits realized over a long use-life and dependability of the system employed. The material types of the tools recorded during the SCR may help to illuminate the degree of sedentism (or lack thereof) that is practiced along the SCR, and more importantly, it has implications about mobility based on the presence of exotic materials throughout Pueblo County and the greater ARB.

Acknowledging that the problems that come from making assumptions about local versus non-local materials can only be exacerbated by the conclusions made about technological organization based on raw material availability. Issues such as material quality, transport of lithic material, and the location of lithic quarry sources becomes essential. Simply put, when the source has not been clearly identified, then the vector, and associated costs of transport cannot be accurately quantified (Brantingham 2006). With this in mind, assumptions and conclusions based on an incomplete data set presented below can only be speculated upon as they are here. As mentioned before, it is important to note that these sites have been heavily collected over the past 130 years, and the resulting artifact inventory is markedly diminished from an undisturbed site. For example, three local collectors were contacted during the SCR and the author viewed their

collections. One of the collectors, had a coffee can full of debitage that he had collected on the 3R ranch over his lifetime, a testament to the intensity of collection in some areas and the consequent reduction of the lithic inventory in general.

Fortunately, there are some robust models about procurement and exchange from which to draw some meaningful conclusions about the material remains along the SCR. Distance decay models based on the frequency of a specific lithic material recovered in archaeological sites, has demonstrated that lithic materials diminish in frequency the further the site is from the source (Kelly 1988, Andrefsky 1994, Odell 2000). In general, Odell (2000) argues that the closer a given site is to a lithic source, the less formal the tool type will be. He further argues that lithic material that is exotic in nature, is usually found as a finished tool type, or is represented by late stage reduction debitage. This late stage reduction or retouch is represented in the distribution of lithic material recorded along the SCR (Figure 99).

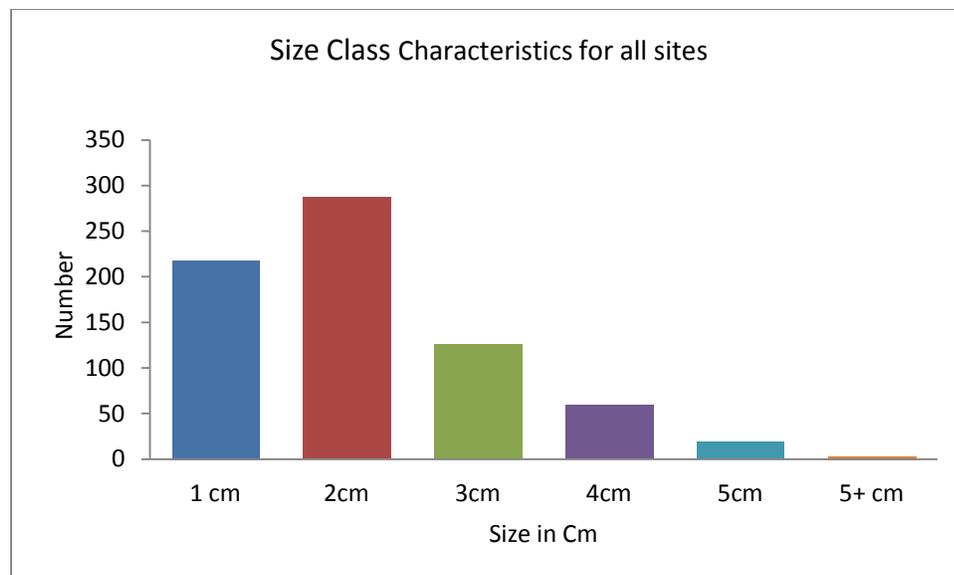


Figure 99. The size class distribution from all sites recorded along the SCR indicate that there is a high percentage of the one to two cm size class indicating maintenance vs. primary reduction and manufacture.

Depending on the model one chooses to employ when talking about the mobility of prehistoric people, the material types and debitage size recorded at almost every site along the SCR appears to represent tools that have entered the system as completed objects, and very little primary manufacture has taken place. The majority of the tools found along the SCR are made from fine-grained cryptocrystalline materials that reflect both the reliability and maintainable qualities outlined above. Importantly, stone tools observed during the SCRP have been extensively reworked, even the lower quality tool-stone such as quartzite exhibit intensive maintenance. A prime example of the intensity of reuse and maintenance is evidenced by the small size, and shape of the projectile points found near the Hightop site (Figure 95, j and k). There is an extreme level of maintenance, sharpening, and reuse, which indicates that the prehistoric inhabitants of the SCR locality may have been a significant distance from a good lithic source.

Efficiency, dependability, and maximizing cutting edge while minimizing weight are argued to be key concerns for logistically mobile groups (Kelly 1988). According to Binford (1979:263), the Nunamuit never went into the field with personal gear that was in need of repair, the discard of broken or sub-par personal gear will be generally done at residential sites.

The paired hearth thermal feature at Roper's Walk contained broken projectile points and is surrounded by a lithic scatter that is indicative of retouch and other tool maintenance. Hearth fill material in Feature 18 at Roper's Walk also contained small debitage within the matrix supporting the argument of intensive retooling occurring throughout the site. The relative abundance of exotic cryptocrystalline materials (Figure 100) coupled with a small debitage class indicates levels of mobility or trade, which in many ways contradicts what one would expect if one were to look at the residential architecture as an indication of sedentism. It is argued here that the signature of exotic material utilized along the SCR is significant, and may be a strong indicator of behavioral responses to external factors that may include their physical location on

the landscape, surrounding populations, territorial constraints, and the emerging access to developing trade networks along the Front Range of Colorado.

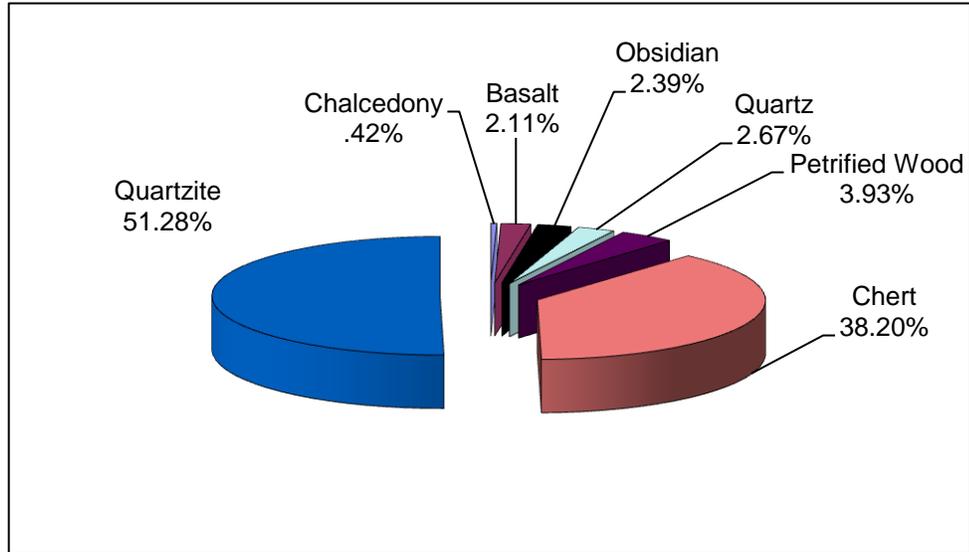


Figure 100. Raw material distribution comparing all sites recorded along the SCR

### **Implications of Exotic Raw Material**

Regionally, there is seemingly an explosion in the frequency of high quality raw materials in archaeological sites after A.D. 1200 (Baugh and Nelson 1987, Brosowske 2005), which gives credence to the idea that there was a marked increase in the regional population or at least an increase in the interaction between groups. Most population growth creates the need to intensify the exploitation of local resources to meet the resource needs of the group. These changes, due to increased local competition for resources, coupled with the geographic restrictions due to political boundaries, may have given rise to the process and need to develop trade networks to resolve issues pertaining to local shortages of resources.

The present author argues that the development of a trade network can be understood by looking at lithic material from a behavioral ecology perspective. It would be very costly for

direct procurement of exotic materials in all cases, except where a quarry would fall within the seasonal rounds of hunter-gatherers or is within the immediate proximity of the SCR. The energy expended on long distance forays, coupled with the logistical considerations of moving entire groups across the landscape to collect high quality materials as a primary objective would be significant, and quite possibly outweigh the returns. The mean size class of debitage for exotic materials indicates retouch and re-sharpening of high quality material that was brought into the Beulah District from an external source. The small amounts of cortical obsidian coupled with the majority of small, late-stage reduction and finishing flakes of this material may be indicative of trade rather than primary acquisition, especially since obsidian occurs in a lower frequency than other lithic materials recorded.

From an energetic efficiency perspective, development of trade networks is one way to mitigate the high energy costs associated with direct procurement, and is predicated by the presence of enough people on the landscape to make the system viable. The greatest benefit of any exchange systems is that a person or group does not have to actually go to the source to enjoy the benefits of those resources. If the settlement area were a remote entity on the landscape, then this would restrict their access to trade networks and the subsequent infusion of exotic material into the system. In this case, the people who lived in this remote region would have to solve resource procurement issues themselves.

Family size may also be a significant factor to consider when looking at trade and exchange aspects of exotic material. For example, if there were a family group of up to 10 people occupying any given architectural cluster along the SCR, then one or two people leaving the family to collect exotic material at the source would result in a net loss of 10 or 20% in labor and other potential material contributions to the group. This drop in available labor and resource acquisition would in turn create a situation where the group remaining behind would have to collectively work 10 to 20% harder just to keep production levels the same. The costs

of having one or two people leave the group at any of the sites recorded during the SCRCP may have exceeded the returns realized in the direct procurement of high quality material.

Assuming that chert, obsidian, chalcedony, Alibates, and petrified wood are all exotic materials to the SCR basin, what can be said about debitage and a very small sample of projectile points? Debitage size classes from the SCRCP indicate retouch and maintenance rather than the earlier stages of biface reduction. The quality of the exotic materials chosen for tools indicates reliable and maintainable systems, and the high percentage of non-local material may imply a lack of familiarity or availability of local sources of quartzite. At the University of Denver there are numerous artifacts cataloged from Pueblo County. Analyses of the distribution of these lithic materials from 5,748 of these artifacts show that 76% of the lithic material is chert, with only 18% being represented by quartzite (Figure 101). According to the models of mobility presented above, these data may have significant about implications prehistoric trade, exchange, and land-use on a regional scale within the greater ARB and beyond.

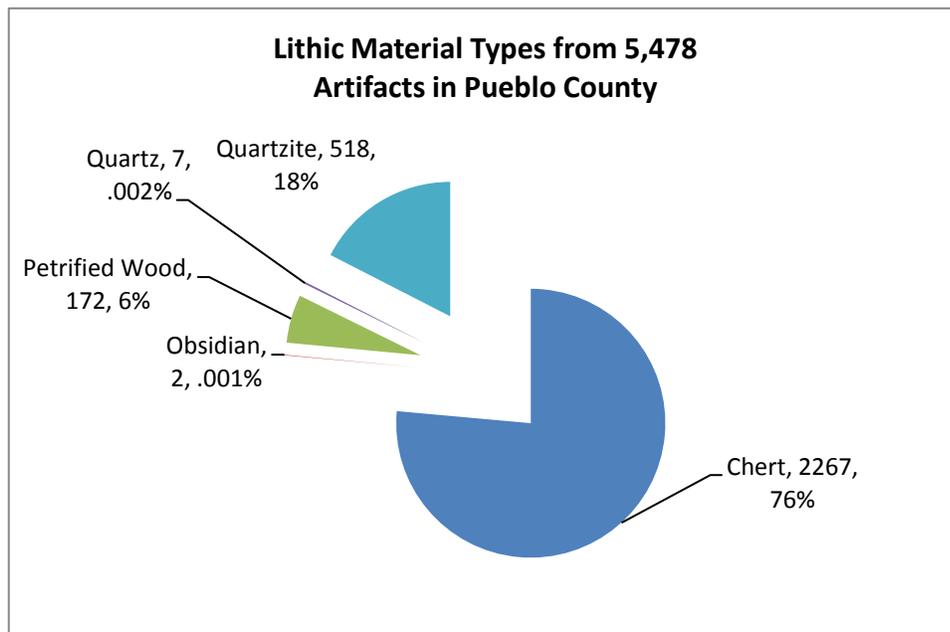


Figure 101. Distribution of Material types from 5,478 recorded artifacts in Pueblo County, Colorado, separated by identified lithic material (Data source University of Denver).

## Summary

There are numerous architectural features along the SCR. All of those features recorded had thermal features which are external to these habitation sites. These features indicate a warm weather/seasonal use of the SCR locality. When coupled with the lithic analysis above, there begins to emerge a picture of a highly mobile group of hunter-gatherers entering the Beulah District during the warm season in order to exploit local resources. A model that is in many ways contrary to the prevalent view that the energy invested in architecture means you are becoming more sedentary. In order to better explain the implications of these semi sedentary behaviors and the relative high frequency of exotic materials observed throughout Pueblo County, it may warrant the development of a land-use and mobility model in the ARB that mimics Benedict's transhumanance model(1990) along the Front Range to the north.

## **Chapter Nine**

### **Special Studies of Obsidian, Catlinite, Pollen, and Fourier Transform Infrared Spectroscopy**

#### **Introduction to Obsidian Studies and the Saint Charles River Project**

The geochemical sourcing of obsidian for archaeological purposes began in 1971 (Shackley 2005:3), and has proven to be a constant and reliable method for identifying the geographic origin of obsidian artifacts found within archeological contexts. The positive identification of an obsidian source is important, because knowing the source of a given material found within an archaeological site allows for a greater understanding of the connections that those people may have had with a much broader geographic area. This understanding allows for the formation models based on trade, exchange, or direct procurement, as well as cost/benefit analysis.

Obsidian is a naturally occurring igneous rock with microcrystalline properties (Kooyman 2000, Odell 2003, Andrefsky 2005), which makes it ideal for the reductive technology of prehistoric people making stone tools. Obsidian will fracture predictably, relative to the application of varying loads through either pressure flaking or by percussive reduction strategies (Andrefsky 2005:12-40). Because of the uniformity of the crystalline structure within relatively homogenous sources, obsidian fractures more reliably than its chert or quartzite counterparts and was valued by prehistoric people (Odell 2003:17). The value placed on this material can be fully realized by looking at the geographic distribution of obsidian relative to its source (Baugh and Nelson 1987, Vehik 1988, Kooyman 2000, Vehik 2002, Shackley 2005). Because obsidian generally forms in extrusive formations within a unique geochemical environment, the percentage of elemental concentrations can be utilized to identify the source of the formation through a variety of methods such as X-ray diffraction (XRD), or X-ray florescence spectrometry (XRF).

The source analysis methods utilized on the obsidian collected during the SCR were done by Dr Shackley on a Thermo/ARL *Quant'X* EDXRF spectrometer at the Berkeley Archaeological XRF lab at the University of California.

Analysis of data provided to the current author by the Colorado State Historical Society in 2007, shows that there are nine sites in Pueblo County that have obsidian associated with them, with a total of 11 pieces of obsidian (see Table 10). To date, the Beulah District has produced 24 pieces representing 72% of the obsidian geochemically sourced within Pueblo County.

### **Sources of Obsidian Collected Along the SCR**

Geochemically sourced obsidian from the Beulah District indicates two different vectors for trade, exchange, or direct procurement. Between Roper's Walk and the Brown Palace site the most frequent obsidian source is the Valles Caldera in northern New Mexico, however two pieces of obsidian collected in the SCR basin were determined to be from Malad, Idaho. The material from Malad is interesting because Malad obsidian is only found in 17 sites in Colorado (Kansas State Historical Society 2009) and those sites are located in the northeastern corner of the state.

The results of the XRDF analysis of the obsidian artifacts collected along the SCR show that seventy-five percent of the obsidian is from the Valles Caldera in northern New Mexico, specifically Cerro del Medio (Figure 102). There are however two pieces of obsidian (8%) that have been sourced to Malad Idaho, over 700 km north of the Beulah District. The remaining obsidian is present in almost equal amounts and comes from El Rechuelos at 9%, and Cerro Toledo Rhyolite at 8%. These data indicate a trade or procurement vector for the obsidian collected within the Beulah district and a strong connection with northern New Mexico, with a small pulse of a northern vector represented by the Malad, Idaho source. Obsidian from Malad, Idaho is seen in Western Oklahoma Washita phase sites dating to the same period (Vehik and

Baugh 1994:259) and may indicate a temporally discrete occurrence of trade networks connected to the north, instead of the relatively common exploitation of the New Mexico sources.

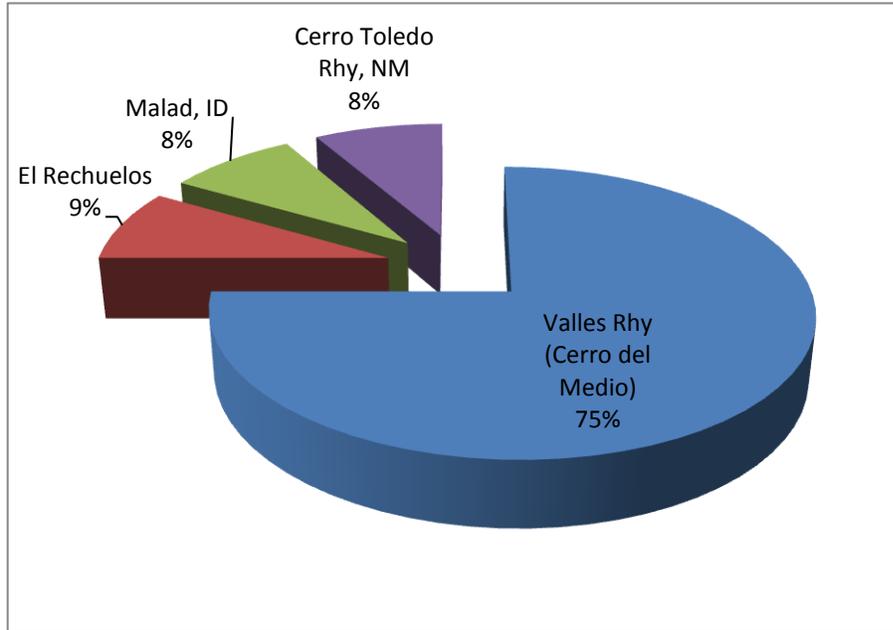


Figure 102. Percentage of source material for Roper's Walk and the Brown Palace combined

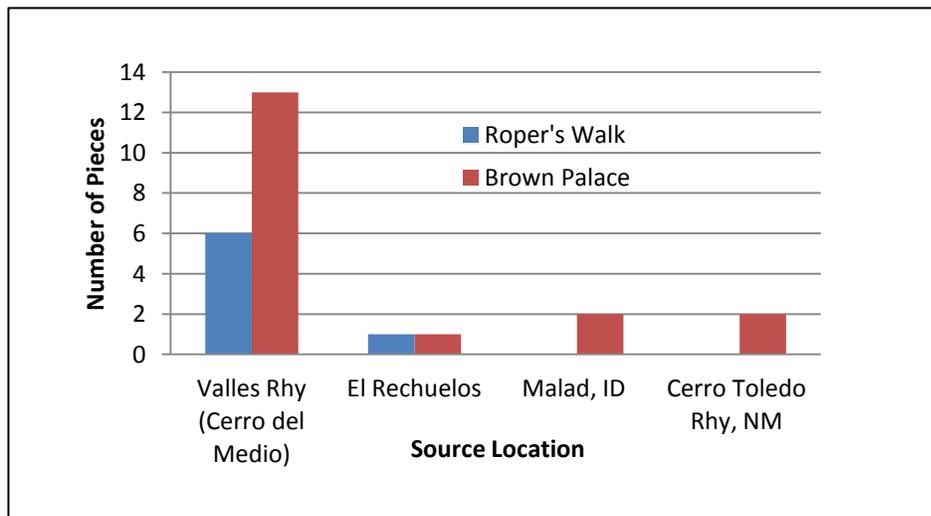


Figure 103. Comparison between obsidian source location for the Brown Palace and Roper's Walk

## Mountain Passes, Rivers, and Waterways as a Vector for Trade

The vast majority of obsidian recovered in archaeological contexts throughout Colorado and Kansas (University of Denver (2008), Kansas SHPO( 2008)) occurs as debitage or shatter, with bifaces, and modified flakes coming in second (Figure 104). The vector of transport for obsidian, out of New Mexico and into the ARB may be discerned through plotting the location of sites containing obsidian (Figure 105). If the river courses, mountain passes, and drainages are the vectors of trade for obsidian out of New Mexico, then travel appears to be over Medano Pass and south of La Veta Pass, not over La Veta pass as one would expect, as it is the path of least resistance between the San Luis Valley and the ARB.

Table 10  
Sites within Pueblo County that have obsidian

5PE.1938	1 flake
5PE.2086	3 Flakes
5PE.2089	1 flake
5PE.2093	1 flake
5PE.338	1 flake
5PE.3578	1 flake
5PE.4373	1 flake
5PE.671	1 blade
5PE.69	1 flake

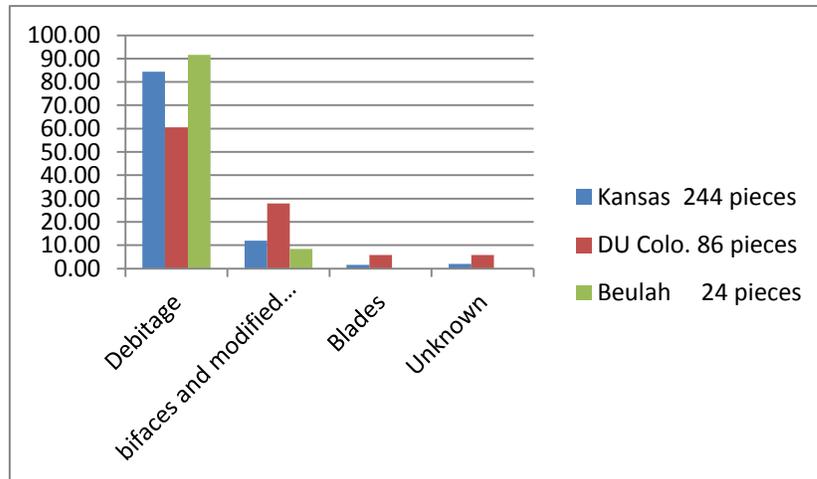


Figure 104. Comparison of the percentage of artifact forms for obsidian recovered in archaeological contexts from Denver University collections, Kansas SHPO, and Beulah.

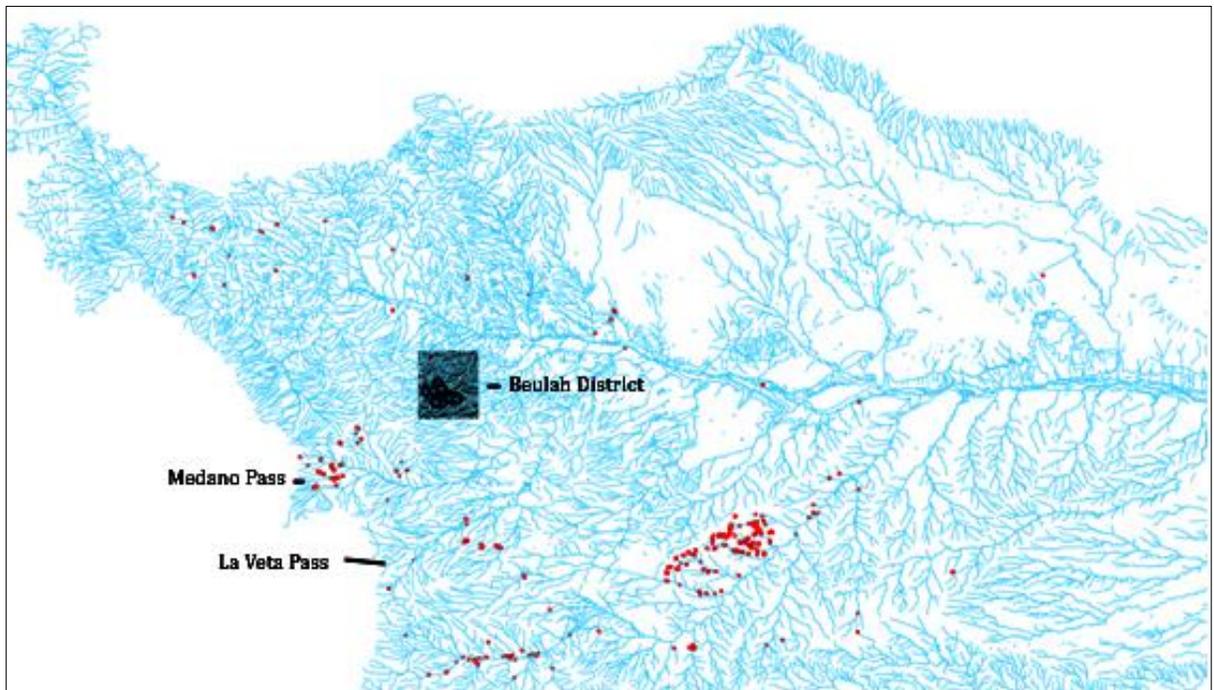


Figure 105. GIS map of 349 obsidian sites throughout the Arkansas River Basin. Distribution appears to be tied to major waterways and other geographic river access. The dark square represents the Beulah District.

While the data points represented in Figure 105 are biased by the amount of archaeological work done on Federal land, it is argued here that the geographic distribution of obsidian is real.

### Obsidian Debitage Attributes

When comparing the attributes of flake size between the Brown Palace and Roper's Walk, it is apparent that there is a clustering of size and a great similarity between the two sites (Figure 106). As with other raw material types analyzed above, these similarities indicate that these flakes are the result of retouch and not the product of primary reduction, implying that the tools entered the Beulah District in completed forms, not as a chunk of raw material to be reduced in situ.

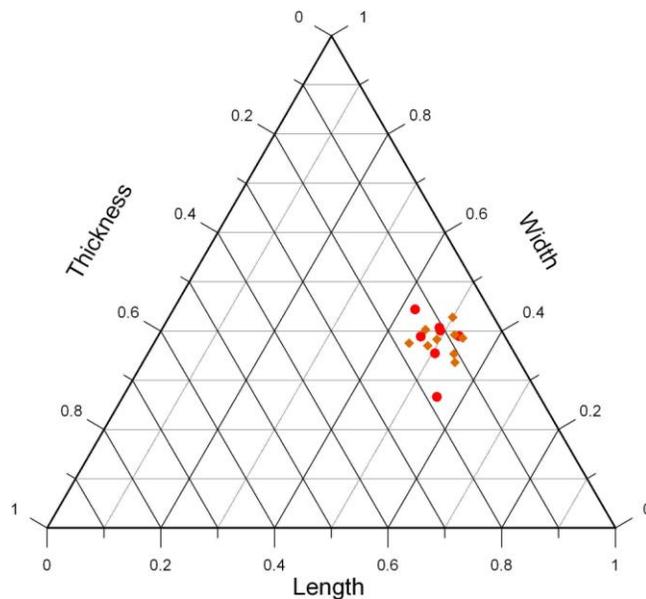


Figure 106. A comparison between the length, width, and thickness of obsidian flakes found at Roper's Walk (pictured as diamonds), and The Brown Palace (pictured as circles), shows that they are from a very similar size class indicating retouch and maintenance vs. manufacture. The one circular outlier below the central cluster is a small drill made from a small piece of shatter, which has a greater thickness than all of the other debitage.

## **Summary of Obsidian Analysis**

Obsidian source analysis of debitage found at Roper's Walk and the Brown Place has demonstrated that there are two distinct vectors of trade. The dominant source is from the Valles Caldera locality with a small representation of material from Malad, Idaho. Importantly, obsidian flakes are associated with the two most complex sites recorded along the SCR, Roper's Walk and the Brown Palace. The hydration dating conducted at Origer's Obsidian Laboratory resulted in the exposure and analysis of two distinct hydration bands. The thinnest band suggests a late date "perhaps on the order of 200 to 400 years before present ... and up to 1500 years before present for the larger band" (Origer 2008).

## **Catlinite Studies**

### **Introduction**

Catlinite is a relatively soft quartzite that is easily carved by prehistoric tools. As such it was the favored material for the production of figurines and pipes found in archaeological contexts throughout the Midwest. Prehistoric use of pipes during the Developmental and Diversification period have been noted (Campbell 1969), but most of the pipes are described as being ceramic in composition. The Catlinite pipe fragment found at Roper's Walk may well be the first evidence of geochemically sourced Catlinite within an Apishapa context. It also may signify an early expression of the Calumet Ceremony in a prehistoric context.

The first historic account of the calumet ceremony was made in 1634 by Padre Diego Romero when he encountered the Plains Apache (Hall 1997:81). European accounts of the calumet ceremony suggest that its use spread from the tribes of the Great Plains toward the east, and not from those of the Eastern Woodlands in a westward direction. Blakeslee concludes that

the type of pipe bowl used on calumet pipes appeared on the eastern Plains after A.D. 1270 (1981:761-76). The purpose and power of the calumet ceremony for forming alliances can be understood through the following passage:

“The calumet constrains and pledges those who have sung it to follow to war the man in whose honor it has been sung... The calumet halts the warriors belonging to the tribe of those who have sung it, and arrests the vengeance which they could lawfully take for their tribesmen who have been slain. The calumet also compels the suspension of hostilities and secures the reception of deputies from hostile tribes who undertake to visit those whose people have been recently slain by theirs. It is, in one word the calumet which has authority to confirm everything, and which renders solemn oaths binding” (Blair 1996, 1:185- 186).

### **Composition**

Mineralogically, Catlinite is composed principally of pyrophyllite and muscovite, with lesser amounts of diaspore and kaolinite (Gundersen 1991, 2002; Emerson et al. 2005:198), making it suitable for geochemical sourcing. The Catlinite sample found at Roper’s Walk was sent to Dr. Jeffrey R. Ferguson and Dr. Michael D. Glascock at the Archaeometry Laboratory Research Reactor Center in Columbia, MO. for analysis. At the lab, a small fragment was crushed and then divided into two samples for Neutron Activation Analysis. This spectral analysis showed that “the new” pipe sample matches quite well with the Pipestone Compositional Group for all Catlinite elements except for scandium... for which it is slightly elevated” (Ferguson and Glascock 2009). The new sample refers to the artifact found at Roper’s Walk, which was a surface find lying on exposed bedrock in the northern portion of the site. As seen in Figure 108, the presence of Catlinite at Roper’s Walk is surprising due to its relative abundance in sites that are decidedly east of the Mississippi River (Wisseman et al 2002:697 -712).

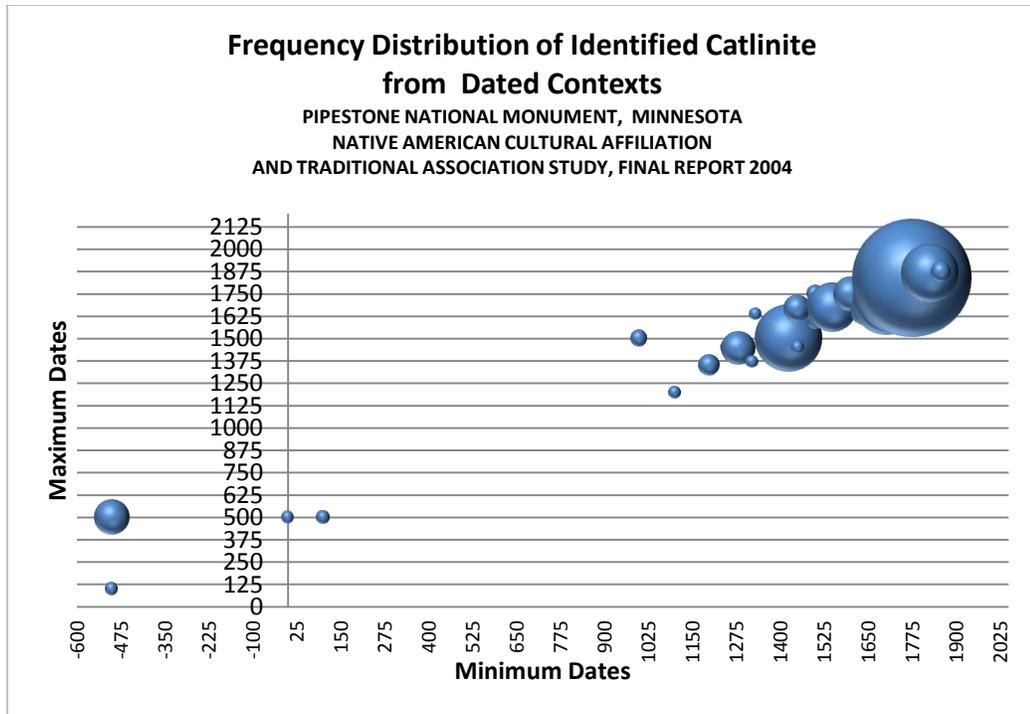


Figure 107. Graphic display of temporal “pulses” for the use for Catlinite, compiled from data collected at Pipestone National Monument (Scott et al. 2004). The size of the “bubble” represents overlapping dates and “inflates” the bubble when there is a higher frequency of Catlinite found within overlapping dated archaeological contexts.

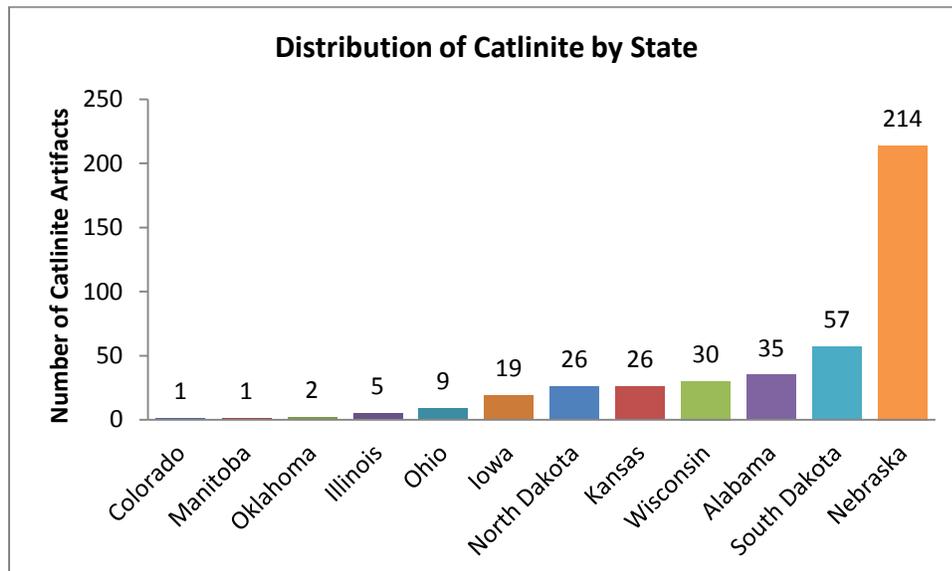


Figure 108. Distribution of Catlinite geochemically sourced to the Minnesota Quarry, adapted from Scott et al 2006.

Catlinite from dated contexts presented in 2006 by the Midwest Archaeological Center (Scott et al 2006), show that the earliest time signature for the utilization of Catlinite is around 475 B.C.E (Scott et al 2006:57) which is followed by another pulse between 25 A.D and 150 A.D. (Figure 107). The main fluorescence of use for this material begins around 1025 A.D. and the frequency increases significantly into historical times. Archeological evidence shows that between 500 B.C. and 700 A.D., artifacts made from pipestone found in the quarries of southwestern Minnesota were traded as far east as modern Ohio, as far south as Alabama, and as far west as north central South Dakota.

#### **Attributes of the Catlinite Pipe Fragment**

To the eye, the artifact has such uniformity in wall thickness, and smoothness of bore channel, that it appears to have been created or modified by modern tools. However, Caliper measurements of wall thickness revealed that there is variation in wall thickness from the proximal to the distal end of the pipe (Figure 110 and Figure 111). The further one gets from the proximal end, the greater the variation in thickness. It seems as though this wall thickness variability is a byproduct of the manufacturing technique and warrants further investigation to determine if the cause of the variation is due to the boring technique, drill tip morphology, or the shaping of the outside curvature of the pipe.



Figure 109. Close up of striations on pipe wall reveals two patterns of friction between the tool that was presumably used to bore out the pipe, and the Catlinite itself. Striations run lengthwise as well as in a radial pattern.

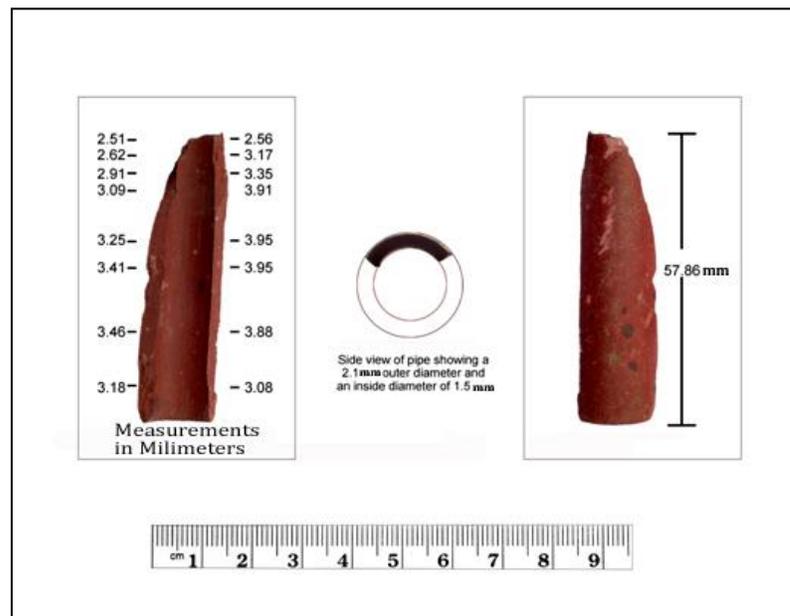


Figure 110. Catlinite pipe stem from Roper's Walk. The pipe-wall irregularities could be the result of imperfect boring and shaping techniques utilizing stone implements.

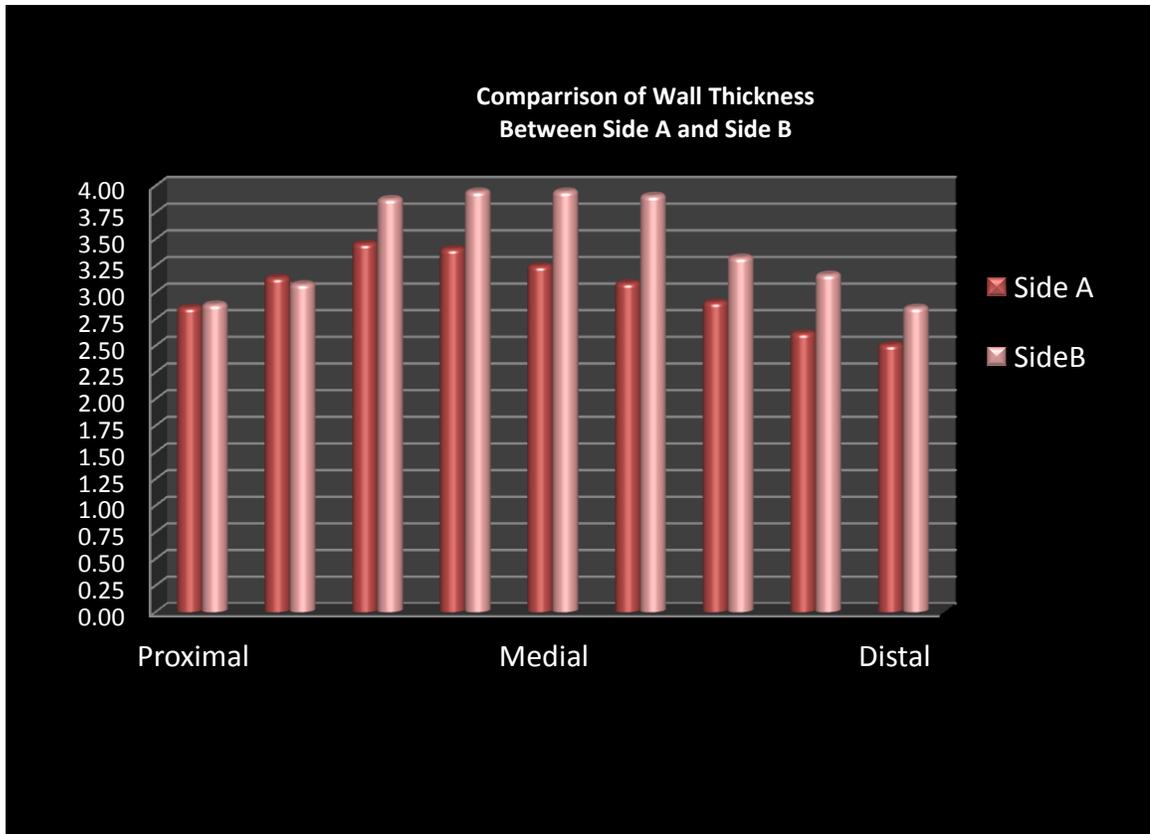


Figure 111. Graphic display of wall thickness comparing side A and side B in mm.

Based on personal observation, and extensive experience with and modern boring techniques through a variety of materials including masonry, the variation in pipe wall thickness, and the variable directions of the striations along the pipe stem walls are assumed by the author to indicate a manufacture technique for boring that is inconsistent with modern tools which have very exacting tolerances. This pipe-wall variance could also be due to the shaping of the exterior portion of the pipe after the initial hole was bored through the Catlinite blank (Figure 112). Based on personal experience and input from a skilled artisan Patty Genack (personal communication 2012), a cautionary note is offered when looking at Figure 112. While the visual sequence of manufacture is useful as a heuristic device, the actual hole boring with a stone drill would likely occur just after step 2, when the rough form of the pipe still had flat edges. It would be much

easier to hold the pipe perform in place for drilling when it had flat sides, rather than rounded edges as shown in step 5.

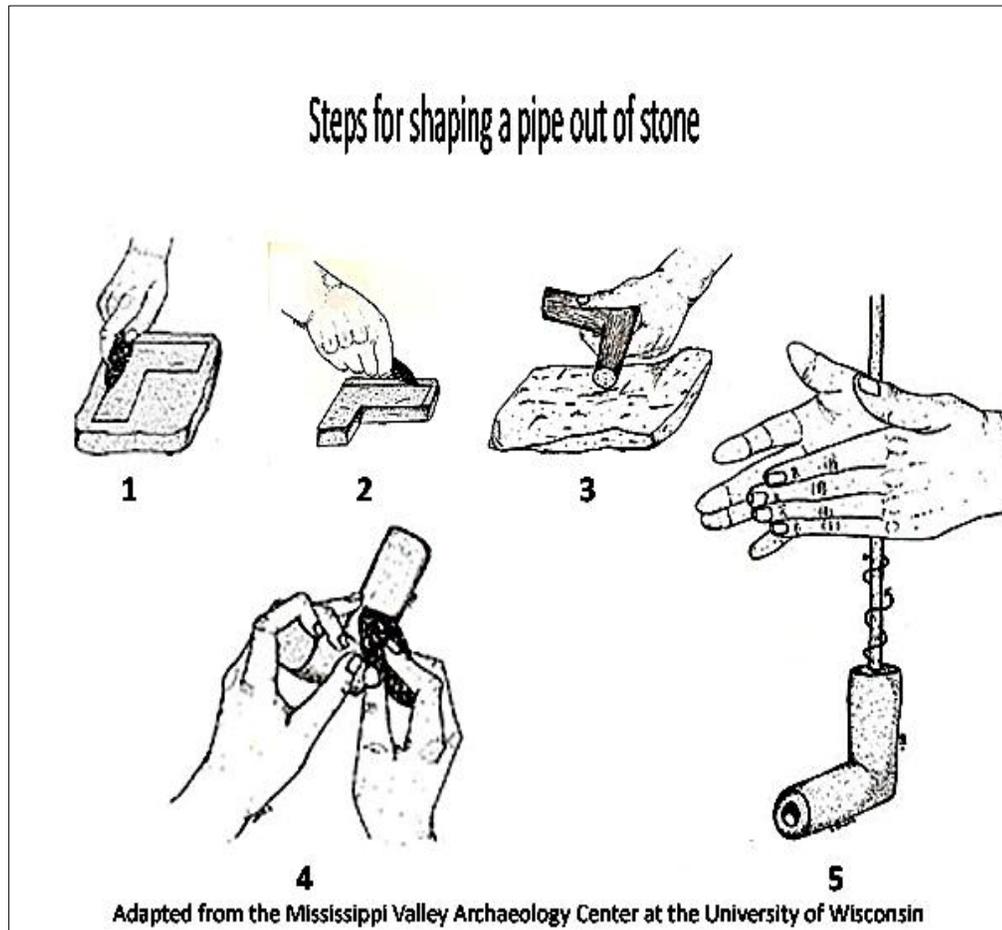


Figure 112. Steps for making a stone pipe with prehistoric tools adapted from ([http://www.uwlax.edu/mvac/preeuropeanpeople/earlycultures/native\\_catlinite.html](http://www.uwlax.edu/mvac/preeuropeanpeople/earlycultures/native_catlinite.html)).

The illustration of a pipe drill bit from the Artifacts of Kansas Website (2012), shows irregularity in width from the proximal to distal ends of the artifact. Intuitively, this variation in width may help contribute to the variation in wall thickness found in the SCRP Catlinite pipe due to uneven surface contact between the drill and the Catlinite.

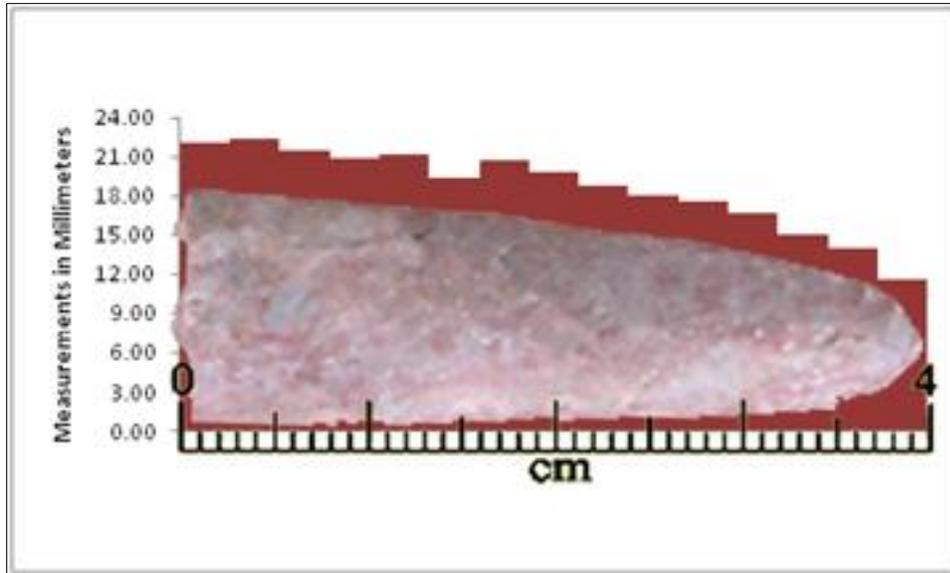


Figure 113. Measurements taken from proximal to distal end of a stone drill from Kansas, this graph has the photograph of the drill superimposed with the graph and shows the variance in the width of the drill, which may account for variable wall thickness of the pipe. (<http://www.ksartifacts.info/2B%20chipped%20stone/cs27%20pipe%20drill%20wear.jpg>).

Measurements used to make the graph above were taken from a scaled image of the pipe drill, the measurements may not reflect the actual measurements on the “real” artifact, but the variance in width is nonetheless apparent from the proximal to the distal ends of the pipe.

### Summary of Catlinite Studies

The presence of Catlinite at Roper’s Walk underscores the dynamics of far reaching trade networks to the east, and in particular opens up discussions about Apishapa connection with the Great Plains. This exceptional find of Catlinite in Southeastern Colorado may be a good indicator of the trade and exchange of “prestige goods” as seen in the Caddo and Southern Plains groups (Perttula 2002). Pipes found in archaeological contexts dated to Apishapa within the ARB are poorly described and many pipes mentioned in the literature refer to ceramic construction (Campbell 1969). The majority of geochemically sourced pipestone is found in archaeological contexts that are decidedly north and east (Scott et al 2006) of the Beulah District (Figure 114).

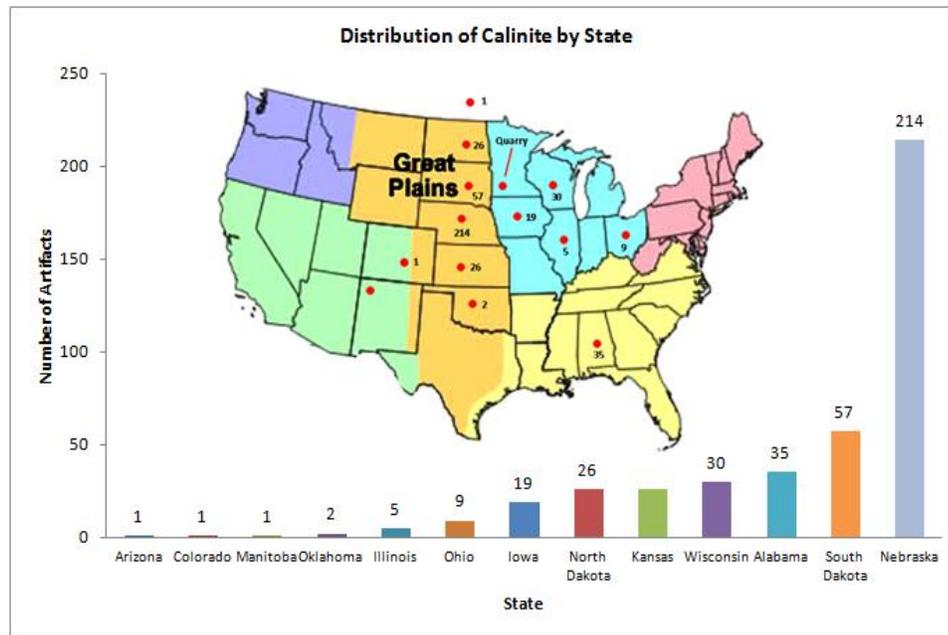


Figure 114. Geographic Distribution of Catlinite from Archaeological Contexts compiled from the work of Scott et al 2006. Dots indicate the state, not geographic location of sites.

### Connections to the “Outside” World

The presence of Alibates as well as the results from the geochemical analysis of obsidian and Catlinite from the archaeological sites along the SCR has presented a meaningful look at the scope and magnitude of the connection that the Beulah District had with “outside” systems. As mentioned above, the direct procurement of obsidian, Alibates, and Catlinite is highly unlikely due to the time and labor costs associated with that endeavor. This concept when coupled with the construction of architectural features implies a level of social organization within the SCR basin that requires us to look at different levels of sociocultural integration with outside systems (Baugh 2008:326).

The majority of the dates from the Beulah district represents a pre-horse period, and thus directs our attention to pedestrian methods of transportation, trade, and exchange of various raw materials. The convergence of these materials in the Beulah district clearly demonstrate that there are connections with geographic areas well outside of the Beulah locality ( Table 11), and that there is significant evidence of trade, which is extremely rare (Vehik and Baugh 1994:256), during the end of the Diversification period (circa A.D. 300 to 800).

Table 11. Raw material source and distance from that source in kilometers

Source	Distance	
Pipestone National Monument, Mn.	969 km	602 mi.
Malad, Idaho	775 km	481mi.
Alibates Quarry, Tx.	400 km	249 mi.
Valles Caldera, N.M.	280 km	174 mi.

Obsidian from Malad shows up in sites designated to be the Washita River phase (A.D. 1100 to 1450) in western Oklahoma (Vehik and Baugh 1989:259) and may have made its way to these sites through southeastern Colorado. According to Vehik and Baugh (1994), during the Late Prehistoric (A.D. 100-1725), there is a marked increase in trade and obsidian, Alibates, and Catlinite. These materials become more prevalent in sites throughout the Central Plains including Kansas, Nebraska, Iowa, South Dakota, and Oklahoma (Vehik and Baugh 1994:253-265).

In light of the recent of the recent findings at Roper’s Walk and other sites along the SCR, it is the present authors opinion that Colorado can now be safely added to the list of states presented above by Vehik and Baugh (1994), which pushes the western boundary of the Great Plains exchange systems right up to the Foothills in Southeastern Colorado (Figure 115).

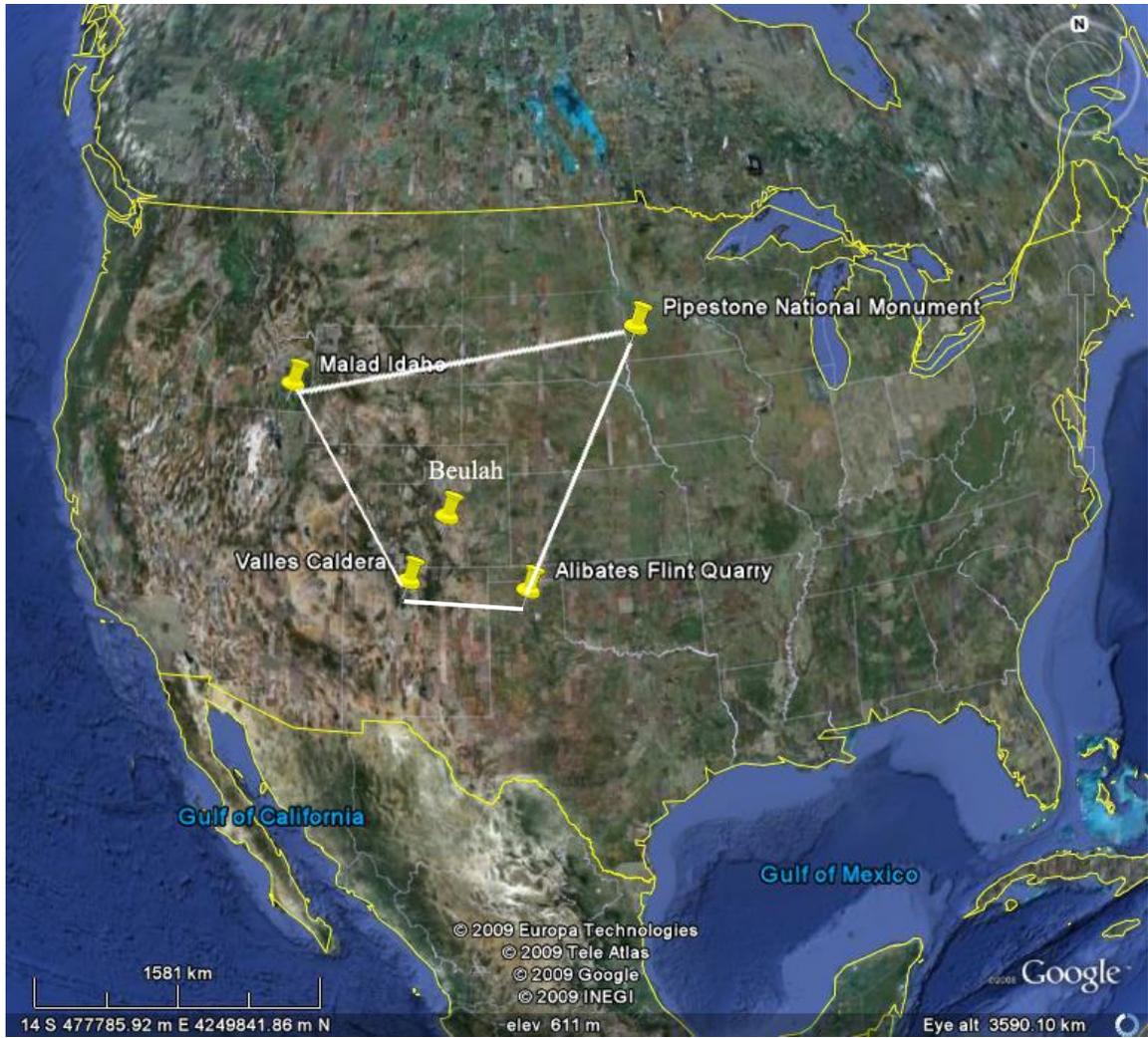


Figure 115. Google Earth view of distant raw material source locations around the Beulah locality

## FTIR and Pollen Analysis

### Roper's Walk, Feature 6

FTIR analysis was conducted for hearth material collected at both Roper's Walk (Figure 116), as well as the Brown Palace site, with the hopes that this relatively new lipid analysis technique (Scott-Cummings 2008, personal communication) could positively identify what economic resources were being utilized by the prehistoric inhabitants of the SCR.

This sample from Feature 6 at Roper's Walk, designated sample 1,

“yielded peaks representing fats/lipids, aromatic and saturated esters, proteins, carbohydrates, and cellulose (Table 4). Matches obtained with the reference library include Apiaceae (umbel family) stems, sunflower seed shells, yucca basal leaves that are raw and those cooked in water, saltbush fruit, chokecherry fruit, currant fruit, baked cholla fruits, and prickly pear cactus pads (Table 5). Of these matches, prickly pear cactus pads were one of the best, suggesting either that prickly pear cactus had grown in this Feature, then died and subsequently deteriorated or that prickly pear cactus pads were cooked (or used to buffer other foods that were cooked) in this Feature.” (Scott-Cummings et al 2008:13).

The western portion of the Feature 6 was excavated a depth of almost 8 cm when bedrock was encountered. “FTIR analysis of the western portion of Feature 6 “yielded peaks representing the presence of fats/lipids, saturated and aromatic esters, and proteins. Matches with the reference library included most of the same plants as were identified for sample 1, which included Apiaceae (umbel family) stem, *Cleome* flowers, saltbush fruit, rose hips, currants, baked cholla fruit, yucca basal leaves, and sunflower seed shells. In addition, the fats/lipids portion of this record yielded a match to bison far from bone marrow, suggesting cooking large game meat and fat, since the lean meats do not provide this match. The match with baked cholla fruit, which also implies inclusion of dried prickly pear cactus (non-sweet variety) fruits, is particularly good in the 1700-1200 wave number range, representing aromatic and saturated esters, as well as proteins. Matches with Apiaceae stem, yucca leaves, and baked cholla fruits are made over most of the spectrum (4000 to 650 wave numbers), suggesting that the record in the fill from this Feature includes plants that probably grew in the area, such as members of the umbel family, yucca, and prickly pear and/or cholla cactus. This sample does not exhibit a match with prickly pear cactus pads, which was noted for sample 1” Scott-Cummings et al 2008:13).

In addition to the FTIR analysis, “macrofloral analysis yielded several pieces of vitrified tissue and a charcoal record consisting of *Pinus* and vitrified *Pinus* charcoal. Pine appears to have been burned as fuel. A portion of the *Pinus* charcoal was submitted for AMS radiocarbon dating. Other cultural material recovered from the sample includes a small amount of calcined bone, a moderate

amount of lithic flakes, and a small, corner-notched projectile point base” (Scott-Cummings et al 2006:13).

As seen above, while the fuel wood appears to be the same in each hearth, the differing lipid signatures suggests that different things were being processed in each hearth.

Contemporaneity of use is likely and may be an energetically more efficient method of cooking two different things at one time, utilizing a “2 burner” approach to food processing in a centralized locality within the site.

A third hearth located between Feature 11 and Feature 10 in the center of the large lithic scatter on the northern portion of Roper’s Walk was also tested utilizing FTIR. This feature was excavated to a depth of only 5 cm to 10 cm below the modern surface and yielded

“peaks representing fats/lipids, aromatic esters, and proteins. Matches representing members of the local vegetation community such as members of the umbel family and sunflower seeds are probably recording plants that deteriorated in the sediments. A match with currants and rose hips also might reflect part of the environmental signal. The match with duck skin in the fats/lipids portion of the spectrum suggests cooking a fatty meat, perhaps from duck, in this hearth” (Scott-Cummings et al 2008:14)



Figure 116. Looking east towards Feature 6 located at Roper’s Walk.

In Feature 6 at Roper’s Walk, the eastern portion of the paired hearth feature was excavated to bedrock, which was encountered in less than 20cm below the modern surface.

## **The Brown Palace, Feature 1**

Feature one at the Brown Palace was excavated up to 20 cm deep near the center of the feature (Figure 117). FTIR analysis

“yielded peaks representing fats/lipids, aromatic esters, and proteins. Matches representing members of the local vegetation community such as members of the umbel family and sunflower seeds are probably recording plants that deteriorated in the sediments. A match with currants and rose hips also might reflect part of the environmental signal. The match with duck skin in the fats/lipids portion of the spectrum suggests cooking a fatty meat, perhaps from duck, in this hearth” (Scott- Cummings et al 2008:15).



Figure 117. Looking east toward Feature 1 at the Brown Palace site

### **Summary FTIR Analysis**

FTIR analysis has yielded some interesting data regarding the variety of plants utilized at both Roper’s Walk and the Brown Palace. There is a similar suite of plants utilized at both sites and these plants include “the umbel family, saltbush fruits, bee weed flowers, sunflower seeds, prickly pear cactus fruits and pads, yucca, and a variety of other plants...” such as chokecherries, currants, and rose hips (Scott-Cummings et al 2008:17). The faunal signatures indicate the

presence of bison, and the possibly the presence of duck at both Roper's Walk and the Brown Palace. Although the results of the duck lipids are intriguing, the present author supplied samples of Mallard, Golden Eye, and Wood Duck to the Paleoresearch Institute just prior to the FTIR analysis of the SCR material. This analysis was then added to their database for the first time. What would the lipid signature be without those duck samples?

### **Summary of Special Studies**

The geochemical analysis of both Catlinite and obsidian has allowed us to look at the far reaching dynamics of trade and exchange practiced by the Apishapa inhabitants at both Roper's Walk and the Brown Palace site within the Saint Charles River Basin. This information when coupled with the presence of Alibates at 5PE4228, Roper's Walk, and the Brown Palace site indicates that there was contact and a presumed alliance with groups outside of the SCR locality which essentially expands the known trade and exchange systems throughout the Great Plains, up to the Foothills in Southeastern Colorado.

## **Chapter Ten**

### **Summary, Conclusions and Suggestions for Future Research**

#### **Summary of the Saint Charles River Project**

The initial catalyst for the recordation of architectural sites along the SCR came when Bob Jackson sold the Roper's homestead to the Red Creek Land Company in 2002. The primary goal of this project was to determine the extent of the archaeology at Roper's Walk, and to record and preserve as much of the site as possible prior to any sort of development made by the Red Creek Land Company. Roper's Walk has been purchased by the Archaeological Society and will be preserved for future generations to enjoy and study. The initial research at Roper's Walk was expanded south along the SCR canyon rim and eventually included the canyon running through the 3R Ranch. Many of the sites visited during the SCRCP have not been recorded or studied by a professional archaeologist in over 70 years, and as such, this project has been a journey through both history and prehistory. Walking in the footsteps of E.B. Renaud, Charles Steen, and Arnold Withers has proven to be both a literary and physical challenge, but hopefully, has produced a framework for future research. The SCRCP has proven to be a complex and rich exploration of the archaeological record that is reflected throughout the Beulah locality and the greater ARB. The sites recorded here, have allowed for a very preliminary look at the culture chronology and the nature of the archaeology along the SCR. These sites are represented by rock shelters, rock art, lithic scatters, and open-air architectural features. The archaeology of Beulah District has proven to contain a deep history spanning over 10,000 years.

The Beulah district represents an amazing collection of archaeological features and sites, and there is a longstanding history of occupation and land use which represents a cultural landscape and a snapshot of settlement during the Developmental and Diversification periods within the Arkansas River Basin. The research potential is far from exhausted, and future studies

should include specialists to aid with the further refinement of the nature and chronology of prehistoric occupation along the SCR. As the model for settlement and subsistence strategies practiced within the SCR locality by the builders of these architectural sites grows, so does the subsequent picture of what they may have been doing on the landscape. Based on the analysis of the data collected in this thesis, it is argued here that the groups that built architectural features along the canyon rim of the SCR were hunter-gatherers who were logistically tethered to these seasonally used structures. Deer, elk, bison, and pronghorn are represented in the faunal remains recovered from the Red Bison Rock shelter, R276, R274, and Chamber Cave, supports the argument that the archaeological sites along the SCR are in many ways ideally situated to exploit these resources, and need not be looked at as defensive structures. These architectural features could also represent the beginning of agriculture within the SCR locality, but currently lack the positive identification of floral remains indicative of such practices.

### **Thesis Discussion**

**The first question** addressed in this thesis involves the determination of the nature and extent of the archaeological sites along the SCR. This was a necessary step as it defined the framework for the rest of the research questions. All of the sites visited during the project's field work in some way produced data that was useful in building models in GIS as well as exploring various trade and distance decay theories relative to raw material types found. These sites have all been heavily collected over the years, subsequently the material remains have been reduced to a few pieces of groundstone, projectile points, and a relatively large amount of debitage. The architectural features observed along the SCR show a high degree of variability in size, door orientation, and room configurations. Roper's Walk, 5PE4228, Riverview, and the Brown Palace sites all contain centralized room-blocks with single-room stone circles found on the periphery of

the site anywhere from 20 meters to 50 meters away. Should these sites all date to the Apishapa Phase, this may indicate an Apishapa cultural preference for site layout and should be the focus of future research, at minimum this should serve as a cautionary note to look for these isolated features when a centralized cluster of architectural features have been identified.

Architectural sites also appear to be placed along the canyon rims with a high degree of dependence on the proximity to hands-free river access on slopes of less than 27 degrees. There is a high probability that proximity to water is an organizing factor for the construction and placement these architectural sites along the canyon rim. Indeed these river accesses are related 100 % with archaeological sites, 50% of which are represented by architecture, and the remaining 50% being represented by lithic scatters or open-air camps. In addition, all of the architectural sites have thermal features exterior to the architectural features, perhaps indicating a warm weather or seasonal occupation. The architectural features observed in the Beulah District do share one common trait, they are all positioned where a commanding view of the surrounding terrain is realized.

Having personally hunted in and around the SCR locality over the past 35 years using bow and arrow technology, it is the current authors opinion that architectural placement is an indication of hunting strategies, rather than a response to an undetermined hostile force motivating a “defensive” placement for the architectural features on the landscape. It is argued here that with the evidence assembled from the Red Bison rock shelter, R278, Chamber Cave, and R276, there were more big game animals in the SCR locality than there were hostile people, and thus would direct the behavior of hunters to position themselves where a view of the surrounding areas would facilitate hunting and maximize their potential for spotting game.

## Testing the Defensive Argument for Sites in the Beulah District

The most recent advancement of the argument for the defensive placement of Late Prehistoric architectural features within the Arkansas River Basin has been made by Mark Owens (2007) in his report for the Pinon Canyon Maneuver Site. Owens (2007) argues that there is a line of site connection between sites for communication, but no specific method regarding the mechanism(s) for line of sight communication has been outlined. Owens further argues that “perhaps acoustic performance characteristics were highly desirable as echoes would have made a defensive group seem larger to the raiding group...” (Owens 2007:39). In addition to his line-of-site argument and acoustic performance for some sort of intra-site messaging (Owens 2007:39-41), the core of his argument centers around five elements which include: “1) inter group rivalry over critical territory, 2) seasonal fluctuations of critical resources, 3) depletion of farmlands and game herds, 4) internal and external sociopolitical pressures, and 5) appearance of new groups and populations (Winter 1988:77)”.

In the present author’s opinion, using the 5 elements in Owens model (2007) to describe the sites in the Saint Charles locality, much less the greater ARB, would not be a productive line inquiry. First of all, without exacting temporal placement of each and every architectural feature in every site within the ARB, it is very difficult to discern if there is any real patterning or community planning taking place at a given site. According to Lintz (1989), Apishapa architectural sites throughout the Chaquaqua Plateau are generally represented “by a random arrangement of structures as sites, the absence of plazas, and the lack of specialized structures marked by differences in size, shape or interior features...” (Lintz 1986:29). This haphazard organization leads Lintz to suggest “that the Apishapa had little or no apparent status differentiation and little community planning” (Lintz 1989:29). It is argued here that if it is difficult determining what the possible site structure may be within a given site, then it stands to

reason that it would be even more difficult to predict what complete Apishapa territories look like. Realistically, other than a generalized view of Apishapa occupying rock shelters or building architectural features above canyons and terraces overlooking streams or rivers, we do not have a clear enough idea about what Apishapa deemed critical territory. It would be even more difficult to define what an imagined rivalry would look like over this undefined territory.

For the first time, the sites along the SCR help to define both the northern and western boundaries of Apishapa architectural expressions *within* the ARB. But this does not take into account sites like the Upper Crossing Guard Station (5SH134) near Saguach, Colorado which exhibits architectural expressions nearly identical to those of Apishapa in the greater ARB. Could the San Louis Valley be the western extent of Apishapa in Colorado? If so, then we need to reexamine what we think Apishapa territory is, and to include the research of stone circle architectural features in the San Louis Valley into the larger corpus of Apishapa studies.

Secondly, Owens (2007) argues that of the five elements outlined above, 1 through 3 “would be directly related to the absence of a good water supply” (Owens 2007:44). While seasonal fluctuations of critical resources relative to the abundance of water is a good argument, “the depletion of farmlands and game herds” (Owens 2007:44) is much more problematic. There still remains the question about how dependant (if at all), the Apishapa were on cultigens (Campbell 1969, Lintz 1986). During the SCRP, maize from R276 represents the only cultigens radiocarbon dated, and cannot be attributed to the Apishapa Phase. Although, maize from Chamber Cave (Nelson 1970) was identified in association with apparent Apishapa aged projectile points and ceramics, it was not radiocarbon dated, which leaves the question about the intensity or timing of horticulture in the Beulah District wide open. Ultimately, there needs to be a much clearer association made between the Developmental and Diversification subsistence strategies, in particular horticulture, before one can argue that depletion of farmland would give rise to the need for a defensive positioning on the landscape.

When xeric conditions persist in the SCR locality, the surface water along the Saint Charles River quickly becomes reduced to stagnating pools of questionably potable water. In the present author's opinion, people would abandon the Beulah District in times of drought, rather than invest the time and energy to build defensive sites protecting small stagnating pools of water. Finally, Owens (2007) argues that "internal and external sociopolitical pressures" or the influx of Athabaskans account for the need for defensive positioning on the landscape (Owens 2007:44). There is one shield bearing warrior motif found in the Beulah District, but the cultural identity of the artist is yet to be established. The icon of a shield bearing warriors occurs throughout the Great Plains between Mexico and Alberta, Canada. As such, no comment can be made of the possible Athabaskan element of Owens' (2007) argument in the Beulah locality.

The present author believes that there needs to be a clear cut definition of attributes given to a particular site in order to accurately define it as defensive as opposed to being defensible. First, a clear definition of what may be gained by a raiding party needs to be clearly explained and supported with archaeological evidence, i.e. surplus grain, meat, water, slaves, or potential mates, because any military campaign begins with an objective (Wheelock 2011).

Second, before one can argue that a group of people are defending a given territory, the cultural group on the ground needs to be clearly defined and understood. It also should reflect how they are organized on the landscape, and most importantly, what the geographic extent their presumed "territory" covers.

Third, the positioning of barrier walls within a given site needs to be analyzed in terms of their actual value as a defensive mechanism. Simply put, a site may be interpreted today as being in a defensible position, but that does not mean that its purpose was defensive in nature when the prehistoric architects constructed those features on the landscape. For example, the present author discussed with Marine Lance Corporal Tim Wheelock of the Fleet Antiterrorist Strike Team in Desert Storm, details regarding the tactical positioning of architectural "fortifications" within

canyon terrain. It was from his trained perspective, that from a tactical standpoint, there are two major advantages to having a cliff at your back, it limits the direction your attackers can assault your position, and it directs the potential assault in a predictable manner which easier to defend against. According Wheelock (personal communication 2011), as shown in Figure 118, the positioning of an ideal defensive wall should be perpendicular to the anticipated line of attack. Figure 119 clearly shows that the placement of the rock wall alignment is in a position that is not ideal for defensive purposes. This finding punctuates the concept that barrier walls need to be looked at carefully before jumping to the conclusion that they are suitable for defense.

In addition to the less than ideal positioning of the rock wall at the Hightop site, the tallest wall seen within the architectural features along the SCR were less than 1 meter high, hardly a height that could be useful for defense unless your attackers are shorter than 1 meter tall. In all fairness, the rock walls could have supported brush “walls” that would be useful in deflecting attack utilizing bow and arrow technology. Other sites along the SCR such as 5PE234, were built with their backs to the canyon, but did not have any barrier walls in place indicating that defense was not a concern. An opposing argument outlining a significant disadvantage of having a small hamlet with its back to the canyon, is that such a site would serve well as a place of detention rather than a place of defense. With a cliff on the backside of the residential structures, all that would be required to contain that group is some well placed sentries around the perimeter who could presumably wait until the people in the cliff-side architectural locality ran out of water or food before surrendering.

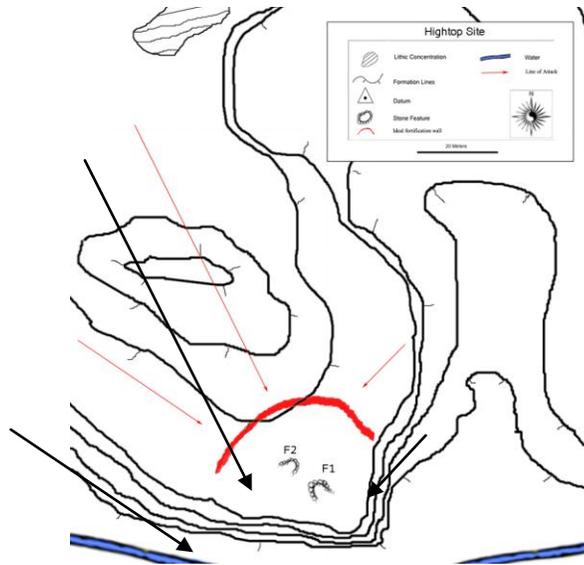


Figure 118. Ideal positioning of a defensive wall for the Hightop site.

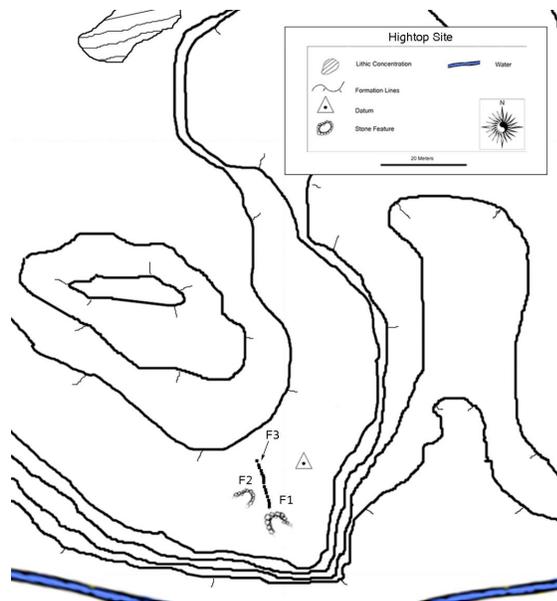


Figure 119. Feature 3 is not ideally located for defensive purposes at the Hightop site.

**The second question** addressed in this thesis is the determination of the chronology of the archaeological sites along the SCR. While many of the sites held no temporally diagnostic material, a few sites allowed for a preliminary chronology building for the area. The earliest site is represented by the broken base of a Folsom point, this artifact can relatively placed somewhere

between 10,950 B.P to 10,250 B.P. The latest occupation date can be inferred from the presence of Plains-biographical style rock art depicting horses and riders. The distribution of the other absolute and relative dates covers a very broad expanse of time and consequently offers only more questions about the timing and intensity of land use within the SCR basin.

**The third research question** was driven by the lack of diagnostic artifacts, but the relative abundance of lithic material. The analysis has shown that 51% of the lithic material recorded was quartzite, with the remaining 49% being represented by exotic material. Approximately 88% of the debitage recorded is 3 cm or smaller, indicating that retouch and maintenance were the primary activity, this in turn implies that the tools that entered the SCR system did so as finished products, carried by a highly mobile group. At 2.11 % of the lithic material recorded, there is a surprisingly high percentage of obsidian found in this locality. The vectors of trade, procurement, or distribution of this material run between Malad, Idaho and northern New Mexico. In the greater ARB, obsidian is found along major waterways and near the foothills of the Wet Mountains indicating a possible trade route over Medano Pass.

In 1986, when discussing the general social organization of Apishapa, Lintz forwarded the idea that “the scarcity of trade materials from either the Southwest or adjacent Plains manifestations suggest that they maintained few alliances outside of the region and were relatively isolated” (Lintz 1986:29). Contrary to Lintz’s argument (1986:29) *ibid*, it is argued here that the Saint Charles Apishapa were not an isolated group. As evidenced by Southwestern / Puebloan style ceramics found in Chamber Cave (Nelson 1970), obsidian from New Mexico, obsidian from Malad, Idaho, Alibates from Texas, and Catlinite from Minnesota, there was contact with outside groups and territories that extend over significant geographic distances including the Plains and the Southwest.

In particular, the presence of Catlinite in the Beulah locality is one of great importance and may indicate for the first time, a far-reaching system of networks and alliances that are

decidedly northeast of the SCR and may be Apishapa in age. The majority of true Catlinite found in archeological contexts occurs in greater frequencies in Nebraska, South Dakota, and Alabama, and the dates associated with the florescence of widespread use of this material occur between A.D. 1025 and A.D. 1775.

### **Suggestions for Future research**

#### **Rock shelters**

Although most of the large habitation sites found in rock shelters have been known to people since the early 1900's, and most of these sites have been excavated/looted, there still remains a tremendous amount of intact deposits within these sites. Rock shelter R276 was excavated, but only as far back as the roof would allow for the comfortable operation of a shovel without banging your head. The erosional feature cutting through the western edge of this rock shelter has exposed intact deposits of elk and bison bone which are in danger of being destroyed by the flow of water every time it rains. It is suggested here that the site be excavated in order to mitigate the natural destruction that is taking place. In R275 there is a significant stratified deposit of charcoal and a large portion of the old drip line has been sealed by a large rock that has spalled off of the rock shelter roof. This rock shelter has also been looted, but the material excavated was piled back into the cave, essentially sealing the material below from future destruction by unknowledgeable looters. The Red Bison rock shelter also holds promise for future research, as it does not appear to have been extensively excavated by looters.

## Architectural Features

It is suggested here that much can be learned from the continuation of the studies of the Apishapa structures found along the SCR. There is only one absolute date generated by the SCRP associated with architecture, this was Feature 6 at Roper's Walk. Importantly, this date demonstrates that prehistoric settlement of the canyons along the Foothills occurred very early in the Diversification period.

The architectural features observed in the Beulah District exhibited varying degrees of complexity in plan design. Some sites had linear features while others consisted of multiple rooms. It is argued here that positioning of the architectural features along the canyon rim, back and away from accessible river access down to the Saint Charles River may be an attempt by the architects to avoid interfering with natural watering patterns of bison, deer, elk, and pronghorn, thereby facilitating the hunting of these animals as they travel to and from the SCR. This model could easily be applied in GIS to other Apishapa sites within the greater ARB and may aid in the development of a predictive model for Apishapa site structure. More absolute dates need to be generated in order to understand the timing and intensity of use of the architectural features along the SCR. With extremely deflated levels of hearth fill remaining in the thermal features recorded during the SCRP, dating of the sites through thermoluminescence may be a viable method of analysis to help firmly resolve the question regarding the contemporaneity of the occupation of the various sites throughout the Beulah District. The importance of this temporal resolution resides in the often cited argument (Gunnerson 1989, Owens 2007) regarding line of site communication between the various Apishapa architectural features. The heuristic nature of the argument revolves around the premise that line-of-site between numerous sites along the canyon rim would bolster the value of site selection based on the defensive or defensible positioning of architectural features along the SCR canyon rim. Line of site would allow for some sort of

imagined paleo-instant messaging system to take place if the canyon system of residential features were under attack from some undefined enemy. Importantly, the effectiveness of the line-of-sight early warning system, lies in the simple necessity of having people occupying every line of site feature at *the same time*. Without establishing that each and every architectural feature incorporated in a line-of-site model are contemporaneous, line-of-site is a mute point. Simply put, you can signal all you want, but if no one's home, who's going to answer the call?

Finally, the connection with a much greater geographic area has been established in this thesis through obsidian analysis, the presence of Alibates, and in particular, the piece of Catlinite found at Roper's Walk. This artifact represents an important piece of the puzzle regarding the extent of trade and exchange systems that were operating during the Late Prehistoric (A.D. 100-1775). Other pipes reported by Campbell (1969) and Baugh (1989) as well as those identified in the Colorado SHPO database need to be properly analyzed in order to positively identify the source, thereby allowing us to understand more about the dynamics of trade and exchange throughout the greater Arkansas River Basin.

The questions and directions for future research presented above, may allow us to ultimately answer the pressing question of who the prehistoric architects along the SCR were. Were they farmers coming into the SCR locality to exploit seasonal resources during the growing season? Or were they part of another type of economic system, exchanging bison and animal hides as presented by Creel (1991)? How are they connected to other Apishapa sites within the Greater Arkansas River Basin and beyond?

While Campbell (1969) initially posited that Apishapa were ancestral to the inhabitants of Antelope Creek on the Alibates quarry in northern Texas, Lintz (1986) demonstrated that they were contemporaneously occupying different regions. No one has looked at the possible trade alliance or connection between the two. To the present author, the presence of Alibates at 3 out of 5 architectural sites studied during the SCRCP combined with the striking similarity in the

architectural footprint of Alibates #28 and Feature 9 at the Brown palace (Figure 120), begs the question about the connection between the two groups. At what point in time does a group become so familiar with another group that they start to duplicate architectural patterning, projectile points, and other subsistence strategies?

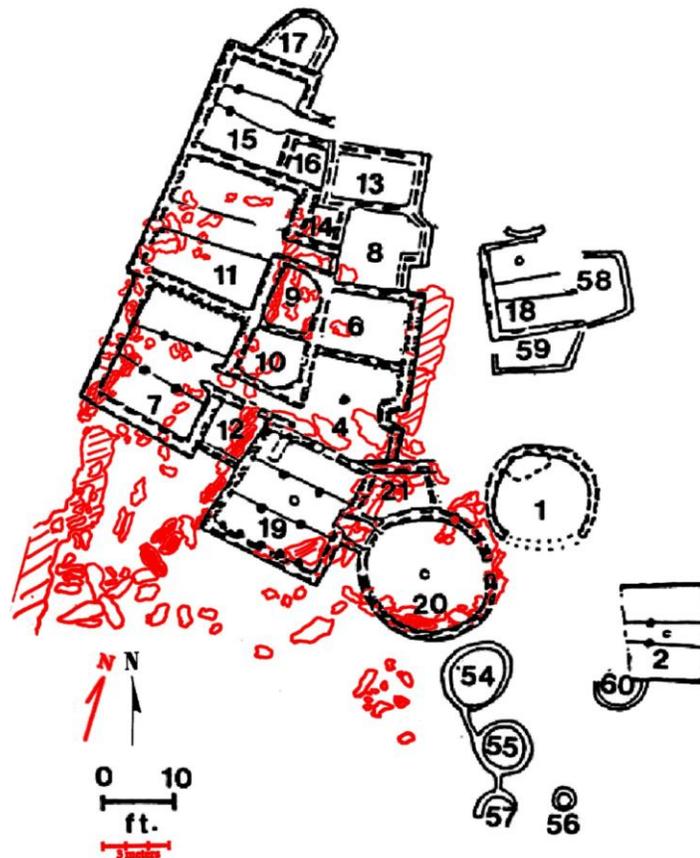


Figure 120. Overlay of Alibates #28 and Feature 9 at the Brown Palace site

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