ARCHAEOLOGICAL ASSESSMENT OF A SUSPECTED LARGE MAMMAL GAME DRIVE GUNNISON COUNTY, COLORADO

A STATE HISTORICAL FUND GRANT SHF #2024-AS-004

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HISTORY COLORADO STATE HISTORICAL FUND
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Acknowledgments

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The files searches, fieldwork, research, and report preparation were completed by staff and crew members of Dominquez Archaeological Research Group. Foremost are the contributions by Sonny Shelton, Barbara Davenport, and Nicole "Kiki" Lathrop for project organization, research and document production. Lathrop's work as the project's drone pilot produced exceptional maps and aerial photographs of the bison drive site.

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Abstract

This is a Dominquez Archaeological Research Group Inc project that was supported by History Colorado State Historical Fund grant #2024-AS-004 and matching funds provided by Kathleen Curry and Greg Peterson, and Grand River Institute. The work was performed under State of Colorado Archaeological/Paleontological Permit 85002 and OAHP Project #GN.SHF.R60. It was undertaken for the purpose of conducting an archaeological assessment, recordation, and data collection of an apparent large mammal game drive the principal feature of which is a dry-laid stone diversion wall. The site mapping was aided by state-of-the-art technology that included use of an Unmanned Arial Vehicle (drone). Additional work was devoted to the reconnaissance of the surrounding area to identify potentially associated prehistoric camps.

Results of the fieldwork included documentation of the game drive features and recordation of two prehistoric camps. One small, apparently single component, open camp is located adjacent to the game drive feature and was included within a single boundary (5MN.6940). It yielded an Avonlea projectile point indicative of the Late Prehistoric bison hunter's occupation of the Rocky Mountains dating ca. AD 300-500. A second campsite was identified approximately 800m southwest of the west end of the drive site's wall feature (5MN.6941). It is a large, multicomponent open camp from which diagnostics previously collected by private individuals are representative of Early and Late Paleoindian, and Middle Archaic occupations that span a period of 7000 years from 13000 to 5000 years before present.

MANAGEMENT SUMMARY

Dominquez Archaeological Research Group's Education Director Holly (Sonny) Shelton was contacted by Kathleen Curry who requested a field visit to an impressive rock alignment located on a hogback ridge on the family ranch. After the initial review of the site and determination that it was likely a bison drive type of prehistoric origins, an assessment grant request was submitted to and later awarded by SHF.

A files search was conducted as part of the initial phase of the project through the Office of Archaeology and Historic Preservation (OAHP) and local federal offices for known cultural resources within or adjacent to the possible bison drive site, which indicated that important Paleoindian finds had been made in the general vicinity. In addition, a review of the General Land Office (GLO) historic maps was completed to determine if the rock alignment (s) was part of any type of historic structure, but no indication of such was found.

Fieldwork ensued in which numerous visits to the site included intensive mapping of artifact distributions around the northwest-southeast oriented main wall and two wing wall rock alignments. Two drone flights contributed to the site's overall mapping and photography. A small prehistoric open camp with an Avonlea diagnostic projectile point was found in direct association with the wall. The fieldwork also involved a search for additional prehistoric camps in the near vicinity. Kathleen Curry guided the archaeologists to a nearby prehistoric camp that has produced Early and Late Paleoindian projectile points, and several Middle Archaic types indicating a multiple component site.

The preliminary assessment of the rock alignments within 5GN.6940 is that they apparently comprise a large mammal drive/trap that likely directed animals into a once swampy area located along the southwestern base of the low hogback ridge. Associated diagnostic points of this and site 5GN.6941 suggest that the hogback/swampy area was utilized at least intermittently for thousands of years as a drive/trap site, and the rock alignments may have been constructed during a Paleoindian period. Mapping of the sites has also indicated potential testing localities.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF PLATES

1.0 INTRODUCTION

This is a Dominquez Archaeological Research Group Inc project that was supported by a History Colorado State Historical Fund grant (2024-AS-004) with matching funds provided by the private landowners and Grand River Institute. The work was performed under State of Colorado Archaeological/ Paleontological Permit 85002 and OAHP Project #GN.SHF.R60. It was undertaken for the purpose of conducting an archaeological assessment, recordation, and data collection of an apparent large mammal game drive, the principal feature of which is a dry-laid stone diversion wall. The site mapping was aided by state-of-the-art technology that included use of an Unmanned Arial Vehicle (drone). Additional work was devoted to the reconnaissance of the surrounding area to identify potentially associated prehistoric camps.

The files searches, fieldwork, research, and report preparation were completed by staff and crew members of Dominquez Archaeological Research Group. Foremost are the contributions by Holly (Sonny) Shelton, Barbara Davenport, and Nicole (Kiki) Lathrop for project organization, research and document production. Lathrop's work as the project's drone pilot produced exceptional maps and aerial photographs of the bison drive site. Carl Conner served as Principal Investigator.

Documentation of cultural resources was set to State Historic Preservation Officer (SHPO) standards, and the sites were evaluated as to their eligibility for nomination to the National Register of Historic Places (NRHP). Artifacts documented during this project are the property of Kathleen Curry and Greg Peterson, owners of the Razor Creek Ranch, Gunnison, CO.

2.0 LOCATION OF THE STUDY AREA

Regionally, the project area is situated in the Upper Gunnison Basin, which is drained by the Gunnison River, a tributary of the Colorado River. The two newly recorded sites are located southeast of Parlin, Colorado in Gunnison County [redacted]

3.0 MODERN ENVIRONMENT

Climate in the Rocky Mountains and the Colorado Plateau is diverse and complicated with a broad range of temperature and precipitation fluctuations. Throughout time, warm/dry climate episodes have alternated with cool/wet periods resulting in changes to vegetation and topography that measurably affected the habits of humans and the game they hunted. Although present climate change is unprecedented, in general, today's climate is characterized as semi-arid steppe-type with temperatures averaging between -15° F to 100° F. Frosts occur frequently between mid-September and early June, resulting in a growing season of roughly 70-100 days (U.S.D.A. SCS 1982).

Figure 1 Project Location Map Redacted

The steppe-type climate annual rainfall ranges between 12 and 16 inches. Comparably, the average annual precipitation recorded at the Gunnison weather station ranges between 11 and 13 inches, and the surrounding mountain areas can receive up to 25 inches. For Gunnison, the peak months of precipitation are July and August, which get about 1.5 inches each. Temperatures recorded in Gunnison have varied between -31 degrees F in winter and 90 degrees F in summer with a frost-free seasonal range of 70 to 100 days. Agriculture is limited by the low rainfall, short period of frost-free days, and low winter temperatures (USDA SCS 1975:72,81). It is of interest to note three record low temperatures in the Upper Gunnison Basin (UGB) region, previous to the inundation of the Blue Mesa Valley, of -45° F in 1906, -43° F in 1916, and -47° F in 1924 (Western Regional Climate Center 2006).

Elevation of the project area averages 8100 feet, which falls on the cusp of the Montane Shrubs and Montane life zone. Elevation defined life zones in the west-central mountains of Colorado consist of approximately 5% Desert Canyonlands and Steppe (5000 to 7000 ft.); 20% Foothills Pinyon/Juniper woodlands and Montane shrubs, (6000 to 8000 ft.); 40% Montane (8000 to 10,000 ft.); 25% Subalpine (10,000 to 11,500 ft.); and 10% Krummholz and Alpine tundra (11,000 ft. and above). However, the life zones of western Colorado are poorly defined with vegetation intermingling at almost all elevation boundaries (Gregersen 2010). Paleoclimate during the Holocene Epoch would have repeatedly expanded and retracted these boundaries dependent upon associated cool/wet and warm/dry episodes, with all life zones extending to lower elevations in cool/wet periods and retreating to higher, more moist elevations during warm/dry occurrences (Miller 2011).

Flora consists of vegetation specialized in each of the aforementioned life zones and includes a remarkable diversity of species. Alpine plants include many dwarf species and flowers such as Rocky Mountain columbine, dwarf astor, golden draba, and barrenground willow. Subalpine trees and herbage include wild strawberry, larkspur, candytuft, columbine, iris, skunk cabbage, wild raspberry, willow, Bristlecone pine, Engelmann spruce, and fir. Montane forest life boasts aspen and pine forests with a variety of native and introduced grasses, ferns, and red willow while the Woodlands and Foothills consist primarily of pinyon and juniper forests with occasional stunted aspen, Gambel oak, and various drought tolerant flowers, forbs, and grasses including Indian ricegrass, astor, penstemon, and cacti. Finally, the lower elevation deserts and canyon lands produce rugged grasses, cacti, sego lily, globe mallow, rabbit brush, yucca, common sagebrush, and sparse pinyon pine and juniper trees (Gregersen 2010) and an assortment of introduced, invasive, and noxious weeds.

Fauna throughout the region is abundant. Large mammals in the past have included carnivores such as mountain lion, black bear, and wolves while herbivores included Rocky Mountain bighorn sheep, desert bighorn sheep, mountain goat, elk, bison and mule deer. Today, the only bison in the region are those found in zoos, and private or state owned herds. The more common medium-sized mammals include coyote, red fox, and bobcat, with many species of smaller mammals including badger, raccoon, skunk, marmot, beaver, pika, chipmunk, and assorted mice and voles. Raptors and other avian life range from the bald and golden eagle, osprey, great horned owl, to Miriam's turkey, Gunnison sage grouse, blue grouse, American dipper, western bluebird, a variety of tanagers, vireos, warblers, finches, and the diminutive and

pugnacious broad tailed, black chinned, and rufus hummingbirds. Reptile, amphibian, and insect species, including the buffalo gnat, are varied and diverse.

A wide variety of domestic livestock is also found throughout the region. Domestic beef and dairy cattle, horses and mules, musk oxen, sheep, goats, hogs, and domestic fowls have been common in the area since the late 1800s when farming and ranching operations were first introduced into the region. Recently domesticated exotics, raised to supply the exotic meat industry, include beefalo, musk oxen, llama, and several meat goat species. These historic and modern introduced bos species negatively affect bone identification of these and non-bos species, which are frequently found and at times confused with bison bone by amateur, avocational, and professional archaeologists.

4.0 PALEOCLIMATE CONSIDERATIONS

Of all the natural events affecting the planet, climate fluctuation is the single most significant factor in floral and faunal evolution and topographic alteration, which when combined, positively or negatively affect human adaptation and ultimately human survival. From an archaeological perspective, it is critical to consider the response of prey animals and human predators to both long- and short-term climatic variation. Temperature changes of one or two degrees, occurring gradually or suddenly, will affect significant change in the amount and distribution of moisture upon the diverse topography of western Colorado. In response to these temperature changes vegetation will adjust elevational parameters and forest boundaries, including timberline, in order to accommodate individual specie requirements. For example, as described by Fall (1997), the lower aspect of timberline is more reactive to moisture with upper timberline being more sensitive to temperature changes.

Climate research performed at Lily Pond and other locations throughout Colorado (Briles et al. 2012) provides evidence of greater expanses of tundra and larger lower elevation parklands at approximately 14,700 BP than are present today. During the Younger Dryas (11,000 to 110,000 RCYBP) most mountainous areas of western Colorado were affected by increased glaciation and colder temperatures. Interestingly, some regions, including parts of the Upper Gunnison Basin, were minimally affected with temperatures being tolerable to the degree that native fauna and humans existing during the Younger Dryas would have noticed little change and their lifestyle, even over several generations, would have been minimally affected (Meltzer and Holliday 2010).

By the Late Pleistocene the lower boundary of timberline occurred 300 meters to 700 meters below the modern limit with a climate 2 degrees to 5 degrees Celsius cooler and receiving 7 centimeters to 16 centimeters more precipitation annually. Between ~9000 to ~6000 YBP the sub-alpine zone spanned a broader range of elevation with the upper timberline averaging 270 meters above the present maximum and summer temperatures from 1 degree to 25 degrees Celsius warmer. This increase in temperature combined with stronger summer monsoons increased precipitation by 8 centimeters to 11 centimeters annually. As a result, the lower boundaries of the sub-alpine and Montaine zones reached lower elevations. From 6000

YBP to 4000 YBP precipitation waned, and temperatures cooled approximately 1 degree Celsius lower than the present and vegetation boundaries gradually retreated upwards. By 2000 YBP a more familiar climate dynamic of increased winter precipitation prevailed in the majority of the study area.

Significant to interpreting past environmental changes in the Gunnison Basin were wood samples recovered during the excavations at sites 5GN810 and 5GN2140. Features 1, 7 and 10 of 5GN810, Feature 1 of 5GN2140, and natural tree burns TB1 and TB2 were identified as Pinus ponderosa. These samples were radiocarbon dated between ca. 4700 and 2500 BC. Carbon from ponderosa pine has been found in other dated hearths in the Curecanti area, e.g., a slab-lined hearth in site 5GN212, which dated ca. 5480-4900 BC, and Feature 1 of site 5GN247, which dated ca. 3620-2470 BC (Stiger, 1981:22, 38). Sagebrush was found to be the fuel for Features 2, 4 and 5 of 5GN810, and isolated feature 5GN2367. Their minimum age range is roughly ca. AD 200-700.

These findings concerning environmental change in the area are comparable to those of Markgraf and Scott (1981) for the Alkali Creek Basin, located just north of the Gunnison Basin. Their study indicates the presence of montane pine forest, at an elevation of about 9000 feet, until ca. 2600 BC when sagebrush became dominant. Ponderosa forest is not found presently in the Gunnison Valley, but it appears likely that a mixed pine forest existed in the Gunnison Basin until at least 2600 BC when a changing environment – compounded by forest fires and perhaps human use of a dwindling resource--removed them completely from the area. This temporal boundary roughly corresponds to a dry/cool episode of the Neoglacial period. The same period of cooling and drying of the climate appears to have been occurring on the Plateau, as indicated by a retreat of the Ponderosa forest to higher elevations.

Climate changes dictated adaptive measures taken by both wildlife and humans of abandoning unproductive or increasingly hostile environments to seek out more welcoming landscapes. Humans engaged in ongoing modification of ineffective survival strategies by developing new coping skills, new tools, and adaptive survival techniques initiated not only in response vegetal resource changes but also to the presence, absence, and movements of large game animals as they adjusted to the results of climate change.

4.1 Geological Implications of Regional Paleoclimate Conditions

Based on an analysis of the area's late Quaternary stratigraphy, the geologic history of the last 18,000 calendar years in the region follows something like the following scenario (cf. James C. Miller, Chapter 2, Conner et al. 2011:2.35-2.36). [Dates (*) are calibrated.]

Late Pleistocene dissection scoured channels during the Late Glacial and deposited thick sequences of large, e.g., boulder-sized, gravel in most drainages. About 13,400 BC* the glaciers are retreating, and capacity and competence decrease; the time between then and about 11,000 BC* is identified by Haynes (1991) as the Clovis drought. In areas dominated by aeolian processes, deflation occurs.

The Younger Dryas, from around 10,600 to 9000 BC*, the last gasp of the glacial period, took place around Folsom times. During the period, drainages are rejuvenated, surfaces stabilize, soil formation accelerates, and the late Pleistocene-early Holocene loess is slowly accumulated.

Between 9500 and 5500 BC*, the long drought hits (interrupted once around 7000 BC*, coincident with Pryor Stemmed occupations). Aeolian sand seas form in Colorado, Wyoming and Nebraska and drainages throughout the mountain west are choked with sediment and become braided; these are Kaycee equivalent deposits. Dunes form in places in western Colorado and are later preserved as clay dune cores, but Kaycee equivalent deposits varying from a few to several meters in thickness are ubiquitous in northwest Colorado. The Pleistocene extinctions were completed early in this interval and Paleoindian big game hunters were subsequently replaced by Archaic hunter-gatherers. While extinction of most of the Pleistocene megafauna took place in Clovis times, mammoth (e.g., Agenbroad 1978), and camel and horse persisted in some areas to around 9000 BC* (e.g., Miller and James 1986).

Cooling temperatures between 5500 and about 3100 BC* sustained the middle Holocene incision. Capacity and competence increased, but not to the levels achieved during the Late Glacial. As a consequence, when incision exposed Late Glacial gravel, stream power was insufficient to erode the gravel, and most drainages initiated a cycle of channel widening. Away from drainages, the middle Holocene loess accumulated. Pithouses were in wide use in the Rocky Mountains, Wyoming Basin, and Colorado Plateau in the interval, suggesting more sedentary populations; Yarmony Site in Eagle County and site 5ME16789 near Battlement Mesa are local examples. McKean Complex is well represented in western Colorado during the latter part of the interval and the period of transition to warmer climates that followed. After about 3100 BC*, warming temperatures led to erosion of the loess by 2500 to 1850 BC* and the deposition of the middle Holocene alluvium.

Droughts in the late Holocene are best dated by periods of erosion, i.e., lacunas, identified by unconformities in loess deposits. Erosion in loess took place between 1850 and 950 BC*, 275 BC* and 165 AD*, and 1050 and 1350 AD*, and again in the last 150 years or so. The first interval coincides with the Middle to Late Archaic transition and the third interval coincides with the Medieval Warming Period in Europe. In the alluvial system, deposition of the middle alluvium ended after the first arid interval, by 650 BC*. The first of Lightning equivalent alluvium is deposited during the second arid interval, at some time after 650 BC*. As the suggested dates imply, the two deposits are nearly continuous and appear this way in sediment choked drainages, but on other ephemeral and small perennial streams, the deposits are more easily separated.

5.0 GEOMORPHOLOGY

(cf. James C. Miller, Conner et al. 2013)

The important deposits in the survey area are loess (windblown silt) and windblown sand sheets or blankets and shadows. The term “sheet” or “blanket” defines thin, albeit widespread

deposits that drape the surface (they are also termed goze, e.g., Reineck and Singh 1975). Shadows are accumulations, generally leeward of effective obstructions, and are best developed on east facing slopes; however, obstructed shadows form on the windward side. Deposition of either sheets or shadows is a result of wind turbulence caused by expanding or compressing wind flow; turbulent flow allows suspended sediment to fall out to form the deposits. However, preservation and long-term stability of these deposits on the landscape is in large part the result of vegetation growth and vitality, so the deposits are phytogenic in nature, meaning they depend on vegetation for accumulation and stability. Vegetation benefits through the accumulation of sediment which enhances water storage and provides nutrients. Climate change to warmer, concomitantly drier conditions decreases vegetal vitality and this leads to degradation of the deposits.

Regionally, periglacial processes have little surface evidence, but are widespread, most notably in older aeolian deposits where edaphic, moisture and temperature conditions conducive to frost heaving are frequently met. The primary evidence for the process is platy- and prismatic-shaped, small pebble-sized particles oriented vertically with respect to the bedding planes, many times, mineral exclusion during ice formation results in thin mineral coatings on the undersides of the heaved particles. A notable unconformity separating pre-3000 years old loess from post-3000 years old loess is marked by a serir or desert pavement surface that was partially produced by frost heaving and further developed by deflation. The period of frost heaving appears to be in the middle Holocene, from 6500 to about 4500 years ago, since deposition after that period bears no evidence of frost heaving except in the northern plains.

The amount of movement of an object affected by frost heave is contingent on interrelated soil-environmental factors (including soil texture, frequency and rate of frost penetration, soil moisture, overburden pressure, etc.), and the physical factors of the artifacts (geometric form, surface area, effective height, and density-thermal conductivity). Frost heave greatly affects objects that are buried near the surface when the soils are poorly drained, there is no cover (snow or vegetation), and the rate of frost penetration is slow. As a result, the actions of frost heave tend to sort--even stratify--artifacts (Hester 1988).

5.1 Geomorphological Considerations in Archaeological Visibility and Preservation

Aeolian deposits -- loess or wind-blown silt -- form in shadow and sheet deposits leeward or downwind of breaks in slope and many deposits have component parts aging to the time humans entered the continent. Normally, north and east facing slopes have the best-preserved deposits, and in places aeolian deposits of two meters depth are present. Aeolian deposits are important archaeologically because of the resources offered to prehistoric inhabitants.

Sites in aeolian deposits are usually visible because deflation or wind erosion has uncovered artifacts, but it is difficult to determine integrity or “intactness” from surface evidence alone. In many places, recent aeolian sheet deposits cover older deposits preventing inspection of older deposits completely. Artifacts recovered from the region span the latest Pleistocene and Holocene – many in association with aeolian deposits – and the potential for

buried, relatively intact archaeological components is good.

Notably, most of the diagnostic artifacts recovered from the surface of aeolian deposits or in the pinyon-juniper forest are Late Archaic or younger, generally less than about 3000 years old. A major factor in exposure is deflation which can easily strip away the relatively unweathered post-3000 year old deposits and leave artifacts on the deflated surface. Deflation in the middle to late 20th Century (exacerbated by development and grazing) has exposed the and older deposits, but non-diagnostic, utilitarian artifacts could represent almost any period in the past. Another possible reason for higher frequency of sites after 3000 years ago is a hypothesized increase in aboriginal population during the period, but visibility of older cultural components is a problem and could also explain the disparity.

5.2 Archaeological Preservation

Preservation is another critical archaeological problem on different levels: on the macro-scale, preservation of entire site is the issue; on the meso-scale, preservation of a site's facilities and activity areas; and on the micro-scale, the preservation of the artifacts.

Most surface sites associated with aeolian deposits, except, very recent sites, have been exposed by erosion. Exposure by deflation and erosion caused by sheet flow alluviation and rill formation locally removes the relatively unmodified post 3000 years old loess and exposes the upper contact of the earlier loess deposits. Artifacts are left on the contact separating the pre-3000 and post-3000 year old deposits. This presents a conundrum: are the observed artifacts part of a post 3000 years old component that is heavily eroded, a pre-3000 years old component that is just being exposed, or both? In areas where deeper exposures of loess deposits are viewable due to rill or slope erosion, artifacts situated on the sloping surfaces present an equally perplexing problem, especially for components with relatively few artifacts: what stratigraphic level did they erode out of? It remains difficult to answer these questions without deliberate, controlled excavations.

Two processes – other than massive erosion – can alter whole sites: frost heaving and clay swelling. Frost heaving has affected some older deposits. Primary evidence for this is platy- and prism-shaped granule- and small pebble-sized particles oriented vertically, i.e. perpendicular to bedding, and mineral coats on the lower margin of the particles. The coats are formed by mineral exclusion during ice formation. Clay and moisture content, edaphic conditions, and temperature and duration of freeze are important factors (Tabor 1929). This process generally affects deposits older than 3000 or 4000 years since the process had its most widespread effect in the middle Holocene, between 6500 and 3500 years ago. However, it may not affect the recovery of useful archaeological data. Frost heaving (like clay swelling) does not alter the position of everything and is limited to the upper (water saturated) parts of the stratigraphic column: a single period of use in the affected horizon still has all the durable remains from the altered component, so it still provides information.

The other factor that has a widespread if not well understood effect on archaeological deposits is clay swelling. Smectite clays, such as montmorillonite, increase volume after

absorbing water in the interlayer spaces. Clay swelling at or near the surface after a light rain produces lateral expansion of the surface layer and results in distinct if ephemeral lineations. Deep wetting in columnar-jointed sediment (i.e., strata with relatively high clay content) is more dramatic and culminates in vertical expansion that forms "pedestals." Lateral expansion can move surface artifacts around the surface, but only a very small distance at a time; this is one of the important processes that produce fire altered rock scatters from the original hearths and middens. Columnar swelling can displace artifacts vertically, but again, just a small distance at a time, and may not result in significant movement over a long period.

6.0 GEOLOGY AND SOILS

The study area lies within the Rocky Mountain System in the physiographic province of the Southern Rocky Mountains (Fenneman 1946) and is approximately 40 miles east of the poorly defined eastern edge of the Colorado Plateau (Hansen 1987). The fundamental structure of the modern Rocky Mountains was formed 70 to 80 million years ago in the Late Cretaceous (Mesozoic) during the Laramide Orogeny. Geologic uplifting that occurred during this time resulted in both thrust and reverse faulting forcing older strata over the younger strata. As uplifting continued, marginal basins subsided and were eventually filled with massive amounts of clastic sediment.

By the time tectonic activity and uplift began to slow and finally cease through the Neogene (Pliocene) and Quaternary periods (Cenozoic), the Southern Rocky Mountains had attained impressive vertical movement of greater than one mile. During the Pleistocene Epoch cyclical glacial movement created alpine cirques and glacial moraines. Such glacial deposits and glacial till are evident in high elevation basins. Today, small, high elevation residual glaciers and ice patches are all that remain of the great ice masses from this epoch. The modern rugged landscapes created by the intermittent episodes of extreme erosion during the Pleistocene exhibit deep canyons with entrenched rivers as well as broad basins with redeposited soft sediments and meandering streams.

The Southern Rocky Mountains physiographic province is a region of Colorado that consists of metamorphic and granite rocks uplifted to form the cores of the region's mountain ranges. Characteristically, the rock is a hard, crystalline structure resistant to erosion that is exhibited in a multitude of high, jagged peaks – many towering above 14,000 feet in elevation – which define the region's topography. Anticlinal arches and intermountain basins are interspersed throughout and form high elevation, isolated parks amenable to large game.

The landscape to the northeast of the project area includes Mt. Antero, Mt. Shavano, and Mt. Aetna. These features, located in the Sawatch range, are aspects of a 15 or 20 mile some-what circular baccolith (Tertiary). Granite, porphyry, and various minerals and gemstones are found on and in the vicinity of these peaks. Monarch Pass, located directly east of the project area, cuts through Precambrian granites on its western slope. A glacial moraine is evident beginning at the foot of Monarch Pass, along Tomichi Creek and terminating near the hamlet of Sargents. To the south, the high prominences of the Sawatch range are topped with volcanic

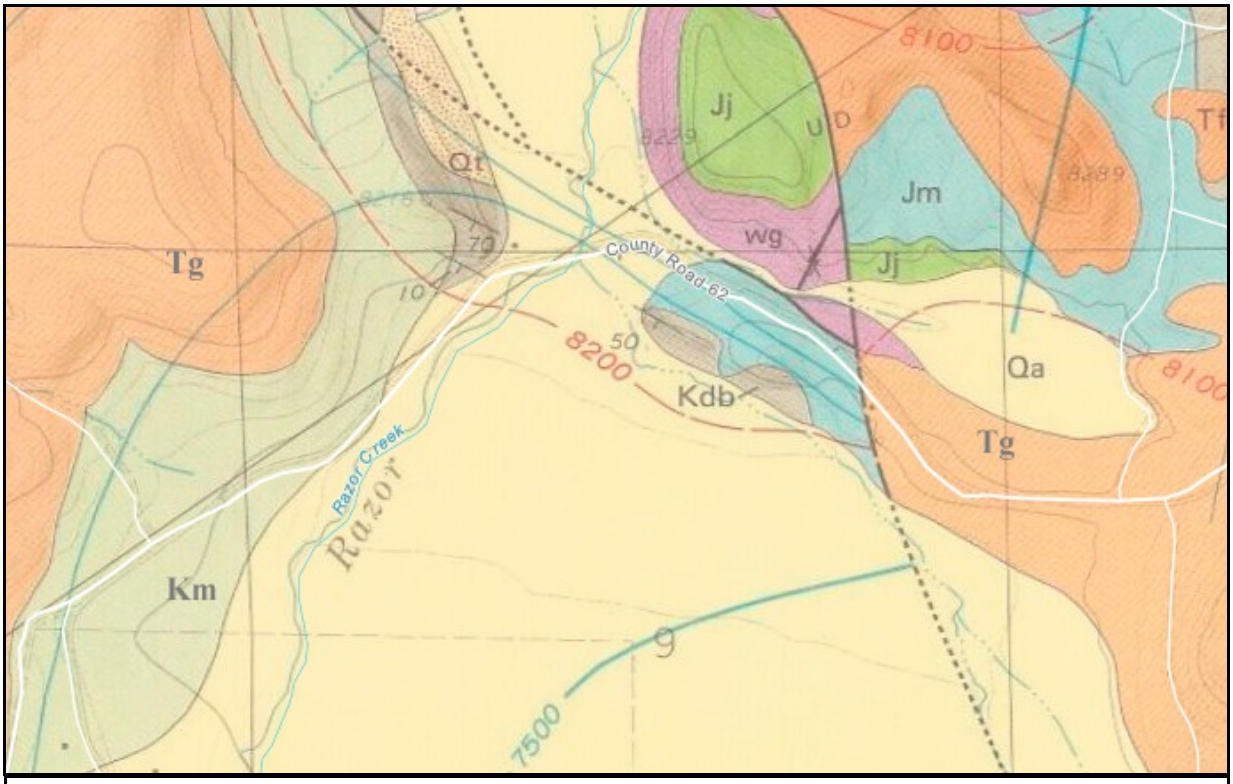
rock and tuff (Tertiary) originating from the San Juan volcanic field (Chronic and Williams 2002).

Tomichi Dome is located east of the project area. The dome is a laccolith (Tertiary) formed by molten rock that moved upwards through Dakota sandstone and into the Mancos shale. As the molten rock progressed laterally, it produced a good deal of additional doming, however; the majority of these domes have eroded leaving some lithic evidence of the event across the landscape (Chronic and Williams 2002). They note that from the Tomichi Dome to Doyleville deep granite (Precambrian) is overlain by Morrison Formation (Jurassic) shales, which are topped by Dakota sandstone and black Mancos shale (Cretaceous). All of these, the Precambrian surface and subsequent deposits, are exposed and visible in road-cuts along U.S. 50. Dakota sandstone and Burro Canyon Formation, known to often be a source of toolstone, are both present at the Petersen-Curry Game Drive Site (5GN.6940) capping the surface of the ridge.

The immediate study area is located in the Colorado River drainage in the Upper Gunnison Basin watershed, which is drained by the Gunnison River, a tributary of the Colorado River. The study area is 2.5 kilometers south of Tomichi Creek and 400 meters southeast of Razor Creek which drains into Tomichi Creek. (U.S.G.S. Quadrangle map: Houston Gulch, 1962). The Peterson-Curry Game Drive Site (5GN.6940) is situated on a hogback ridge north of a 4-kilometer-long expansive, north to south oriented, flat-bottomed alluvial valley (U.S.G.S. 2025). South of the site, the valley has an average width of 2.0 kilometers. Immediately west of the site, the valley narrows to a 300-meter-wide bottleneck. North of the bottleneck, the valley reopens to an approximately 500 to 600 meters and is mostly level. Razor Creek bisects the valley north to south.

The ridge line of 5GN.6940 is located immediately south of a gentle slope of Morrison Formation (Jurassic) that consists of sandstone, mudstone, shales and some decomposing limestone (Figure 2). This area rises southward to an east-west oriented prominence consisting of Dakota sandstone and Burro Canyon Formation's (Cretaceous) weathered quartzite. Atop the crest of this prominence is a massive northwest by southeast oriented, linear outcropping of quartzite with eroding, prismatic-shaped boulders – a large number of which have been manipulated and repositioned by humans to form a prehistoric stone walled game drive.

The eastern aspect of this outcrop, near which the game drive wall terminates in a constructed angled wing-wall, is interrupted by an eroded swale that dips back into the Morrison Formation (Jurassic) strata for approximately 30 meters whereupon it abruptly rises eastward to a rounded prominence formed of the same Dakota sandstone and Burro Canyon Formation sandstone (Cretaceous) unit. The south-facing escarpment of the northwest by southeast oriented outcrop, topped by stone game drive, drops steeply downward to the south for 14 meters at a grade of 50 to 70 degrees at the level hydric area of the lower alluvial valley previously described. Site 5GN.6941 is situated on a slope of Mancos Shale Formation 800m southwest of 5GN6940. The ridge tops in the surrounding area have a bedrock of Green River Formation, and the basin below is covered in modern alluvium.



GEOLOGIC MAP KEY

Jj [Jmj] – Morrison Formation and Junction Creek Sandstone - In Gunnison River area east of wedgeout of all units of Wanakah Formation (Jmw) except the Junction Creek Member
Jm – Morrison Formation - variegated claystone, mudstone, sands1one, and local beds of limestone
Kdb – Dakota Sandstone and Burro Canyon Formation - Sandstone, shale and conglomerate
Km – Mancos Shale - lntertongues complexly with units of overlying Mesaverde Group
Qa – Modern Alluvium - includes Piney Creek Alluvium and younger deposits
Qt – Ancient Alluvium - in isolated patches that may not all be of the same age
Tg – Green River Formation - Marlstone, sandstone, and oil shale
wg – Undifferentiated Wasatch/Green River - Sedimentary Rocks of Tertiary Age

Figure 2. Geological formations within and near the two prehistoric sites of the study area.

An unnamed drainage originating to the southeast near the Gunnison and Saguache County line enters Razor Creek from the east and contributes to the hydric area in the valley. A warm spring is located on the northwestern aspect of the prominence on which the game drive is located. Like other warm springs of the area that are the result of water heated by circulation through the fault system, this spring is charged from a geothermal source emanating from a small fault located to the south of the game drive site. Other hot and warm springs are common with several being located near the site. The largest and most productive is Waunita Hot Springs, which originates from geothermal sources (Zacharakis 1981).

Work done by D. C. Hedlund and J. C. Olsen (1981) indicate that there are a multitude of large and small fault lines present within the Gunnison Uplift, which extends south of the Gunnison River and eastward to the Cochetopa Creek region. Ages of these faults are of Precambrian, Cambrian and Laramide ages, with the Precambrian being difficult to date. The tilt of the fault block averages 5 to 10 degrees and is oriented northeast. Exposures of thorium veins found in exposed areas of the Cambrian age faults are associated with reddish colored jasper (Hedlund and Olsen 1981). A number of knapped jasper projectile points and flake artifacts have been identified on newly recorded site 5GN.6941. This lithic material, most often considered a chalcedony, is of sedimentary or metamorphic origin. Michael O'Donoghue (2006) states that jasper "... occurs as a cavity filling or as nodules or veins in iron ores. It occurs in altered igneous rocks and in detrital deposits. It may occur in variegated red-to-brown colors as a petrifying agent of wood."

The open basin south of 5GN.6940 and east of 5GN.6941 is filled with clastic sediment that is overlain by alluvium from the meandering Razor Creek. Within the site areas are four soil types. Soils on the ridge in 5GN.6940 are Duffson-Beenom (2GB4), an exposed complex on 5 to 40 percent slopes, and the lower elevations on the south and west are Gold Creek (GrB) silty clay loam found on 0 to 5 percent slopes. The west portion of 5GN.6941 also has Duffson-Beenom soil type, while most of the lower slope exhibits Duffson-Hazton (2GB3) extremely stony-Beenom, an exposed complex on 5 to 35 percent slopes. The lowest elevations of this site have Menbar and Venable soils (2GB6), very deep and poorly drained, formed in alluvium and found on 0 to 5 percent slopes (Web Soil Survey National Cooperative Soil Survey). The Duffson series consists of moderately deep, well drained soils, formed in residuum and slope alluvium from sandstone and shale. Duffson soils are found on hills, ridges, escarpments and mountainsides with slopes of 4 to 50 percent. The mean annual precipitation for the Duffson series is about 430mm [17 inches], and the mean annual air temperature is about 5 degrees C [41 F] (National Cooperative Soil Survey U.S.A).

7.0 Research Background

Files and site form searches for this project made through the Office of Archaeology and Historic Preservation, Colorado Historical Society, Grand Mesa, Uncompahgre, and Gunnison NPS Office, and the Bureau of Land Management Gunnison Field Office indicated no sites were previously recorded within the project's discrete areas. The literature review also included a search for information concerning bison drive or trap sites and similarly constructed walls in the Upper Gunnison Basin and North Park regions (Appendix A).

In general, cultural resource investigations in the Gunnison Basin have yielded surface diagnostic artifacts and excavated cultural materials consistent with the regional cultural history (Conner and Hutchins 1991:9-15). Reportedly, artifact assemblages from the Gunnison area exhibit similarities with the Front Range and even greater similarities with those of the Colorado Plateau (Baker et al. 1980:197). Importantly, radiocarbon data from the excavation of 25 sites (Euler and Stiger 1981; Jones 1982, 1984; Stiger 1981) in the Curecanti National Recreation Area suggests a nearly continuous occupation of the Gunnison Basin for the past 12,000 years

(Jones 1984:19-21).

Regional archaeological studies indicate occupations by Paleoindian Era big game hunting peoples (ca. 11,500-6400 BC); Archaic Era hunter/gatherer groups (ca. 6500-400 BC); Formative Era horticulturalist/forager cultures (ca. 400 BC-AD 1300); Protohistoric Era [or Late Prehistoric] pre-horse hunter/gatherers (Athabascan – Navajo/Apachean and Numic – Ute, Shoshone, Comanche, ca. AD 1300-1650) and historic horse-riding nomads (Navajo, Ute, and Arapahoe ca. AD 1650-1881). An overview of the prehistory of the region is provided in a document published by the Colorado Council of Professional Archaeologists entitled *Colorado Prehistory: A Context for the Northern Colorado River Basin* (Reed and Metcalf 1999). Additional information can be obtained from Colorado Historical Society's publication entitled *Colorado Mountains Prehistoric Context* (Guthrie et al. 1984). Historic records suggest occupation or use by Euro-American trappers, settlers, miners, and ranchers as well. Overviews of the historical record are found in a Bureau of Land Management publication entitled *Frontier in Transition* (O'Rourke 1980), and in a historical context published by the Colorado Council of Professional Archaeologists entitled *Colorado History: A Context for Historical Archaeology* (Church et al. 2007). Additional historical information is provided in a Colorado Historical Society's publication entitled Colorado Mountains Historic Context (Mehls 1984).

8.0 OBJECTIVES

This project was undertaken by DARG for the purpose of conducting an archaeological assessment of an unrecorded, prehistoric dry-laid stone masonry wall(s) suspected as a large mammal game drive. Work was to consist of a pedestrian survey of the site and recordation through photography, mapping of features and artifacts using handheld Trimble units, production of quality photographic imagery, and artifact analysis. Large scale mapping of the site was to be aided by state-of-the-art technology that included the use of an Unmanned Arial Vehicle (drone). Limited shovel testing was to be allowed as necessary to make an evaluation of the site's potential depth of cultural fill. In addition, work was to be devoted to reconnaissance of nearby areas in order to identify a prehistoric open camp the occupants of which may have constructed or used the game drive.

A report consisting of all available data, assessment results, selected images, maps, drone data, and other supplemental information was to be completed. Discussion regarding the site(s) features, select components, associated features, and artifacts were to be addressed. Colorado State Historic Preservation Office site forms were to be completed for sites identified during the project.

9.0 FIELD AND REPORTING METHODS

Site 5GN.6940 was visited for over a week of combined efforts during which site parameters, features, and artifact locations were identified and mapped using a Trimble Geo7X unit and drone imaging. All extant features within the site parameters were measured and

individual details noted. Special attention was given to identifying potential associated features and evidence of faunal remains exposed near the base of the escarpment. On-site photography included existing features, artifacts, site overviews, and viewsheds. Photography was performed using high resolution digital cameras.

A pedestrian survey of the stone wall feature and the surrounding approximately 10-acre area was conducted to determine the presence and level of integrity of any archaeological features, the presence of artifacts, and the character and boundaries of the site. Transect intervals for the survey ranged from 10-15 meters for 50% to 100% ground visibility and 5 meters for less than 50% ground visibility. Limited testing was found to be unnecessary based on exposures of cultural materials due to erosion, cattle congregation/trailing, and frost heaving.

Drone technology was employed to better record the massive structure of the game drive. For the digital recording of an archaeological site by drone photogrammetry, an initial assessment of flight ability through FAA regulation is considered. Once it is established that the site is safe for flight by FAA part 107 UAS regulations, a launch point is determined that would be least impactful on the site. A bright contrasting colored launch pad with cardinal direction is used with "home point GIS" information. This point is photographed from height by the drone before operations for the purpose of redundancy in error elimination of the final 3D model. From the home point, the drone is programmed with photo collection software Pix4D Capture, and flies autonomously to take evenly spaced photos at pre-determined overlap while flying transects. These photos are then compiled through WebODM software to create a point cloud model of the site. This information can then be exported and used in-house through GIS programs to make maps (including detailed contour maps), 3D printed models, and in the planning process for future study.

Nicole Lathrop, an FAA licensed pilot of Indiana Drones Archaeology LLC, conducted Geographic information system (GIS) analysis, low altitude aerial photography (drone imaging), and subsequent data processing. She assimilated and analyzed spatial data using drone technology and created maps, 3-D models, and other images. Data derived from this work is provided as a deliverable.

In general, cultural resources were sought as surface exposures and characterized as sites or isolated finds. A site is the locus of previous human activity (50 year minimum) at which the preponderance of evidence suggests either a one-time use or repeated use over time, or multiple classes of activities. For example: a) Isolated thermal features such as hearths are to be designated as sites, due to the interpretable function of such utilization and the potential for chronometric and economic data of recovery, b) Single element rock art panels are to be designated as sites due to the interpretive nature of such an event and the potential diagnostic value of the motif, c) Similarly, isolated human burials are to be designated as sites, or d) Loci exhibiting ground stone and flake stone in association. An isolate refers to one or more culturally modified objects not found in the context of a site as defined above. Note that this definition makes no reference to an absolute quantitative standard for the site/isolate distinction.

The sites were recorded using the following methods of mapping and note taking. The basic approach to the data collection was the continuous mapping of observed artifacts and features by recording UTM coordinates (NAD 83 Datum) using a handheld Trimble Geo XT. Site maps were created using differentially corrected GPS data and ArcGIS Pro. Photographs were taken at each site and include general overviews and specific artifacts or features. Colorado State Historic Preservation Office site forms were completed. This report includes contributions from all team members, consisting of all available data, assessment results, selected images, maps, drone data, and other supplemental information. It also includes discussion regarding site features, select components, associated features, and artifacts. The two OAHP site forms contain a compilation of images and maps, GIS data, drone imaging data, images, and curation quality photos.

10.0 STUDY FINDINGS

Beginning in the summer of 2024 Dominquez Archaeological Research Group, Inc. performed an in-depth archaeological assessment of an unrecorded prehistoric dry-laid stone masonry feature believed to be a large mammal game drive. Also, a nearby area suspected to be a prehistoric open camp by previous surface collections was a subject of reconnaissance survey. The result was documentation of the apparent game drive structure and its adjacent small camp (5GN.6940), and a large open camp (5GN.6941) where Paleoindian and Middle Archaic Era projectile points had been recovered by Kathleen Curry from surface collects by private individuals. The following describes the two previously unrecorded sites.

Site **5GN.6940** (Peterson-Curry Game Drive Site) is an apparent large mammal drive structure/trap area with an associated open camp. The drive structure, a long, dry-laid rock wall, is situated along the crest of a northwest-southeast oriented hogback ridge with a mean elevation of 8100 feet. Along the base of the ridge to the south and west is hydric soil that has been included in the site boundary as a potential, previous bog-type trap area. The combined features of the site include an area of about 21 acres (317m NW-SE x 256m). The nearest permanent water is Razor Creek located about 350m to the west, which flows north 1.5 miles to join Tomichi Creek, a tributary of the Gunnison River. A warm water spring lies northwest of the ridge. Its presence and previous northward progression have created hydric soils along the ridge's southwest base. Natural vegetation on the ridge is a low sagebrush community. Soils are shallow and rocky along the ridge top and southwest slope. Loess deposits occur on the northeast slope of the ridge and present the greatest opportunity for soil depth and undisturbed cultural deposits.

The site's main feature is a massive, dry-laid stone wall with wing-walls at each end (Plates 1 and 2). The walls were constructed using large quartzite clasts repositioned from natural debris as an enhancement of the layers of upturned Burro Canyon Formation bedrock that form the hogback of the ridge. The main wall is approximately 149 meters long with a maximum present height of 1.4 meters. Fallen clasts indicate that some segments of the wall may have been constructed to a height of 2.0 meters. The western wing-wall runs northeast to

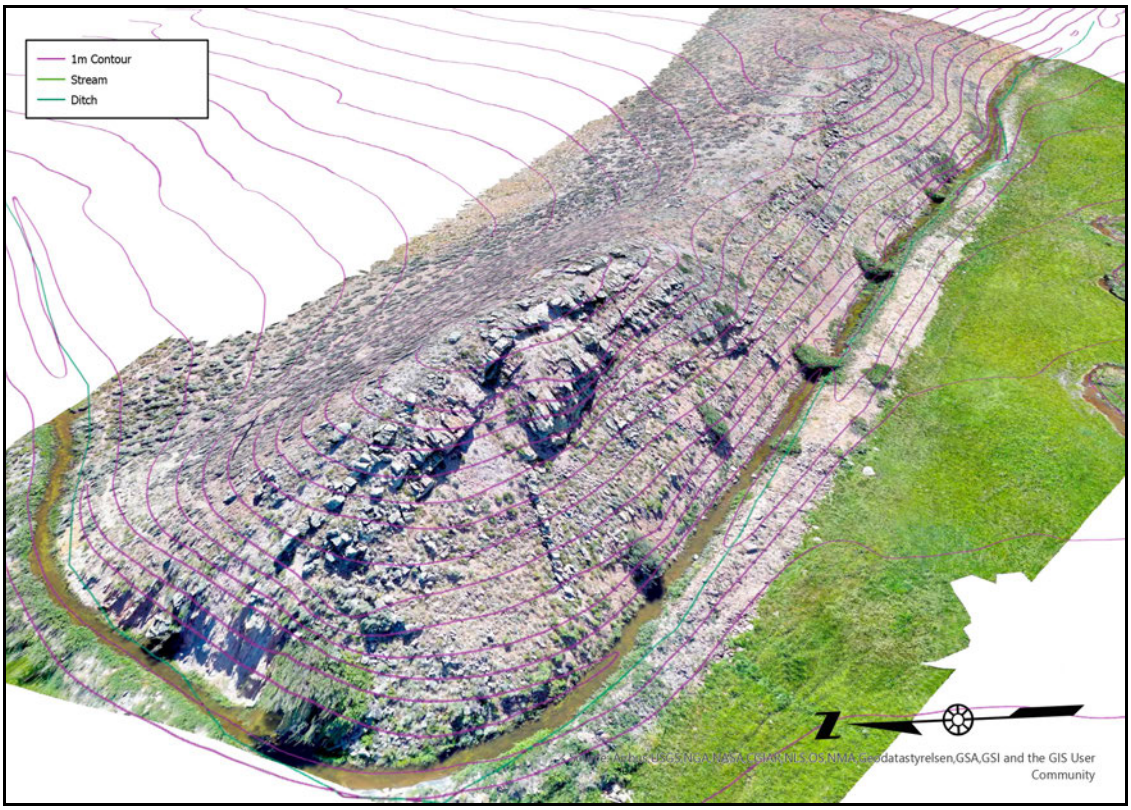


Plate 1. Overview southeast of the hogback ridge showing the enhanced linear exposure of Burro Canyon Frm quartzitic rocks that form the drive line to the hydric soil area (bog) located to the west.

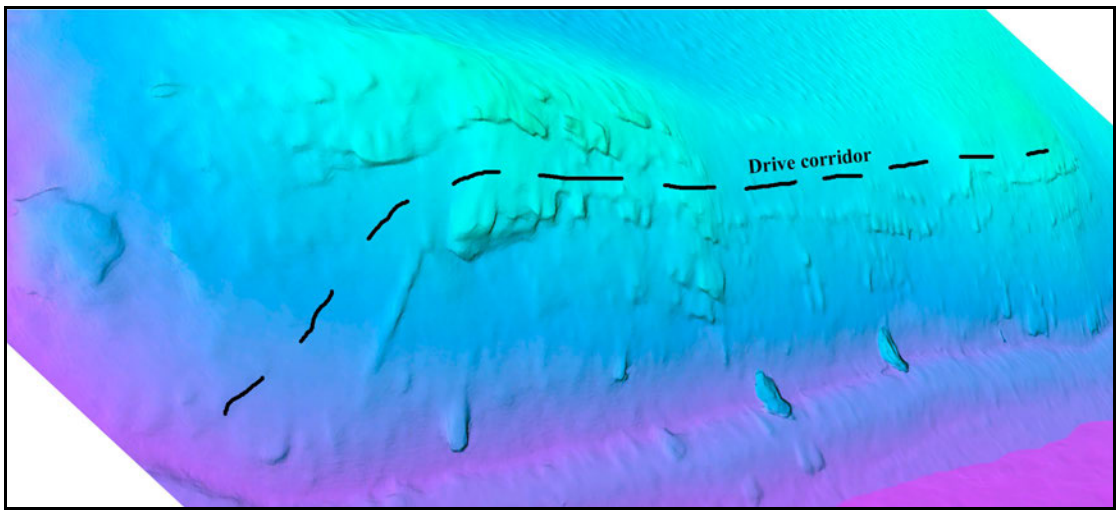


Plate 2. Site 5GN.6940 3D digital surface model (DSM) of the hogback ridge showing the enhanced natural layers of quartzitic rock of Dakota Sandstone Formation and sketched line of the apparent drive corridor. The indicated scenario is of large game animals being driven to the wall from the north and directed westward into a bog/mire.

southwest, is 20 meters in length and has a maximum height of 1.2 meters (Plate 3). The somewhat deteriorated eastern wing-wall is aligned northwest to southeast and its remains are approximately 15 meters long and only about 0.75m in height – cattle trailing and erosion may have reduced its greater length and height (Plate 4). Previous to construction of an irrigation ditch located along the southern and western base of the escarpment, both wing-walls may have extended several meters into a lower elevation.

Plate 3. View northwest of the west portion of the wall feature showing a wing wall descending the slope in a westerly direction and towards a suspected bog trap area.

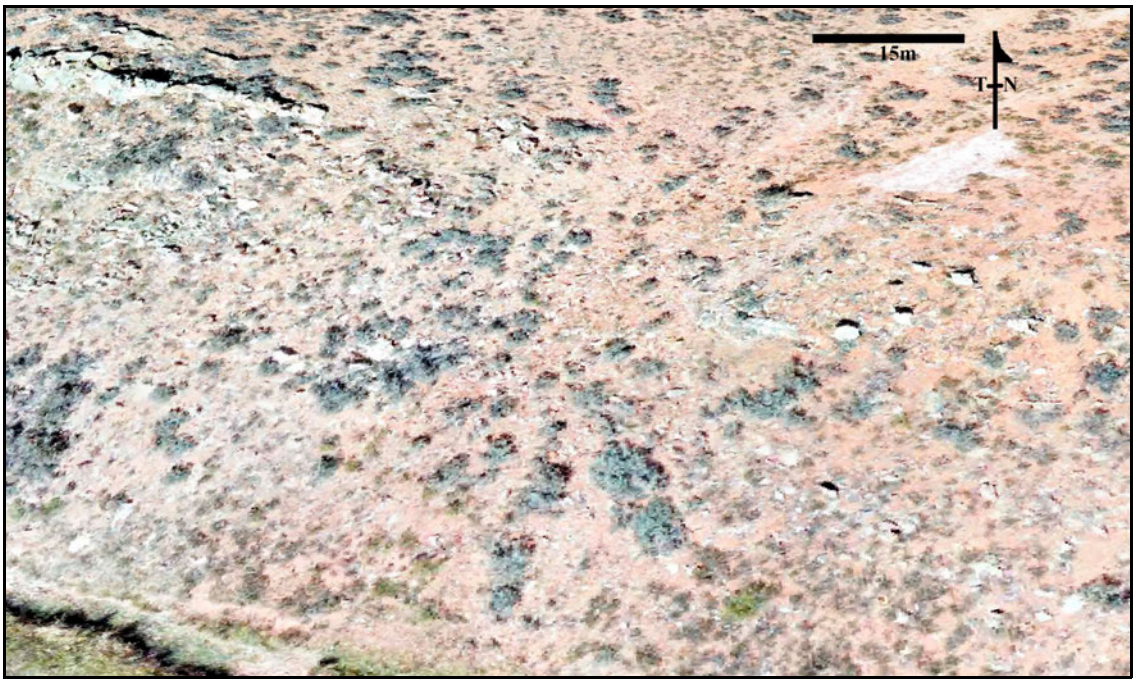


Plate 4. View north of east portion of the wall feature showing an apparent wing wall extension trending southeast and downhill. Cattle trailing and erosion may have reduced its greater length.

Significant to the prehistoric people's purpose of the walls' construction is a lower elevation hydric soil area situated along the southern and western base of the ridge. This soil type was formed through water saturation, flooding, and ponding for a period long enough to create a wetland and develop anaerobic conditions. Investigation of the local geology revealed that a fault that lies south of the ridge brought the ground water to the surface. The water that rose up created the bog/mire conditions on the west end of the game drive – the trap area into which large mammals were directed. Vegetation around the mire includes mosses, sedges and horsetails.

Artifacts identifying a prehistoric open camp were found on the southeast of the drive feature on the ridge crest and north of the ridge line. The camp measures 43m N-S by 18m E-W. Throughout there is a low-density scatter of artifacts. A concentration measuring about 12m in diameter occurs centrally that contains a projectile point, scraper and chopper and 10+ flakes. A mano was identified north of this cluster on the southern border of the site. Somewhat north of the main concentration (~8m) is a cluster including two choppers, a core and a scraper that point to a butchering activity area separate from the main concentration. The distribution of the artifacts in the site's central concentration indicates the likelihood of the presence of a subsurface thermal feature near the projectile point location. There is also a potential for buried evidence of a small conical structure – likely west of the point location.

After its UTM location was plotted, the projectile point was recovered for its preservation and is in the collections of Kathleen Curry. Curry found the point in an upright position (tip showing) indicating its elevation to the surface by frost heaving. [Frost heaving (like clay swelling) does not alter the position of everything and is limited to the upper (water saturated) parts of the stratigraphic column: a single period of use in the affected horizon still has all the durable remains from the altered component, so still provides information.]

The point is comparable to Avonlea types, whose appearance in the Northern Rocky Mountains generally marks the beginning of the Late Prehistoric period (Plate 5). Their date of appearance, ca. AD 300, represented by distinctive, large, side-notched (some corner-notched) dart points, corral kill sites, and the occasional Woodland ceramics overlaps in content and hunting characteristics that of the Besant Culture (Kornfeld 2010:125). In support of that scenario, excavations at site 5RB.4558 located near Meeker, Colorado, provided evidence of both Besant and Avonlea projectiles within the same cultural context that dated ca. AD 300 (Conner et al. 2020). Interestingly, the red-brown chert material of the point appears to be derived from the Morgan-Madison Formation, for which known prehistoric quarries occur around Cross Mountain in northwest Colorado (Conner et al. 2024).

Plate 5. Avonlea point recovered from surface contexts of 5GN.6940.

In review of the regional literature, the Wardell site, located in southwestern Wyoming within the Green River Basin near Big Piney, proved to have important information bearing on the interpretation of the projectile point representing the Avonlea Culture. Officially named the

Wardell Buffalo Trap, 48SU301, it is exceptional in many aspects (Frison 1973). As summarized in Frison 1991 (pp. 212-217), it contained the "earliest known evidence of a communal bison kill involving use of bow and arrow." Hundreds of projectile points recovered from the site were classified as Avonlea type. Use of the corral over a 500-year period (about AD 300-800) was displayed by five feet of stratified bison bone levels that were radiocarbon dated (ibid.:212). Interestingly, the bones indicated entrapments occurred during early fall, and the majority of those identified were above the age of yearlings (ibid.:215).

Besides the direct evidence of buried cultural remains as indicated by the elevation of the Avonlea projectile point by frost heave, a depression in the north part of the site suggests the possible presence of a pithouse. Its footprint is a slight surface depression about 4m in diameter that occurs in an area of deeper soil deposition on the north side of the hogback. There are no distinctive artifacts in its association (manos or temporal diagnostics), although a broad, low-density scatter of a few flakes and scrapers exist on the surface of the north slope of the ridge.

The exposure of the open camp is exemplary of the fact that most of the diagnostic artifacts recovered from surface aeolian deposits are Late Archaic or younger, generally less than about 3000 years old. A major factor in this small campsite's exposure is deflation caused by cattle trailing, which can also strip away relatively unweathered post-3000 year old deposits.

Evaluation and Management Recommendations

The site is not associated with events or persons significant to our past (Criteria A and B); does not represent distinctive characteristics of a type, period, or method of construction (Criterion C). The site has yielded and is likely to yield additional information important to the prehistory of the area concerning bison drive/traps and the distribution of Avonlea culture in the southern Rocky Mountains of Colorado (Criterion D). Accordingly, the site is field evaluated as eligible for listing on the NRHP. Protection and preservation are recommended.

Site **5GN.6941** is a prehistoric open camp located southwest of a large mammal drive structure/trap area with its associated open camp (site 5GN.6540). It is situated on an east-facing slope at a mean elevation of 8110 feet. The nearest permanent water is Razor Creek located about 100m to the east, which flows north 1.6 miles to join Tomichi Creek, a tributary of the Gunnison River. A warm water spring lies northeast of the site about 850m. Its presence has created hydric soils along the hogback ridge's southwest side. Natural vegetation on-site is low sagebrush community. Soils at the higher elevations of the site are rocky Duffson-Beenom type, while most of the lower slope exhibits extremely stony-Beenom Duffson-Hazton type (2GB3). The lowest elevations of this site have Menbar and Venable type (2GB6), very deep, poorly drained soils that are formed in alluvium and found on 0 to 5 percent slopes (Web Soil Survey National Cooperative Soil Survey).

The site boundary is pear-shaped with its widest portion on the east side. It measures 210m E-W by a maximum of 100m N-S, an area of 13945m^2. Within that area is a broad low-density scatter of lithic artifacts. A dense scatter of artifacts is exposed in the west portion of the site, an area that includes an old, stock water tank that rests just south of a small drainage. Cattle

trampling near the tank has caused surface erosion about 40m in diameter and exposed lithic and ground stone artifacts. A fence line and gravel road cross north to south in the east portion of the site and generally demarcate the point along the slope where loess deposits cover alluvium, and deeply buried cultural materials may occur.

This site has been known by private artifact collectors for its exceptional qualities for many years. To the benefit of the archaeological record, the landowners, Kathleen Curry and Greg Peterson, have recovered a few of the diagnostic projectile points from some of the private collectors. The points indicate occupations of the site during Paleoindian and Middle Archaic times. Most do not have accurate location data other than they were found within the site boundary. Two recovered points that represent the oldest occupations by Clovis and Folsom Culture peoples have been plotted to their approximate positions (Plate 6: a, b). The Clovis point was found within the site boundary west of the fence at its north end, and may have been exposed during the fence construction or was elevated by frost heave. The Folsom is a base/midsection that was found near the stock tank in the erosional area. Two other points (identified as James Allen and Pryor Stemmed), which represent occupations during later Paleoindian periods, were also recovered from private collectors by the landowners (Plate 6: c, d). These were not provenienced. The four Paleoindian points appear to be either reworked for additional use or were broken and not reused, but all retain their temporally diagnostic qualities.

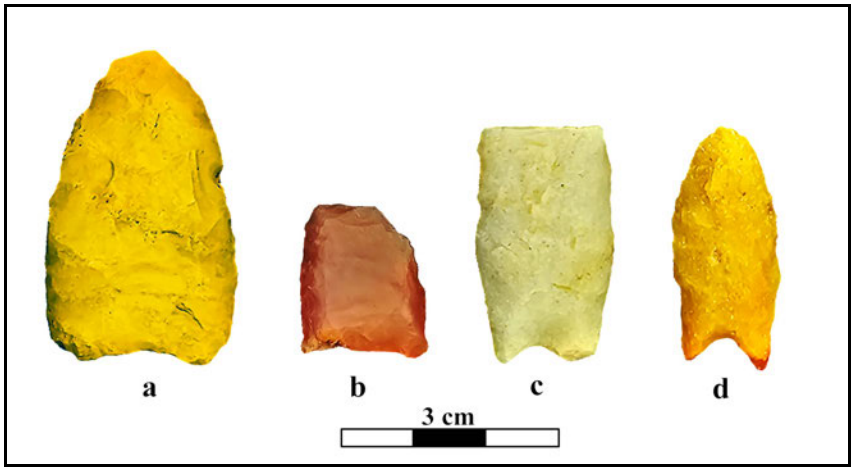


Plate 6. Paleoindian-age projectile points previously collected from the surface of site 5GN.6941, and recovered by the owners of the Razor Creek Ranch: a) Clovis, b) Folsom, c) James Allen, and d) Pryor Stemmed.

The Clovis Complex point (Plate 6a), which has been reworked and apparently hafted as a knife, is representative of the Early Paleoindian period that dates roughly 13,050–12,750 cal BP. These points disappear from more recent cultural deposits at the beginning of the Younger Dryas, "coincident with the extinction of the remaining North American Proboscideans" (Waters et al. 2020). The Folsom Complex point (Plate 6b), which is categorically a member of the Early Paleoindian Era, has origin dates roughly correlating with the beginning of the Younger Dryas. This complex also has a limited temporal range but one slightly longer than that of the Clovis, dating about 440 years from 12,610 to 12,170 BP (Surovell et al. 2016).

Unfortunately, the Middle Paleoindian period is not represented by the site's point collection. However, a Late Paleoindian James Allen type point (Plate 6c) was recovered that has – along with the Frederick type – an associated "approximate ^{14}C range of 9,350-7,900 BP

excluding the Fourth of July site, and a 9,350-6000 BP range if it is included" (Pitblado 2003:112). The last of the Paleoindian points shown in Plate 6 (d) is a Pryor Stemmed Complex type that is notable as the youngest representative type of the Paleoindian Era. It has been reworked for use as a projectile, a common characteristic, and "radiocarbon dates indicate that this type was present [in archaeological contexts] from about 8300 to 7800 BP" (Kornfeld et al. 2010:102).

Importantly, the four Paleoindian points are made of jasper, a high-quality lithic material. It is an opaque, impure variety of silica that can be found in volcanic ash deposits and rhyolitic lava flows. Made up of micro-granular quartz and crypto-crystalline chalcedony, it can be red, yellow, brown, green, or black depending on the type and concentration of impurities present during formation. It is formed by silicification processes where silica-rich fluids seep into porous rocks and sediments depositing tiny crystals that eventually replace the original material – a process that takes millions of years. This material is relatively hard (Mohs scale rating of 6.5 to 7) and dense (2.5 to 2.9 g/cm), and breaks with a smooth, curved surface, known as a conchoidal fracture.

There are two probable jasper toolstone source areas located within 30 miles of the site. Along with quartz, agate, and chalcedony, jasper is found in abundance 30 miles to the east of 5GN6941, in the vicinity of Poncha Pass (https://www.mindat.org/loc-158951.html). It is to be noted that there are historic references to jasper having been mined by Spanish explorers in the Cebolla Valley, near what is now the town of Powderhorn, Colorado, located approximately 25 miles southwest of the Game Drive site (https://gunnisoncrestedbutte.com/blog/town-profiles-powderhorn/). The type of jasper in the area is referred to as seven-river jasper and may have been mined to be used as adornment in various Catholic cathedrals in Mexico (Vandenbusche 1980). It is suspected that additional small jasper toolstone sources are located nearer the site due to the presence of a southwest, northeast fault located just south of the project area. Jasper fragments of reddish coloring are present throughout the project area and were being used in the production of various tools. As this material is of good quality it was likely a preferred resource.

Three Archaic points were also recovered by the landowners from surface collections made by private parties. All appear to represent Middle Archaic types (ca. 5000-3000 BP) that are often associated with prehistoric occupations of the Uncompahgre Plateau. Points a) and c) of Plate 7 compare well with Buckles' Uncompahgre Complex Roubideau Phase Types 24, or 25, which date ca. 3000-500BC or 5000-2500BP (Buckles 1971:1220). Point b) of Plate 7 is comparable to San Rafael Stemmed variations (O'Neil 1993) and resembles

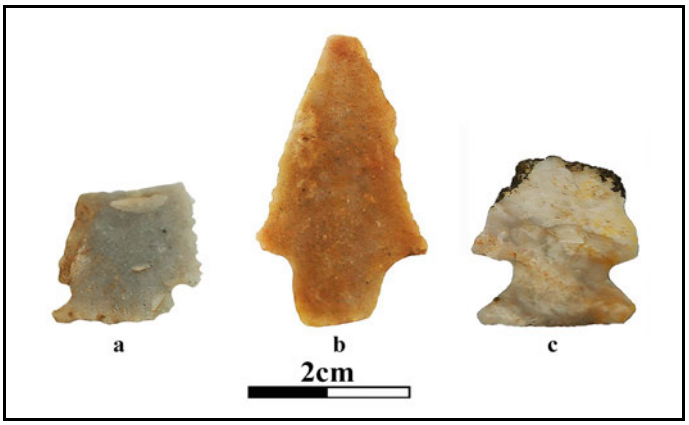


Plate 7. Middle Archaic projectile points found at 5GN.8941 that were recovered from surface contexts by private collectors and recovered by the landowners.

Buckles' Shavano Phase, Type 31, which he assigns a date of 3500-1000 BC, roughly 5500-3000 BP (Buckles 1971:1220). Notably, there diagnostics are constructed of local quartzite and chert materials.

Evaluation and Management Recommendations

The site is not associated with events or persons significant to our past (Criteria A and B); does not represent distinctive characteristics of a type, period, or method of construction (Criterion C). The site has yielded and is likely to yield additional information important to the prehistory of the area concerning various Paleoindian and Middle Archaic occupations of the region (Criterion D). Accordingly, the site is field evaluated as eligible for listing on the NRHP. Protection and preservation are recommended.

11.0 DISCUSSION AND RESEARCH RECOMMENDATIONS

Site 5GN.6940 is of special significance due to the presence of a massive mostly intact dry-laid rock and boulder masonry game drive wall with attached bilateral terminal wing-walls. The overall length, height, and robustness of the feature is astounding. It is also significant due to its unusual design as a massive barrier wall likely intended to divert large game towards either wing-wall and then down the steep escarpment into a lower elevation hydric area where game could be mired, slowed, and easily dispatched. Unlike most western Colorado funnel-to-trap game drives or linear drives with blinds, as in the Monarch Pass Game Drive system (Hutchinson 1990), this feature is a single wall with a wing-wall at each end. (See Appendix A: Bison Research Documents.)

As far as is known, no comparable feature has been identified in western Colorado. The one comparable game drive is 5JA.320 located in northwestern Colorado. Recorded in 2015 during the North Park Cultural Landscape Study by Dr. Robert H. Brunswig and the University of Northern Colorado (Brunswig 2015), it was designed to direct large game, such as bison, into a lower elevation mire to impede movement. As this site had not been previously assessed or recorded and has not been vandalized or significantly disturbed, the archaeological potential of the site is high in that there is a strong probability of encountering surviving artifactual evidence and intact structural remains.

Site 5GN.6941 has provided evidence of Early and Late Paleoindian and Middle Archaic occupations, which may directly relate to the construction and use of the massive wall structures of 5GN.6940. While the soils' depositional contexts of the site are shallow and somewhat disturbed in the higher elevations in the west portion, deeper soils occur in the eastern third where undisturbed cultural materials may be present.

Findings resultant from this assessment could lead to future in-depth research that would aid in establishing timelines of occupation and use of the two sites during the Paleoindian Era, Middle Archaic period, and Later Prehistoric times. The next phase of research should involve standard site testing within the small campsite and potential pithouse area of 5GN.6940. Backhoe trenching should be used in the possible bog/mire areas southwest of the ridgeline to

determine if prehistoric, large game mammal remains are present and are reasonably preserved. It is recommended that a geometric pattern of testing occur within 5GN.6941 to determine distribution and depth of possible cultural deposits. Radiometric testing, dendrochronological evaluation of any wooden artifacts, obsidian hydration dating, and lithic analysis could reveal specific information useful in identifying the indigenous cultures involved in construction and use of the game drive and open camps.

On-site involvement and consultation with descendent community representatives would aid in identifying ancestral and cultural ties to the site. Participation by members of the Southern Ute, Ute Mountain Ute, and Northern Ute tribal representatives, elders, and youth will be requested. It is anticipated that future funding for in-depth work at the site will be requested through a History Colorado State Historic Fund competitive archaeological grant.

DARG accomplished mapping of the sites and identification of potential periods of occupation based on surface collected, temporally diagnostic artifacts. Future project research goals include establishing more specific site boundaries, refining site chronology, and acquiring data about subsistence and technology of the prehistoric occupants. Research questions guiding those goals include:

- What are the refined boundaries of the two sites and how do they relate to use of the surrounding landscape?
- What are the periods of the site's occupation/use based on radiometric dates and how do they relate to the regional climatic conditions?
- What are the subsistence strategies of the various groups that occupied the two camp sites?
- What are the observable technological traits in the artifact assemblages, and can they aid in defining group subsistence strategies?
- What are the lithic source(s) for the jasper used in the construction of the Paleoindian points? [Nondestructive X-ray fluorescence (XRF) geochemical analyses and comparisons of silicified rhyolites can be used to source jasper materials (Dello-Russo 2004).]

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APPENDIX A – BISON RESEARCH DOCUMENTS (BY HOLLY SHELTON):

1. Prehistory and History of Bison and Bison Hunting in West-central Colorado
2. Hunting Techniques and use of the Razor Creek Game Drive as a Diversion Drive
3. References

A.1 Prehistory and History of Bison and Bison Hunting in West-central Colorado.

The evolutionary history of bison in North America is by no means clearly understood. Dates of the bison's first appearance in the Americas, time lines of biological divergence, routes of migration, episodes of species congruence, and extinction dates are all embedded with controversy. Research dedicated to clarifying these questions is ongoing and the pieces of the bison evolutionary puzzle are gradually coming together to create a picture of the complicated journey through time of this remarkable creature. The Bovidae Family, of which bison are a member, consists of 140 living and over 300 extinct species which may extend to approximately 17.7 million years ago to the common ancestor *Selenoprortax* vexillarius (Badgley et. al., 2008). *Bison* priscus was the first of the genus to migrate into the Americas. It is important to note that several additional chronologically oriented subspecies of *B.* priscus have been proposed by Castanos, Castanos, and Murelaga (2006) that include *B.* priscus gigas, *B.* priscus mediator, and *B.* priscus priscus. Over time, several species of bison, the majority now extinct, were present on the North, Central, and South American continents with B. Latifrons, B. Priscus, and B. Antiquus, having been pursued and harvested by human predators.

Until recently it has been commonly accepted that the earliest bison in North America, *Bison* priscus, also referred to as steppe bison or steppe wisant, traversed the Bering Land Bridge from Siberia sometime between 300,000 and 130,000 years ago (Shapiro et al. 2004) gradually wending their way into western Canada, mid-continent America, and southward into what is now Mexico. New investigations using mitochondrial DNA from fossil bison bone has significantly refined the timing of this previously confusing mammalian invasion of the Americas. By evaluating the results from a combination of paleontological and paleogenomic testing and resultant evidence from the oldest known bison fossils in North America, including *a Bison* latifrons bone specimen from Ziegler Reservoir Site in Colorado, Dr. Duane Froese and a team of researchers have developed an accurate time line defining the appearance of bison and aspects of their evolution in North America (Froese et.al. 2017).

Using bison fossil specimens collected from two well dated sites, a 130,000 year old Ch'ijee's Bluff *Bison* cf. priscus from the Old Crow area of the northern Yukon, Canada, the 120,000 year old Snowmass *Bison* latifrons from Ziegler Reservoir Site near Snowmass, Colorado, and 44 additional bison mitogenomes the team determined that there were two distinct episodes of bison moving out of Asia and invading and colonizing North America. The first of these invasions date to ~195,000 to 135,000 years ago and occur before morphological diversification of bison on the North American continent. During the Late Pleistocene the second invasion occurred and is dated to ~45,000 to 21,000 years ago. Therefore, the data reveals that bison made their first appearance in North America during a sea level low stand within marine isotope stage 6 (MIS 6) thereby refuting previous proposals of an earlier presence of bison on the continent.

Bison rapidly colonized most of North America and, effectively surpassing the mega-mammalian grazers Equus and Mammuthus, established themselves as the dominate grazing mammal on the continent. Bison retained this status until their near extermination, induced by both EuroAmericans and Native Americans, left the species teetering on the brink of extinction

by the late 1800s. A population of *Bison* priscus, which did not migrate southward from Beringia, appears to have spread eastward into the Northwest Territories of Canada and are dated to have existed as late as 11,800 B.P. (Zazula et al. 2009:2741), indicating they may have been available as prey for human hunters.

The long-horned *Bison* latifrons was the largest of the ancient bison standing 2.4 meters at the withers. This remarkable example of Pleistocene megafauna weighed up to 1024 kilograms, and averaged a length of 4.75 meters. Its distinctive horns, the longest of any known bison species, are known to have an average horn core tip to tip span of 1.4 to 2.2 meters with the horn caps extending much farther (San Diego Zoo Global 2009). That *B*. latifrons evolved to become Bison antiquus (Meltzer 1999; Schultz and Hillerud 1977) is a theory challenged by Schultz and Hillerud (1977:112) who propose that a several "paleospecies" of bison filled various ecological niches resulting in multiple lineages of bison occurring in the Late Quaternary. As it relates to bison evolution in North America, the importance of the Ziegler Reservoir site *B*. latifrons specimens cannot be overemphasized. As *B.* latifrons is not found in the northern reaches of North America, Canada, or in Siberia, the presence of the Snowmass *B.* latifrons in an MIS 5 senso lato site, combined with additional evaluation of a collection of bison mitochondrial genomes, establishes a morphologically distinct bison species in continental North America that is of a younger age than the Old Crow *B*. priscus used in the Froese study (2017). This information indicates that *B*. latifrons evolved to become morphologically distinct in what is now defined as the continental United States (Froese et.al. 2017). By the late Wisconsin Glaciation, approximately 20,000 years ago, *Bison* latifrons was likely extinct.

Bison antiquus, possibly a direct ancestor of *Bison* bison, was common in mid-continent America by 18,000 years ago and may have disappeared from the faunal community as recently as 10,000 years ago. Averaging 2.2 meters in height, 4.6 meters in length, and with a tip to tip horn core span of about 1 meter, *B.* Antiquus was approximately 20 percent larger than the modern *Bison* bison we are familiar with today. Paleoindian hunters of the Rocky Mountains and Plains left evidence of extensive hunting of *B.* antiquus as found in multiple archaeologically important kill sites such as the Finley Bison Kill site, a Cody Complex site in southwestern Wyoming, Hudson-Meng (Agenbroad 1978) where over 500 *B.* antiquus remains were found with in-situ Paleoindian projectile points and other stone tool artifacts.

Existing congruently for a time with *B.* antiquus, *Bison* occidentalis lived during the Late Pleistocene and through the mid-Holocene from approximately 11,000 years ago to 5,000 years ago, and was also hunted by Paleoindian peoples. Morphologically *B.* occidentalis was slightly smaller and more gracile than *B*. antiquus sporting thinner horns that pointed backwards instead of forwards. There is conflict among academics regarding the development of *B.* antiquus and *B.* occidentalis with Meagher (1986) and Frison (1998) stating each are a separate species and Wilson (1978) indicating they are both subspecies of *Bison* bison. Further study will be required to resolve this issue. There is a possibility that, instead of becoming extinct, both *Bison* antiquus and *Bison* occidentalis, via phenotypic and morphologic adaptation to climatic change, evolved to become *Bison* bison (Martin 2018).

One of only eight ungulates to survive the last deglaciation in the Americas (McDonald 1981) *Bison* bison, alternately referred to as the American or Plains Bison, or colloquially as buffalo, is now the commonly accepted extant bison species on the North American continent. Standing an average of 1.67 meters to 1.86 meters for males and 1.52 m to 1.57 meters in females at the withers and with a head to tail base length of 3.6 meters to 3.8 meters in males to 2.13 meters to 3.18 meters in females, an adult male *B*. b. bison can weigh between 318 to 1179 kg with the heaviest known wild bull weighing 1270 kg (https://animaldiversity.org/).

Their unusual conformation, massive head and forequarters tapering downward to a narrow rump, does not disable them from being fleet and agile, capable of reaching speeds up to 65 km/h (40 mph) and being fully capable of easily jumping a 6 foot fence or simply plowing through it. Over time this species of bison reproduced in great numbers and soon became the predominate large mammal species of the continent. They congregated in herds of such size that it is difficult to comprehend their magnitude as they migrated across the Great Plains in numbers estimated between 60 and 100 million individuals.

Though not always supported in the archaeological community, it is suggested that there were and are presently two subspecies of Plains bison these being *B. b.* athabascae, the wood bison and *B.b.* bison the plains bison. Though previously found in significant numbers throughout the high country and boreal forests of Alaska, northwestern and northeastern Canada, and the Yukon, the wood or mountain bison is described as larger than *B. b.* bison and possibly more aggressive and dangerous. *B. b.* bison, or the Plains bison, is described as slightly smaller with a rounded instead of a squareish hump, fleeter of foot, and with more stamina and endurance. Though not a universally accepted concept, the plains bison may be divided further into two ecotypes, *B. b.* montainae, a northern plains ecotype, and *B. b.* bison, and ecotype of the southern plains. It is suspected that the bison of the western rocky mountains and Colorado high country may have been a subspecies or race of *B*. b. bison. These, often referred to as Mountain bison, are described as slightly smaller and more gracile than the Plains bison and are considered to have been more agile, aggressive, and elusive. Although he did not consider them a separate species, President Theodore Roosevelt, a remarkably experienced big game hunter, spoke of hunting this type of bison and made clear distinctions when discussing their attributes (Roosevelt 1893):

> " In the recesses of the Rocky Mountains, from Colorado northward through Alberta, and in the depths of the sub-arctic forest beyond the Saskatchewan, there have always been found small numbers of the bison, locally called the mountain buffalo and wood buffalo; often indeed the old hunters term these animals "bison," although they never speak of the plains animals save as they form a slight variety of what was formerly the ordinary plains bison, intergrading with it; on the whole they are darker in color, with longer, thicker hair, and in consequence with the appearance of being heavier-bodied and shorter-legged.
>
> They have been sometimes spoken of as forming a separate species; but, judging from my own limited experience, and from a comparison of the many hides I have seen, I think they are really the same animal, many individuals of the two

so-called varieties being quite indistinguishable. In fact, the only moderate-sized herd of wild bison in existence today, the protected herd in the Yellowstone Park, is composed of animals intermediate in habits and coat between the mountain and plains varieties — as were all the herds of the Bighorn, Big Hole, Upper Madison, and Upper Yellowstone valleys.

However, the habitat of these wood and mountain bison yielded them shelter from hunters in a way that the plains never could, and hence they have always been harder to kill in the one place than in the other; for precisely the same reasons that have held good with the elk, which have been completely exterminated from the plains, while still abundant in many of the forest fastnesses of the Rockies. Moreover, the bison's dull eyesight is no special harm in the woods, while it is peculiarly hurtful to the safety of any beast on the plains, where eyesight avails more than any other sense, the true game of the plains being the prong-buck, the most keen-sighted of American animals. On the other hand, the bison's hearing, of little avail on the plains, is of much assistance in the woods; and its excellent nose helps equally in both places."

Confirmation of a scientific distinction between the Plains and Mountain bison has not yet been confirmed and the issue remains a point of conflict among those with an interest in the subject. That said, it is to be noted that, though a limited sampling, the majority of *B.* Bison skeletal remains examined in both Phase I and Phase II of the project are observed to be slightly smaller than those specimens common to the Plains. Although of interest to the project, data collection of skeletal element size which may contribute to discerning a possible differentiation of Mountain bison from Plains bison, it is not an aspect of the study and pursuit of this concern shall be left to future researchers.

The earliest evidence of bison in the west-central Colorado area is from the recently excavated Ziegler Reservoir Fossil Site, commonly referred to as the Snowmastadon Site. Located in Pitkin County, less than one mile west of Snowmass Village, Colorado, on the ridge of a glacial moraine between Brush Creek and Snowmass Creek, the reservoir was constructed in 1958 in a sediment filled basin meadow. The meadow had previously been a natural alpine lake formed by the lateral lobe of a glacier during Marine Oxygen Isotope Stage (MIS) 6. As the lake filled with sediment over time an astonishing variety of flora and fauna was preserved in the accumulating layers. The resultant biotic community is represented by species of mega and macro fauna including mammoth, mastodon, bison, ground sloth, bear, camel, horse, and canids. Macro and micro flora and a wide variety of reptiles, insects, and molluscs were also recovered from the site (Johnson and Miller 2012).

Use of three well defined stratigraphic tie points within the site enabled scientists to confidently establish a correlation between the lake center and the lake margins and thereby confidently assign date ranges. The dates for the site and the bison specimens span a period of ~140 ka to ~55 ka. A faunal element assemblage representing at least five *Bison latifrons* were excavated at the site (Mahan et. al. 2014). These were found in sediments dated to late MIS 6, all of MIS 5, MIS 4, and early MIS 3. Among the 402 bison specimens are included an almost

complete *B*. latifrons cranium (DMNH EPV.60678) likely female, three partial crania that retained horn cores (DMNH EPV.66964, 66965, 66966), and a single relatively complete horn core (DMNH EPV.66967). The remaining post cranial specimens include long bones, jaws, jaw fragments, teeth, and various other bone fragments. Many of the postcranial elements could not be absolutely diagnosed as *Bison latifrons*. As most were found in geologic horizons where the confirmed *Bison latifrons* specimens were recovered they are likely to be attributed to the species.

Previous to the discovery of the Ziegler Reservoir Fossil Site only a few locations in west-central Colorado are noted to have produced Pleistocene and Early Holocene age bison remains.

A large Bison priscus (Steppe bison) skull, DARG 66, evaluated during Phase I of the WCBP (Shelton, Berry and Conner 2017) produced a late date of 11,700 YBP placing the specimen late in the Pleistocene but within parameters of the occurrence of Steppe bison known to have existed in prehistoric times. The frozen mummy of the Yukagir Bison, a well preserved, complete Steppe Bison (*Bison priscus*), was recovered in 2011 from the Chukchalakh Lake shore of the northern Yana-Indigirka Lowland of Eastern Siberia. An extensive necropsy, performed by scientists of the Yakutian Academy of Sciences in Siberia, revealed the bison to be a male about four to four and a half years of age that had died of starvation. An accelerator mass spectrometry (AMS) radiocarbon date of approximately 9300 BP was obtained. The specimen represents the most complete mummy among known records of this extinct species (Serduk et al. 2014). Considering the Yukagir Bison date and the relatively late, yet valid date of DARG 66, it is quite possible that *Bison* priscus was hunted by the early Paleoindian peoples of western Colorado.

Harold J. Cook describes visiting a fossil deposit found in 1929 during construction of an irrigation ditch along the west side of a valley in the Little Cimarron drainage, 69 miles west of the project area and approximately 12 miles from Cerro Summit, at an elevation of 8,000 feet. The assemblage, possibly the first high elevation Ice Age bison discovery in western Colorado, included a bison tooth that Cook examined and described as "a molar tooth of a very large fossil bison, of the size found in the immense *B. latifrons* and similar species." (Cook 1930). Mr. L. G. Coffin, the rancher who owned the land where the fossils were discovered, reported also finding bison horns at the site. He described these as longer but less robust than the *B. latifrons* horns he had later seen in the Colorado Museum of Natural History. Unfortunately, none of these remarkable specimens were collected and it is reported that due to "rough handling" they were badly damaged.

Late Paleoindian evidence of use of bison is represented at the Mountaineer Site (5GN2477) located near Gunnison, Colorado and only 19 miles west of the project area. This remarkable site contains a Folsom pithouse identified and excavated under the supervision of Dr. Mark Stiger (2001, 2006, and personal communication 2019). Situated among small lithic flake tools, a drill, and a graver, a bison second phalange (DARG 265) abutting a bison tibia fragment (DARG 267) were both recovered within a Folsom pithouse that may have been a lithic workshop. It is unknown if the specimens are *B.* antiquus or another species. Bone sample

number CAMS105764, collected from bone located at the base of an interior wall of the same structure, produced a 14C date of 10,440. Although the precise cultural use of the artifact is unknown it's location inside and against a wall of the Folsom structure indicates that Late Ice Age bison were likely being harvested by Folsom people. It is possible that the specimens may have been employed as mallet tools used for lithic tool manufacture.

Archaic sites producing evidence of bison procurement are rare within the Upper Gunnison drainage and include only the Marion site, 5GN1664, and possibly the Pioneer Point site, 5GN41, though it may have been a Formative period hunting camp.

Though far to the north of the project area, the Roatcap Game Trai1 Site (5DT271), Component 1 is included here as it represents Protohistoric Ute bison hunting and butchering occurring in the late 1700s or early 1800s. 5DT271 is located in the corridor of the Kebler Pass route between the North Fork Valley and the Upper Gunnison Basin (UGB). This trail was traditionally used by the Ute peoples (Clifford Duncan personal communication 2012) who inhabited the area until 1880 when they were forced to adjourn to the reservations of eastern Utah. The butchered bison bone found at the site strongly supports the suspicion that bison were traversing the corridor as they moved between the UGB and the lower elevations of the North Fork Valley. Elements recovered from Component 1 were tentatively radiocarbon and dendrochronologically dated between the late 1700s or very early 1800s falling within in the latter part of the Early Contact Phase (Baker 1988). Extensive excavations produced evidence of a historic Sabuagana Ute household with the remains of wooden shelter, a slab-lined hearth and several butchering areas containing processed elk, deer and bison bone indicative of large game hunting and processing activity. Baker (1991) best describes the assemblage and ethnographic implications:

> "The faunal assemblage from Component 1 is particularly useful in allowing us to move into more detailed inquiry and evaluation of Sabuagana settlement analysis and social structure. As demonstrated by Rood (1987) over 45% of the deer elements and 75% of the elk elements consist of lower front quarter bones (radii, ulnae, humeri). This percentage is drawn from a population of 5 deer (3 mature and 2 yearling) and three elk (2 mature males and 1 mature female). One bison is also represented by lower limb bones. Recovered body parts for both deer and elk indicate that lower front quarter, phalanges, some vertebra fragments, and skulls were the only items returned to or deposited at the site. Rood particularly notes the absence of hind quarters and believes it unlikely that these elements were left at the kill or were in some way removed from the site area. Rood and this writer concur that the faunal material strongly suggests a distribution of deer and elk body parts among Ute households. This view is strengthened by the relatively high number of individual kills represented and the consistency in the faunal elements found at the site."

The butchered portions of a carcass are often ranked according to preference (Hill 2007) and the Roatcap site provides some evidence of kinship distribution as the remnant bones of a less preferred portion, the front quarters, were present at the excavated household. The faunal

assemblage, including the bison bone, evidences a consistent pattern of probable kinship-based meat distribution as again described by Baker (1991):

> "It is suggested that the pattern in the faunal assemblage of Component 1 reflects a consistent pattern in meat distributions among a group of associated Ute households. It is furthermore suggested, in keeping with Service's reference to the familistic statuses involved in meat sharing (1966:17) that the distributions was based on kinship and the relationship of this particular household within a Ute deme, which is a cluster of families that were "usually related through the matriline and resided matrilocally. Demes owned no property and in most cases, individual families, as the basic economic unit in Great Basin societies, occupied separate dwellings and were relatively autonomous. The demes were mobile exogamous year-round residence groups that were held together by their respect for the deme headsman whose status was usually derived from his hunting and from his skillful direction of the camp's movements (Callaway, Janetski, and Stewart 1986:353; Steward 1938:44; Shapiro 1986:628)."

The butchered bison bone elements recovered from 5DT271 provide important insight into the relative rarity of bison procurement as compared to elk and deer, and likelihood of the commonality of single bison kills in the mountainous regions verses the multiple bison kills so familiar to the plains of eastern Colorado. Baker (1991) states:

> "The presence of lower extremities of one bison (a right calcaneum and a right proximal metacarpal) further supports the kinship distribution theory. The limited bison bone in the site indicates that this species was not commonly taken in the area when compared to deer and elk. In this regard, it may be suggested that on the rare occasion when one was taken, the distribution system finally carried a limited and less than choice portion to this household. This is as compared to what appears to have been a larger part in the more frequent sharing of deer and elk. This interpretation is based on the assumption that we were able to recover most of the faunal remains from the component."

The Roatcap Site is an important link between the UGB and the lower Gunnison River Basin regions providing evidence and insight into not only Protohistoric bison procurement but of regional bison migration patterns.

Historical documentation from the 1600s through the late 1800s, found in diaries, letters, and military logs, relate eyewitness accounts of bison and the evidence of bison in west-central Colorado. Several of these documents refer to Native Ute bison hunters.

On July the twenty-ninth, 1776 the Catholic Franciscan Fathers Fray Silvestre Velez de Escalante and Fray Francisco Atanasio Dominguez, in company with a small group of Spaniards and New Mexicans set forth on a most difficult and extraordinary journey intended to trace a direct route from Santa Fe, New Mexico to Monterey, California. Using Native American guides, the Fathers followed both established trails and more obscure prehistoric routes as they

made their way through western Colorado and into eastern Utah. Over the next five months Father Escalante kept a detailed journal in which he described their progress and experiences. Within this document are several notations he made concerning bison. Father Escalante's first allusion to bison, on 1 September 1776, occurs not within, but less than 20 miles northwest of the present study area on the periphery of the north aspect of Gunnison County. In describing the events of a meeting with a large group of Utes, Father Escalante notes:

> "...some jerked bison meat was bought from them, they being paid for it with white beads..." (Chavez; Warner 1976).

There is no indication of where the meat was procured though additional comments in the journal confirm the presence of bison approximately seven and three quarters of a mile north-northwest of Rangely, Colorado where Father Escalante, on 12 September 1776, records evidence of bison and a bison kill as follows:

> "A short distance from El Barranco we had seen a recent spoor of bison. We saw it again still fresher on the plain, and saw that it went in the direction we were taking. By now we had few provisions, in view of the long traveling we still had to do, because of what we had spent among the Sabuaganas and other Yutas. And so, a little before reaching the arroyo, two companions took off and followed the spoor mentioned. A little after midday one of them returned saying that they had found the bison. We dispatched others on the fleetest horses and , after chasing it for about three leagues, they killed it; then at seven thirty at night, they brought back a grand supply of meat (much more than what a big bull of the common variety has). And, in order to prepare the meat so as to keep the heat from spoiling it for us, ...we spent the 12th at this place, which we named El Arroyo del Ci′bolo..." (Chavez; Warner 1976).

On 14 September 1776, near the Green River in Utah they killed another, smaller bison and on 17 September of the same year Father Escalante makes reference to a group of Utes who had been on a bison hunt (Chavez; Warner 1976).

By the mid-1800s the expansive bison herds of the Great Plains were in decline. In west-central Colorado occasional reference to their presence is found in a select few documents indicating that the species was present in the area near the Continental Divide and still being hunted. One of these, the Heap-Beale Expedition of 1853, documented by Gwinn H. Heap and published in 1854, provides interesting and revealing details in chapter III of the document related to bison near Cochetopa Pass, located southeast of Gunnison, Colorado and a mere 40 miles south of the project area. In an explanation of the origin of the name the author states:

> "A stream issues from Coochatope Pass and joins the Sahwatch; it is called Coochumpah by the Utahs, and Rio de los Cibolos by the Mexicans: both names have the same signification-River of buffaloes. Coochatope signifies, in the Utah language, Buffalo gate, and the

> Mexicans have the same name or it, El Puerto de los Cibolos. The pass and creek are so called, from the large herds of these animals which entered the Sawatch and San Luis valleys through this pass, from the Three Parks and Upper Arkansas, before they were destroyed, or the direction of their migration changed, by constant warfare carried on against them by Indians and New Mexicans." (Heap 1854 p 38).

The words "...entered the San Luis valley through this pass..." indicates that bison were regularly moving in and out of the project area via the Cochetopa Pass corridor.

The next two sentences of the same paragraph are most revealing as these eyewitness observations clearly indicate that, in 1853, bison still remained in the high country and valleys of the project area and were using Cochetopa Pass to migrate between the Gunnison Basin and the San Luis Valley. He states:

> "A few still remain in the mountains, and are described as very wild and savage." and "We saw a great number of elk-horns scattered through these valleys; and, from the comparatively fresh traces of buffaloes, it was evident that many had visited the pass quite recently." (Heap 1854 p. 38).

Heap also notes that Mexican traders met with the Utes in order to trade for buffalo robes. In addition, he writes that near the forks of Cochetopa Creek, between five and eight miles from the Pass, numerous buffalo skulls were seen (Heap 1854 p39). These notations suggest that more than just a few bison remained in the region and that they were still being hunted and processed by Native peoples for meat, hides, and trade.

Captain Randolph B. Marcy was ordered to lead a small company of soldiers from Camp Scott in Utah southward to Fort Massachusetts, New Mexico in the winter of 1858 to procure and return supplies to Camp Scott. Arriving in the Gunnison valley area in early January, his beleaguered troops, starving and freezing but faithful to their Captain, struggled through the deep snows, the men crawling through drifts to break trail for the mules as the hard crust of the snow had cut their legs. Eventually the company became disoriented and it was at this point Captain Marcy noted:

> " There was not the slightest sign of a road, trail, or footmark to guide us. All was one vast, illimitable expanse of snow as far as the eye could penetrate...Not a living animal outside our own party was seen for many, many long days all was a dreary, desolate solitude...".

His observation of the lack of any type of game, including bison, suggests that the local herds had migrated to lower elevations or were simply sheltered, out of sight, in the hills and swales within the landscape.

In 1858 Colonel William Wing Loring led members of the Regiment of Mounted Riflemen, and other detachments north along Colorado's Front Range from Fort Union, New

Mexico to Fort Bridger to provide reinforcements to General A. S. Johnston's Utah Expedition. His orders then directed he lead a command from Camp Floyd, Utah back to New Mexico. This entailed taking a more southerly route through western Colorado and accessing parts of the Old Spanish trail. The manuscript of his report was first published in 1946 in The Colorado Magazine with an introduction and notes by the renowned historian Leroy Hafen (1946). Of note, as it relates to this project, are references to bison in two separate areas in what is now Gunnison County at the mouth of Tomichi Creek near the town of Gunnison and along Cochetopa Creek which Loring refers to as the "Goochatope."

> "Goochatope River, Aug. 29th...Soon came to the valley formed by Grand River running east, its fork from the north, and Goochatopa, its tributary from the south...Antelope, bear, and grouse also recent buffalo sins and numerous Indian trails seen."

According to Hafen, and substantiated by modern maps, this describes the valley where Tomichi Creek enters the Gunnison River approximately 20 miles east of the project area.

Loring's second comment concerning bison occurs on the very same day approximately 6 miles west of the project area stating:

> "Abundance of antelope, deer, bear, grouse, duck, geese and sandhill cranes, and also recent buffalo signs. Numerous Indian trails seen. Same description applies to valleys throughout today's march."

By Loring's descriptions and his use of the word "recent" in referring to signs of bison, which reasonably would include tracks, trails, and droppings, it is clear that bison were present in the region during the Fall of 1858 in large enough numbers to leave visible evidence. His meeting with a large band of Utes and his comments regarding obvious Indian trails confirms these were in use and that the Native peoples would have been very aware of the presence of bison and likely exploiting this resource.

Of great interest to the project are several indications that bison persisted and may have been hunted on the western slope in the late 1800s and possibly into the early 1900s.

The first of these, located far to the north of the study area, is worth mention as it confirms late bison hunting by Ute peoples west of the Continental Divide in Colorado. A report of Ute people hunting a bison near Craig, Colorado was formally documented by the well respected ornithologist Dr. W. H. Bergtold of Denver in his notes of a multi-party scientific expedition to Colorado's western slope in 1894 (Felger 1909). His interview with Mr. R. S. Ball, the owner of the Meeker Hotel in Meeker, Colorado, detailed Mr. Ball's description of a group of Ute hunters in 1884 who, while mounted on horseback, hunted and killed a cow bison at Cedar Springs, six miles west of Craig, Colorado. To date this is the last known living wild bison hunted in western Colorado and the only objective documentation known to this writer confirming Ute people actively hunted bison on the western slope of Colorado.

Two other bison faunal elements found within the general region of the study area are of interest. Mr. John "Jack" Welch, 1854 to 1929, known as "Buckskin Jack," of Saguache, Colorado, was a mountain man, government scout, contract hunter, and trapper who supplied large game meat for the military, the railroad, and the Monte Vista and Del Monte irrigation ditch construction crews near Saguache, Colorado (Saguache Crescent 1929). It is possible this included bison meat. In 1899, while hunting near Crested Butte, Colorado, approximately 30 miles northwest of the project area, he found and collected a large bison skull (DARG 276) upon which he hand painted, in red on the foreskull, the following: "Buffalo Head Found by Jack Welch Near Crested Butte 1899." Radiometric testing of bone collagen collected from the skull indicates this bison most likely died between 1800 and the 1870s, though the 1890s cannot be ruled out. It is likely the specimen remained subsurface and was not exposed until shortly before discovery by Mr. Welch.

In the Fall of 1947 Gunnison National Forest Administrative Assistant Ralph Mike Sweet discovered a bison horn cap in Taylor Park, approximately 20 miles north of the project area. In a brief he submitted to his superiors he notes his suspicion that the specimen likely dates to the very early 1900s due to its good condition and his conversation with a Mr. Thomas Stevens, whom he describes as an "old-timer," having related his knowledge of a small remnant herd of bison in the area. This is calculated as between 1909 and 1919.

Edward Royal Warren (1910, 1927, 1942) , a well respected avocational mammaolgist wrote of finding bison skulls in 1904 in the forest at an elevation of 10,700 feet close to the Venango Mine near Irwin (Ruby Camp), Colorado, approximately 45 miles northwest of the project area.

A.2 Hunting Techniques and use of the Razor Creek Game Drive as a Diversion Drive.

Due to the absence of vast, open prairie lands and associated large bison nursing herds in west-central Colorado, including the project area, it is strongly suspected that encounter hunting verses logistically complex communal hunting events (greater than 25 persons), were the predominant hunting style. The topographic conditions of the study area, lacking for the most part the broad open expanses so distinctive of Colorado's eastern plains, tend to discourage the use of logistically complex communal hunting events which employ tactics such as bison jumps or startle and cross-country chase tactics that involve large numbers of participants. This is not to say that communal hunting was not engaged in, but that it was most likely performed on an abbreviated scale as compared to Plains style hunting. The Razor Creek Game Drive is likely one of the rare candidates for communal hunting events. As bison and humans co-existed in the immediate region from the Late Pleistocene through the late 1800s, the feature was likely used repeatedly through time.

The Razor Creek Game Drive appears to have been intended to divert large game, such as mountain sheep, elk, and bison into the hydric area, or mire, immediately south of the feature, in the following manner. By stationing hunters at strategic locations at the valley bottleneck to the west of the feature, game could have been gently pressured to move eastward into the swale located north of the game drive wall. At that point the same or additional hunters would have

been able to concentrate the pressure to move the animals southward to the wall feature. From here the prey could move laterally either east or west along the wall, which due to its height would have been difficult to jump, to the wing walls and then be pressured into the mire at the base of the wall. Once slowed and inhibited by the mire the game could have been dispatched to the satisfaction of the communal hunting group.

Prehistoric and historic peoples of the region were familiar with game drive hunting techniques and hunting bison. In fact, stone structure game drive sites located near the project study area are common in the UGB. Dr. Mark Stiger lists a number of known large-game drive sites located reasonably near the project area. These include: Black Canyon, Curecanti Creek, Haystack I, Haystack II, Historic Iola Elkhorn Site, Cochetopa Game Drive Quarry (5SH1714), Kezar Basin, Old Agency, and DOW Beaver Creek.

The Cochetopa Game Drive Quarry (5SH1714), located in Cochetopa Park just south of Cochetopa Dome and approximately 15 easy miles south of the project area, is of interest as two bison horn caps (DARG 272 and DARG 273) were found within five miles of the site. It is reasonable to assume that game directed through this drive may well have included bison.

Depending on how the terrain is incorporated into the design of the game drive system, the season and weather conditions under which it is used, and the desired number of animals to be taken, a drive or hunt event could be successfully accomplished with as few as two participants (Whittenburg 2017; personal experience 1998) or up to 25 individuals (Buchholtz 1987) with the majority of participants located at the area of drive structure convergence; the most important feature of most game drive systems.

Well documented Paleoindian and Late Prehistoric bison hunting methods (Kornfeld et al 2010:213-286) include such techniques as surround, impound, game drive, and bison jumps. Surround, impound, and jump hunting tactics may have been used within the study area and, although there is little sure evidence of such, the topography in the mid-elevation hill country definitely lends itself to the use of impound, surround, and especially game drive hunting techniques. Large animal game drives consisting of intentionally constructed stone blinds, constructed or natural stone walls, and strategically placed lines of cairns, designed for communal hunting events are somewhat of a rarity in the high elevations of Colorado's western slope when compared to the high country of eastern Colorado (Cassells 1995). Likely due to the lack of the long, broad, open and gently sloping ridge tops so common in the mountains of eastern Colorado, individually constructed blinds used by small groups of hunters appear to be the norm in the majority of the San Juan mountain range high country (Southwell 1995) and the upper Gunnison Basin area.

Large communal style game drive systems, though not the standard in the study area, are present. A total of 12 game drive systems near Monarch Pass are located along the Continental Divide at the Gunnison County and Chaffee County boundary lines. These stone structures consist of low rock walls, blinds, and possibly remnants of wooden sticks or posts incorporated into the stone walls at two to three meter intervals (Hutchinson 1990). These wooden stick or post features, known to have been used by native Arctic hunters (Speiss 1979), were

incorporated into the low stone drive walls and intended to support flagging materials used to enhance the visual impact of the wall and startle and redirect game through the drive toward the kill zone. Tenderfoot Mountain, a high flat top mesa with severe drop-offs on all sides also boasts evidence of a game drive. A nearby sudden and precipitous drop-off to the south could have sufficed as a bison jump (2019 Stiger personal communication and tour of the site) however; investigations of the possible game drive and jump location have been limited and bison bone has yet to be identified along the drive or at the base of the precipice.

During project visits to the study area special attention was given to viewing and glassing the landscape in search of various topographical features which might suggest use as bison habitat or offer a human hunting advantage. Examination of the foothills on the northeast aspect of Tenderfoot Mountain revealed a drainage with a wide shallow mouth that opens northeast to a broad lowland park and riparian area well suited as bison range. The drainage is flanked by relatively steep hillsides which narrow and rise in elevation in a south-southwesterly direction sweeping upwards to a terminus at approximately 8000 feet on the east side of Tenderfoot Mountain. This topographical feature, rising 200 feet in elevation in a distance of 4000 feet, is ideal for maneuvering large game such as bison into a vulnerable situation as the last 1000 feet is suddenly steep and narrow. The wide mouth would allow for mildly stressing and gently pressuring bison gradually uphill and into the confines of the flanking hillsides. The hillsides, brush, rock and any man-made structure would have provided cover for hunt participants to pressure game further in the chosen direction. The higher, narrow aspect of the drainage would allow hunters to ambush selected game in the narrow, steeper ascent where bison, forced to slow and struggle to manage the terrain, might also increase their vulnerability when attempting to turn and descend.

Another use of this topographical feature may have been to channel game upwards into the northeast segment of the Tenderfoot Mountain mesa top game drive. Alternatively, using a drainage on the northwest side of the mountain, game could have been channeled uphill in a southeasterly direction and possibly to the mesa top as the final ascent is less severe. In fact, due to this ease of access, a modern dirt road has been constructed on this route. On the flat surface of Tenderfoot Mountain is located a probable Folsom large game drive feature, oriented somewhat east to west and bounded by deteriorated rock cairns, which may have been constructed to take advantage of this route.

A steep drop off near the east end of the drive may be a bison jump, however; no bison bone evidence is known to have been located to date. The drop-off, the result of a geological slump, would require further geologic investigation to determine if it was present during the Folsom era. The lack of evidence of bison procurement at the drop-off is, in part, due to the lack of opportunity to thoroughly investigate the site. It should also be noted that large game may have on occasion, ascended Tenderfoot Mountain naturally during the winter in order to access it's windswept surface which would have allowed for grazing on exposed dry grasses, forbs, and shrubs not covered by the deep winter snows common to the region. In this case, any game, large or small, would have been a major attraction and the drive a significant asset to the intermittently residential/sedentary Folsom peoples overwintering atop the mesa. Archaeological survey of the entirety of both drainages, especially eroded cut banks, and further investigation of

the probable game drive and possible bison jump is strongly advised as it may produce positive evidence of bison hunting.

Finally, when discussing the hunting techniques of any people, ancient or historic within the study area, an expansive viewshed from atop a high vantage point, such as the prominence located immediately to the east of the Razor Creek Game Drive stone wall feature, is a tactic mandatory for the effective observation of lowlands, drainages, and hillsides when sighting large game, including bison. This observation technique, commonly defined as glassing, would have been, and still is, an important hunting advantage. Positioning of observers from a vantage point also allows them to signal and provide direction to hunters located below and nearer game. In discussing glassing, which refers both to the use of binoculars or the naked eye, for big game hunting, specifically elk, Colorado Parks and Wildlife (Gindlesperger 2010) states:

> "An effective way to scout is by glassing the area from a distance, especially if you're above tree line. Set up in a spot that gives you a good vantage point, and watch likely areas for elk. In the mornings and evenings, elk will be feeding in or near openings. As the day progresses, look for elk along the edge of timber or other cover."

The ability to identify the type, number, location and movement of game across a landscape from a high vantage point, such as Tenderfoot Mountain and the many other high mesas and ridge tops within the study area, is a significant advantage. This enables a single hunter or an organized hunting group to coordinate and plan a procurement event in such a manner as to conserve energy while greatly improving the potential for a successful outcome. Bison, though large and frequently found in groups, have an uncanny ability to effectively seclude themselves in the undulating topography of hilly country, drainages, riparian areas, and forested mountain slopes. Dr. Larry Loendorf (2019) describes the Crow, Hidatsa and Sioux peoples perception of bison emerging from and receding into the landscape or the earth as so common and yet so profound that their spiritual rock art and boulder sculptures frequently depict this as a "bison emergence" effect. Considering this remarkable ability of bison to avoid detection by effectively melding into the landscape, it is clear that scouting from a high elevation is a hunting technique of no small consequence.

By the advent of the Historic period hunting practices began to change as the availability of horses, metal tools, firearms, the fur trade altered the longstanding native economy and hunting behavior of both plains and mountain peoples. Hunting of bison expanded to an unprecedented scale and the need for bison surrounds, impounds, jumps, and game drives was no longer necessary, and these tactics were abandoned within a generation. Native tribes quickly adapted to the use of firearms for distance hunting and the use of horses for the chase. The romanticized belief that the Native American peoples always used every part of the game they killed and wasted nothing is a myth. Native Americans certainly knew how to use every iota of a carcass of any species of game procured but they were also capable of being as opportunistic as Euro-American hunters depending upon their circumstances and the economic demands of the time. W. H. Hutchinson (1972), a Colorado native, accomplished historian of the Fur Trade era, and critic of the concept of the ecological native, stated:

> "If the Amerind was a truly dedicated ecologist, why did he so succumb to the artifacts offered him by the Europeans that he stripped his land of furs and pelts to get them?" "He did so because he was only human. The white man offered him material goods–iron, and woolens and gewgaws, and alcohol–which he could not resist. The riches, which is what they were, gave his life an expanded dimension which it had never known before. No power on earth could keep him from getting these things by raid or trade, once he had been exposed to them. To ask him to refrain from making his material life fuller and richer is to ask him far more than we have ever asked of ourselves."

The North American fur trade, beginning with European trade with natives in the 1500s, escalated to a fever pitch by the 1820s as Europe's demand for beaver fur and bison robes swelled and attracted greater numbers of Canadian and American entrepreneurs. From that time and continuing through about 1857, Native Americans, for a variety of reasons, set aside any previous values regarding resource conservation and wastefully exploited large numbers of bison (Isenberg 2000) primarily for fur trade purposes and frequently left the carcasses to the wolves as did the EuroAmerican hunter. The reasoning behind such behavior is includes not only the perception that the supply of bison was inexhaustible but the inability of a limited number of individuals to process a massive amount of product especially from a large kill. In addition, native peoples and EuroAmericans alike had preferences for select portions of meat including the hump, hump ribs, and the fatty tongue. Bison cows were preferred over bulls as the meat was more tender and the hides easier to work. Therefore, bulls killed in the excitement of the chase frequently had only the tongue harvested and the rest of the carcass abandoned.

As the wild game and hunting territory began to dwindle Native Americans became increasingly dependent on French, English, Spanish and American trade goods. Soon furs and robes began to fall out of favor in Europe and the economy shifted to a focus on the need for bison meat to supplement railroad construction crews and military posts. Having little choice, Native peoples adapted accordingly, and engaged in the slaughter of large numbers of bison and other animals often taking only hump, rib meat, and tongues to trade for guns, ammunition, horses, and other desired trade articles. Thereby did they, in concert with the Americans, significantly contribute to the ultimate collapse of their bison hunting based economies. These events also impacted both native and American hunting practices on Colorado's western slope. The remaining smaller, scattered bison groups and individuals, previously somewhat protected by the rugged landscape, would have been sought out as the Plains bison populations decreased. The resultant increase in intentional encounter hunting would have gradually reduced their numbers until they suffered the same fate as their cousins on the prairie and disappeared altogether.

Conclusion

The project area is surrounded by evidence of the presence of bison and of bison procurement activity occurring over a vast expanse of time from the Late Pleistocene to the late 1800s. The Razor Creek Game Drive presents with attributes that strongly suggest its use as a

large mammal game drive that very likely included bison harvesting. The magnitude of the feature, the original height of the stone walls and the use of massive stone boulders are all indicators that the feature was constructed to accommodate any large game and especially bison. The feature is singular in that it is one of a very few stone wall game drive features intended to direct the game into a hydric area where they would be mired and slowed to the point that they could then be dispatched with some degree of ease and success.

A similar feature was recorded during extensive work performed in 2014 in northern Colorado by Dr. Robert Brunswig who has provided a great deal of insight regarding large mammal game drive systems (Brunswig 2007). While working in partnership with the Bureau of Land Management Kremmling Field Office on the North Park Cultural Landscape Study, Dr. Brunswig and a University of Northern Colorado team, recorded a bison game drive jump that terminates in a spring area where bison would have been mired down. This feature is associated with a processing camp (5JA320) dating to the Early Paleoindian period (Brunswig et al 2015).

Robert Dello-Russo's work at the Water Canyon Paleoindian site (Dello-Russo et. al 2016) in New Mexico provides invaluable insight into the potential for identifying and dating multi-component Paleoindian deposits and recovering faunal remains within the Late Pleistocene and Early Holocene black mat deposits in prehistoric hydric areas (wetlands) that are associated with hunting events (Dello-Russo et al. 2016). Future work at the Razor Creek Game Drive site could certainly take advantage of the research done at Water Canyon by applying it to the hydric area (mire) below the stone wall diversion/drive feature. The strata within the low oxygen hydric area would very likely produce well preserved faunal elements of the prey harvested which could be subjected to bone collagen testing for radiometric dating. This would not only aid in establishing a timeline of use of the feature but would also confirm the species hunted through use of the game drive.

The Razor Creek Game Drive is a rare archaeological feature worthy of preservation and further study. Although the archaeological assessment and investigations into the feature have provided some answers regarding its attributes and purpose, many more questions have evolved from the limited work that has been done. It is hoped that additional investigations and future study will enhance and clarify the story of this most unusual archaeological structure.

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Appendix B: OAHP Forms