THESIS

ARCHAEOLOGICAL INVESTIGATION FROM A PRIVATE ARTIFACT COLLECTION LOCATED IN NORTHEASTERN COLORADO

Submitted by

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WE HEREBY RECOMMEND THAT THE THESIS PREPARED UNDER OUR SUPERVISION BY AMY R. FREDERICK ENTITLED ARCHEOLOGICAL INVESTIGATIONS FROM A PRIVATE ARTIFACT COLLECTION LOCATED IN NORTHEASTERN COLORADO BE ACCEPTED AS FULFILLING IN PART REQUIREMENTS FOR THE DEGREE OF MASTER OF ARTS.

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ABSTRACT OF THESIS

ARCHAEOLOGICAL INVESTIGATIONS FROM A PRIVATE ARTIFACT COLLECTION LOCATED IN NORTHEASTERN COLORADO

The research and publication resulting from this project contributes to the archaeology of northeastern Colorado. This collection has never been analyzed, and the land had never been previously surveyed. This research contributes to the general theory of archaeology by helping to develop a method for working with amateur archaeologists or collectors. It also provides information on behaviors of a collector: his knowledge of archaeological resources, what attributes he looks for in choosing locations to collect artifacts from, (i.e. land forms, known collection locality, etc), and what type of artifacts are collected. This research model can be used to predict what types of artifacts one can expect to find on federal, state, and private lands that have been looted or collected, and help explain the lack of bifaces, formal tools, and diagnostic artifacts at many sites on the Plains. Artifact collecting is a hobby of many individuals and it is important to understand how this behavior affects the archaeological record. Many features cannot be assigned to a cultural group or time period without the contextual information gained from diagnostic artifacts that are often surface collected from sites. The purposive sampling method used to record the landowner's property only includes areas that the landowner has surface collected from for decades. The archeological survey and site inventories fail to represent the landscape variety, diversity of site types, and full range of

archaeological resources that one would expect to find distributed over the landowner's property.

This thesis addresses the following questions. What types of activities have occurred at the collection sites over the years? What brings the landowner, Dirk Hunter to these locations? What types of artifacts are collected by Dirk? What site types are present? What tool types and lithic materials are represented within each site and over the project area? What is the cultural history of the area based on the diagnostic artifacts found within the Private Collection? This analysis of a private artifact collection provides evidence that meaningful interpretations can be drawn from private artifact collections.

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Chapter one will introduce the project. The location and environment of the project area will be discussed in chapter two. The cultural context will be covered in chapter three. Chapter four will describe the methods used throughout the project. Results will be addressed in chapter five. Finally, chapter six will provide conclusions.

This section will introduce the project, issues of confidentiality, looting, and archaeological ethics. This research was conducted on private land and has resulted in the documentation of previously collected artifacts, seven prehistoric sites, two historic sites, and the private land owner's collection habits. Only the site locations where artifacts were collected from were investigated.

In the summer of 2004, Dr. Larry Todd and Amy Frederick of the Department of Anthropology at Colorado State University began documentation of a private artifact collection and field research in the South Platte River Basin. Northeastern Colorado is part of the Great Plains physiographic province. The project area is located in the Colorado Piedmont, a subregion of the Great Plains. The project area is also surrounded by the Pawnee National Grassland, and small parcels of state land that are subject to leasing.

This thesis provides the opportunity to document and record previously collected artifacts and the sites that the artifacts were collected from, and the collection behaviors of the landowner/collector Dirk Hunter. All of the artifacts were legally collected from

private land that the land owner owns, or owned at the time of collection. The majority of the collected artifacts have no precise provenience, but the land owner can provide limited contextual provenience for many of the artifacts in his collection. Site types located on the collector's land include open camps with stone circle features also known as architectural/habitation sites, open lithic scatters, isolated finds, and a possible bison kill site. Historic sites on the property include two homesteads with dense concentrations of domestic, agricultural/ranching, vehicle/machinery parts, and domestic artifacts. Both homesteads date to the early twentieth century, and provide a clear archaeological record of historic homesteading in northeastern Colorado. One homestead contains the remains of the landowner's home as a boy.

The research from this undertaking has investigated seven prehistoric sites and two historic homesteads. This research has five main goals, documenting the collection, surveying the collection sites, describing the landowner's collection habits, summarizing and analyzing the collected data, and drawing conclusions. The following questions will be specifically addressed.

1. What types of artifacts are collected by the landowner?
2. What tool types and material types exist in the private artifact collection?
3. Does the collection include both historic and prehistoric artifacts?
4. What type of sites does the landowner collect from and where are they located?
5. What types of activities have occurred at the collection sites over time?
6. Does the landowner go out specifically to collect artifacts, or does he find them incidentally while performing farming and ranching activities?
7. Have the landowner's collection habits and behaviors changed over time?
8. What brings the landowner to the collection localities?
9. How often are artifacts collected?
10. What types of features and artifact assemblages are present at the collection sites?
11. Does the landowner only have artifacts from his land, or does he buy, sell or trade artifacts?

12. What is the landowner's knowledge of site locations? Does he use predictive modeling; if so, what does he look for?
13. How do sites located on private land compare to sites that archaeologists traditionally study?
14. What site types are located on private land?
15. What do historic site look like on private land; what types of buildings and artifacts are associated with the homesteads?
16. Who lived at the homesteads?
17. How long were the homesteads occupied for?
18. What types of activities are represented within the homesteads based on the artifacts?
19. What was learned from the interviews and the landowner's collection behavior?

The various methods utilized during the course of this project include person-centered interviews, semi-structure and structured interviews, participant observation, survey, and site recording in an attempt to gain provenience for the artifacts and to gather information on collection habits. For survey, an intensive methodology was used. Transect spacing was conducted at 5 meters to 70 cm at all the site localities.

Site designations and types were determined by Colorado State Historic Preservation Office standards. Site localities were named by the landowner, Dirk G. Hunter. Architectural features and artifacts were given UTM provenience with the use of a Garmin E-Trek Vista. Artifacts were classified into artifact types including chipped stone, ceramics, faunal remains, and historic artifact types. All prehistoric artifacts were measured to the nearest 0.01mm for length, width, thickness and were described based on class, element, portion, material, colors (3), heat treatment, cortex, scarring, and burning (when applicable). Historic artifact types were not measured, but the historic artifacts were observed and given provenience. Historic artifacts include ceramics, glass, nails, cans, cartridges, domestic items, vehicle and machinery parts, miscellaneous items, and

structural materials/ parts. Historic ceramic types include non-vitreous earthenware, vitreous earthenware, stone ware and porcelain.

Issues of Confidentiality

This project was conducted on private land and some agreements were made at the landowner's requests. No location or sketch maps will be included within the site write ups. This act of confidentiality is done as a courtesy to the landowner in order to ensure his privacy and to protect his land from illegal looting activities by other collectors. Trespassing and looting have been issues in the past, and are of concern to the landowner. This research strives to protect and respect the landowner's requests of anonymity. The pseudonym given to the landowner is Dirk G. Hunter. The next section will discuss and define ethical issues associated with private artifact collections, the act of looting, and archaeological ethics.

The Issue of Looting

Surface hunters, artifact collectors, pothunters, and looters have a profound impact on the archaeological record in terms of sheer quantity of items picked off the surface of sites over countless decades. Many sites and artifacts have gone unrecognized, or have disappeared resulting in the loss of irreplaceable knowledge. The practice of artifact collection destroys archaeological sites even those located on private land. Despite the legality of such collections, the act of artifact collection can destroy the archaeological site's integrity by removing data creating a loss of context from the site. Context comes from the Latin verb *contexere* which means "to weave together" or "to

connect" to (Butzer 1982:4). The true misfortune is the loss of information which could provide insights into the past of humankind. Many amateur archaeologists fail to keep adequate records on provenience or label artifacts efficiently. Archaeology is concerned with the collection of data and more importantly the collection of information in a scientific way focusing upon the concept of context which allows for site interpretation.

The removal of artifacts, whether legal or not, is considered looting by professional archaeologists. Artifacts must have provenience in order to explain spatial relationships of the material, based on a cultural system and non-cultural processes (Schiffer 1976:13). Removing an artifact from its context dramatically decreases the quality and quantity of information the site can reveal about historic and prehistoric human activity (Schiffer 1976). The archaeological record is disturbed by surface collecting. Therefore, it is important to see how this type of behavior affects the archaeological record. Many types of behaviors are perceived as looting and include the collection and/or intentional destruction of sites for the sole purpose of collection and/or sale of cultural materials within an illicit trade market (Davis 1991; McAllister 1991). The most prevalent participants in looting behaviors are identified as hobbyists, looters, collectors, amateur archaeologists, or relic hunters. Collectors remove artifacts and other materials from archaeological sites primarily because of personal interest in the past, and the desire to start or enhance their own collections. The scarcity of these materials gives artifacts their intrinsic value thereby encouraging their removal for personal satisfaction or financial gain without regard to data collection and analysis. Collectors tend to collect rather than sell the artifacts for profit in a local or international market (Davis 1991:175; McAllister 1991:96).

It is important to deal with artifact collectors on a professional basis as they have had and continue to have a profound impact upon the archaeological record in terms of the sheer quantity of items picked off the surface of sites over countless decades. Many artifacts and sites have gone unrecognized by the archaeological community, or have disappeared only to end up in private artifact collections lacking provenience (LaBelle 2003:115). It is the responsibility of professional archaeologists to interact with surface hunters because private collectors possess "tremendous knowledge of local sites, artifacts, and other collectors" (LaBelle 2003:115). The vast number of collectors compared to archaeologists demonstrates the need to address their collections and collection behaviors in order to get a more accurate perspective of the archaeological record. The willful ignorance of collection activities leads to a very biased perspective on the archaeological record. Developing a dialogue with artifact collectors is important for strengthening the discipline of anthropology as a whole. Collectors/avocational archaeologists have been shown to support the (academic) profession and community in Northeastern Colorado by helping to enforce the ethics of the discipline, reporting newly discovered sites, assisting with recovery and analysis, protecting sites from vandals and looters, lending political support at the local and national level, and occasionally providing financial support (Frison and Wilson 1984:184).

This thesis allows the opportunity to understand the collection behaviors of a private land owner. Information will be acquired regarding site localities and the artifacts taken from these locations that are currently in Dirk Hunter's private artifact collection. This project promotes conservation and protection of the archaeological record by introducing the collection of contextual data, and by stressing the importance of

stewardship to the landowner. This thesis introduces the use of archaeological methods and theory for interpreting human behavior and culture to Mr. Hunter. It also promotes the interaction and exchange of ideas between academic and avocational archaeologists. Many surface collectors have taken the only diagnostic artifacts from various site localities. By creating a working dialogue and exchange of ideas, the relationship between avocational archaeologists and archaeology can be improved.

Archaeological Ethics

Despite the need to interact with amateur archaeologists there are certain legal and ethical considerations for professional archaeologists involved with private artifact collections. Professional archaeologists are confronted with ethical, philosophical and theoretical dilemmas when analyzing private artifact collections. The issue is tied to illegal collections, artifact looting, and resulting site destruction when artifacts are taken from private, federal, state lands, and reservations. Collecting is prohibited on federal, state, and reservation lands with legislation including: the American Antiquities Act of 1906, National Historic Preservation Act of 1966 and section 106 compliance, Archaeological and Historic Preservation Act of 1974, and the Archeological Resource Protection Act, Executive Order 13007, the Indian Self Determination Act, the Native American Graves Protection and Repatriation Act, the American Indian Religious Freedom Act, and related cultural resource regulations (Canouts and McManamon 2001:97; McAllister 1991:95). According to United States law if artifacts are found on private land they belong to the landowner. The landowner can do as they wish to artifacts and sites located on private land. However, it is important to remember that artifacts are

often obtained illegally by trespassing individuals and tying them back to a site or context is very difficult at best. The philosophical question remains who owns cultural resources?

The act of collecting artifacts is viewed as looting and is destructive to the archaeological record. Professional analysis of an existing private artifact collection requires careful ethical considerations. In fact, some would question the legality of such artifacts based on federal and state laws regarding privately held lands. Many times it is difficult to determine where artifacts were collected from, and if they were collected without breaking any federal or state laws. Looted artifacts or collected items often times do not have provenience, and are not associated with other artifacts or a particular location that can provide an archaeological context. In addition, the analyses of looted archaeological objects could be perceived as legitimizing the activity of looting.

Unlike most other countries in the world, where archaeological resources are public property wherever they are found, the cultural resources belong to the land owner when located on private property in the United States (McAllister 1991:94). Consequently, the removal or destruction of archaeological resources on private property by the owner, or with their permission, is not generally illegal. Legislation only applies on private land when specific items such as human graves are encountered because burials and associated artifacts are protected by federal, state, and local laws (McAllister 1991:94). "The fact that a site is on private land makes the destruction no less a loss for science and humanity; it simply, in most cases, makes it legal" (King 1991:84). While some landowners protect sites on their landholdings from looting, many times the landowners themselves have removed the only diagnostic artifacts from the sites, and the promises and acts of stewardship only last the lifetime of the landowner. Current

strategies for curtailing the looting problem within the United States include legislation, law enforcement, education and public involvement (Fagan 1996; Kaiser 1993:353).

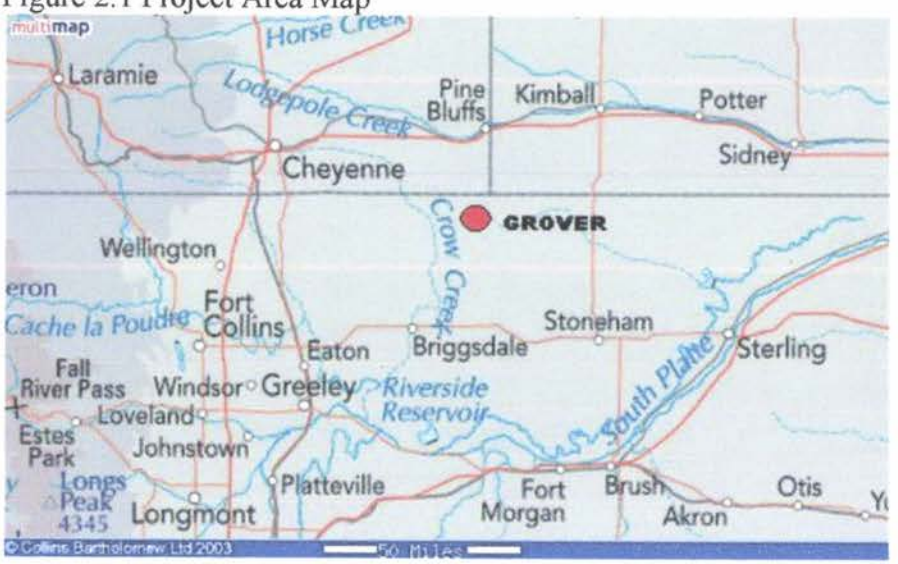
When archaeologists go into the profession they abide by many common ethics or principles based on stewardship of the archaeological record. Professional archaeologists also view in situ archaeological materials and sites, as well as records, and reports as irreplaceable data. Thus, it is the responsibility of archaeologists to regard the long-term conservation and protection of the archaeological record by practicing and promoting stewardship of archaeological recourses. Archaeologists should discourage, and should themselves avoid activities that enhance the commercial value of archaeological objects. In the interest of stewardship, archaeologists should enlighten the public regarding the importance of preservation, protection, and interpretation of the archaeological record (Kaiser 1993:348). Stewardship of archaeological resources can be achieved by enlisting public support, explaining and promoting the use of archaeological methods and techniques for understanding human behavior and culture, and providing archaeological interpretations of the past.

The next chapter will cover the project location and environment of Northeastern Colorado. Specific information will be provided on geologic history, lithic sources, soils, present climate and biota. The Paleoclimate and paleoenvironment will also be explored.

CHAPTER 2: PROJECT LOCATION AND ENIRONMENT

At the land owner's request, no locational or personal data will be provided as he already experiences problems with trespassing and looting activities on his land. The general project area is within the greater Colorado Piedmont area of the Great Plains physiographic province, specifically in the drainage basin of the South Platte River. The South Platte River drainage demarcates a "fundamental north-south division within the Colorado Plains area," specifically the Northeast and Southeast sub-areas (Eighmy 1984:2). Colorado's South Platte River basin drains into Northeastern Colorado and branches off into Crow Creek, Bijou Creek, Kiowa Creek, Lost Creek, Box Elder Creek, Sand Creek, Cherry Creek, Plum Creek, North Pawnee Creek, and the various intermittent tributaries and drainage basins of the Colorado Piedmont, see Figure 2.1 for the Project Area Map (http:/www.multimap.com)

Figure 2.1 Project Area Map



The Great Plains Ecosystem

Northeastern Colorado's ecosystem consists of highly complex abiotic and biotic components. The next sections will focus on the South Platte River Basin, geology, soil, climate, flora, fauna, paleoclimate, and paleoenvironment. A review of the ecosystem will set the stage for the following interpretation of collection localities and artifact distributions for both mobile prehistoric hunter-gatherers, and historic inhabitants in northeastern Colorado.

South Platte River Basin

During the Tertiary period particularly during the Paleocene (53-65 million years ago/ (mya)) and Pliocene (2-12mya) epochs, erosion of the Rocky Mountains deposited a mantle of river borne sediments (Burris 2006:11). In the Colorado Piedmont, these sediments have been eroded away by the actions of the South Platte, Arkansas River systems, and intermittent drainages (Burris 2006:11). Topographic features of the landscape include deep arroyos, steep sided buttes and escarpments, wide valleys with usually gentle slopes, nearly level plains, and abundant playas (McFaul et al. 1991; McFaul et al. 1994). Sand dunes and loess deposits are also characteristic features of the northeastern Colorado landscape (Gilmore et al. 1991; McFaul et al. 1994).

Although local precipitation is often minimal and sporadic, water sources are varied and plentiful including the South Platte River and its tributaries, rainfall, snowmelt, and artesian springs. In recent decades, many second and third order streams have had only intermittent flow in drier years, but may have been perennial streams prior to the lowering of local water tables through modern irrigation, livestock, and domestic

use (Kalasz et al. 1992:7; Brunswig 1996:98). Other sources of water include rock outcrop depressions, and playa basin formations that serve as temporary water reservoirs after spring and summer rains. The Chalk bluffs and the Pawnee Buttes are the main topographical features of the project area. The Pawnee Buttes and Chalk Bluffs are remnants of Oligocene and Miocene age sedimentary rock that once covered much of northeastern Colorado and often contains bones of primitive mammals (Chronic and Chronic 1972:66).

Dirk G. Hunter's property is located just outside of Grover city limits. His landholdings are bordered by private land, the Pawnee National Grassland, and state lands that are available to lease for cattle grazing. The geographic study area includes the valleys of Crow Creek and Pawnee Creek, and the jagged line of sandstone bluffs known as the Chalk Bluffs running across the northern border of Colorado. Within the project area, elevation ranges from 1524-1829 m (5,000 to 6,000 ft). The total area included in the survey was 195 hectares (482 square acres). The landowner owns a total of 2023.4 hectares (5000 square acres).

Geologic History

The geologic history of the Platte River Basin is complex and best summarized by the work of Thornbury (1965) and Tweto (1979). The depositional and erosional history of the Pawnee National Grassland can be divided into five significant events.

The first geologic event is the detachment of the North American Plate from Europe which resulted in the creation of the Rocky Mountain range during the Colorado Orogeny (Cassells 1983, 1997; Thornbury 1965). From about 600-300 million years Colorado was covered by sea until the Cretaceous age 136-65 million years ago (Cassells

1983, 1997; Thornbury 1965). Over the next 200 million years, the Rocky mountain range eroded producing sediment that the rivers deposited upon the Plains until a second uplift began around 60 -35 millions years ago during the Laramide Orogeny (Cassells 1983, 1997; Thornbury 1965). Major volcanic activity took place between the Laramide Orogeny and the Miocene-Pliocene uplift producing additional river sediments between 37 and 17 million years ago (Cassells 1983, 1997; Thornbury 1965). The fifth geologic event took place during the Pleistocene resulting in massive glacial waxing and waning (Cassells 1983, 1997; Thornbury 1965).

The geologic history of Northeastern Colorado can be discussed in terms of the geomorphic history including Mesozoic and Cenozoic sediments (Cassels 1997:13). Cretaceous and tertiary nodules are located within the project area. In areas where tertiary sediments have been eroded away be aeolian, alluvial and colluvial processes, the cretaceous bedrock forms the surface geology. Tertiary formations range in age from the Paleocene to the Pliocene. Vast portions of the region are mantled with more recent aeolian and alluvial sediments of Quarternary age (ca. two million years ago to present) (Tweto 1979). Locally abundant bedrock formations include the Cretaceous Pierre Shale, Fox Hills Formation, Laramie Formation, and the Paleocene Dawson Arkose bedrock deposits (Thornbury 1965; Tweto 1979). Geological processes have shaped the area of the Platte River basin topographically and offer many local lithic sources selected by prehistoric people for their stone tool kits. Quartzite, chert, and chalcedony cobbles, and petrified wood occur on and near the surface locally. These local lithic sources are derived either from the Pleistocene terrace of Crow Creek, intermittent drainages, or are secondary Tertiary-age gravels derived from the Rocky Mountains.

Lithic Sources

Non-local lithic material was commonly transported by Paleoindians and utilized as part of their toolkit and the related technology associated with a mobile, bison hunting subsistence strategy. Some of the exotic materials found in Northeastern Colorado have characteristics similar to Knife River flint, Kremmling chert, Flattop chalcedony, Trout Creek jasper, Windy Ridge Quartzite, and Edwards Chert. The Spanish Diggings quarry in the Hartville Uplift consists of high quality cherts, chalcedony and quartzite/ orthoquartzites and is located in east-central Wyoming (Slessman 2004; Frison 1991; Miller 1991; Reher 1991). Flattop chert and chalcedony are part of the Chadron Formation and is found in Logan County near Sterling Colorado, in Nebraska, and South Dakota (Ahler 1977:134; Holen 1991; Slessman 2004). Quartzite outcrops occur throughout Wyoming, New Mexico, and Colorado along the South Platte River (Jodry 1999:97; Miller 1991; Reher 1991). Quartzite may also be found in Wyoming at the Morrison Formation outcrops and the Hartville Uplift (Miller 1991; Slessman 2004). Kremmling chert and Windy Ridge quartzite are found in Middle Park Colorado (Frison 1991:450-474). Trout Creek jasper and Edwards' chert are found in Texas (Frison 1991:450-474). Knife River flint is derived from the Golden Valley Formation located in Dunn and Mercer counties, North Dakota (Frison 1991:469, 473). Obsidian, ignimbrite, basalt, quartz crystal, and rhyolites are known to come from the Yellowstone Plateau in northwest Wyoming, eastern Idaho, and southwest Montana, the Idaho batholith (located in both Idaho and Montana), and the Snake River Plain located in southern Idaho (Frison 1991:472).

Weld County Soils

The soils of a region are largely a result of past geologic activities. Pleistocene glaciers in North America eroded and transported sediments through natural activities of rivers and creeks (Diffendal Jr. 1991:95). Frequent fires interacted with drought to push forest boundaries to the east and north, creating the distinctive Short Grass Prairie vegetation and soil composition (Bock et al. 1991). The soils of Weld County include all loams known as the Epping series, Kim-Mitchell series, Otero series, the Thedalund series, the Ustic Torriorthents sandstone rock outcrop and the Wages series. For specific details, see Table 2.2.

Table 2.2 Weld County Soils Based on Crabb (Crabb 1982)

Series	Characteristics	Topographic Areas	Soils are formed in:	Slope/ Description	Soil color
Epping	Silt loam; shallow, well drained, moderately permeable soils	Dissected plains	Calcareous loamy residuum derived from siltstone	0-9%; loamy mixed mesic Ustic Torriorthents	Light brownish gray 10YR 6/2 to dark grayish brown 10YR 4/2
Kim-Mitchell loam	Loam; deep, well drained, moderately permeable soil	Smooth to dissected plains, alluvial and colluvial fans	Calcareous loamy alluvium and colluvium	0-9%; fine loamy mixed mesic Ustic Torriorthents	Light brownish gray 10YR 6/2 to brown (10YR 5/3)
Otero Series	Sandy loam; deep, well drained, moderately to rapidly permeable soil	Smooth to dissected plains, alluvial and colluvial fans	Calcareous loamy alluvium and colluvium	0-25%; course loamy mixed mesic Ustic Torriorthents	Brown (10YR 5/3)/ dark brown (10YR 3/3) to Light yellow brown 10YR 6/4
Thedalund-Keota	Loam; moderately deep, well drained, moderately permeable	Fans, upland ridges and plains	Calcareous loamy residuum derived from fine grained sandstone, shale & siltstone	0-9%; fine loamy mixed, mesic Ustic Torriorthents	Grayish brown (10YR 5/2) to Brown 10YR 5/3
Ustic-Torriorthents	Fine sandy loam; deep well drained, moderately permeable soils	Dissected plains and alluvial fans	Calcareous loamy alluvium	0-9%; fine loamy mixed mesic Ardic Arguistolls	Grayish brown (10YR5/2) to a very pale brown (10YR 7/3) / a yellowish brown (10YR 5/4)
Wages	Fine sandy loam; deep well drained, moderately permeable soils	Dissected plains and alluvial fans	Calcareous loamy alluvium	0-9%; fine loamy mixed mesic Ardic Arguistolls	Grayish brown (10YR 5/2) to a very pale brown (10YR 7/4); to a yellowish brown (10YR 5/4)

Epping sediments are a fine to medium coarse grained silt loam. The sediments include intermixed Thedalund loams Keota loams, Kim loams and the Mitchell silt loams (Crabb; 1982:24, 73). This soil can be adversely affected by water erosion, runoff, and wind (Crabb; 1982:24). Potential and observed plant communities include blue grama, winterfat, western wheatgrass, and fourwing saltbrush (Crabb 1982:24).

The Kim-Mitchell loam soil series is composed of a fine mixed mesic loam that contains Ustic Torriorthents (sandstone) inclusions (Crabb 1982:26-27; 75). Soil components are intricately intermingled and include the Kim loam, Mitchell silt loam, and small inclusions of Haverson loam, Thedalund loam, and Keota loam (Crabb 1982:27). This soil can be adversely affected by water erosion, runoff, and wind (Crabb 1982:27). Potential and observed plant communities for the Kim-Mitchell loam series include blue grama, western wheatgrass, sedges, and buffalograss (Crabb 1982:26-27).

The Otero soil series consists of a sandy loam with a gravely surface layer (Crabb; 1982:34, 78) intermixed with Stoneham fine sandy loams, gravelly soils, Kim-Mitchell loams, and Bushman fine sandy loams. This soil can be adversely affected by water erosion, runoff, and wind (Crabb 1982:33-35). Potential and observed plant communities for the Otero sandy loams include blue grama, prairie sandreed, and needlethread (Crabb 1982:34-35).

The Thedalund-Keota loams are a fine loam mixed with deteriorating sandstone (Ustic Torriorthents) inclusions. This soil can be adversely affected by water erosion, runoff, and wind (Crabb: 1982:43-44). Potential plant communities for the Thedalund-

Keota loams include blue grama, western wheatgrass, and fourwing saltbrush (Crabb 1982:43-44).

The White River sandstone outcrop has an associated soil matrix composed of sandy loam, commonly known as the Ustic Torriorthents soil series. These soils are concentrated around sandstone escarpments. Ustic Torriorthents soils range from a silty loam to a gravelly sandy loam (Crabb 1982:45). This soil is adversely affected by water erosion, runoff, and wind. Ustic Torriorthents soils are calcareous throughout. Runoff varies from slow to rapid, and the hazard of water erosion is high to very high. The potential and observed plant community consist of sideoats grama, little bluestem, blue grama, and prairie sandreed (Crabb 1982:46).

The Wages soil series is a deep fine sandy loam. The Wages soils are a mixture of Kim soils, Mitchell soils, and Platner loam (Crabb 1982:48). This soil can be adversely affected by water erosion, runoff, and wind (Crabb 1982:48). Potential plant communities within the Wages soil series include blue grama, western wheatgrass, sedges, and buffalograss (Crabb 1982:48).

Present Climate

Many natural forces have altered the environment of Northeastern Colorado through time. The Colorado Great Plains has a "continental-type climate characterized by great diurnal and annual temperature variation" (Gilmore et al. 1999:11). Annual changes in the global atmospheric circulation system produce mid-continent weather and climatic conditions that exhibit strong seasonal differences such as outbreaks of exceptionally cold arctic air, blizzards, severe thunderstorms, tornadoes, hail, dust storms, searing heat,

and torrential rain (Solomon and Daniel2004:1273-1288; Harrington and Harman 1991:104). The Plains region exhibits strong gradients of temperature and drought variability (Bock et al. 1991; Harrington and Harman 1991). Temperatures increase from the north to south while precipitation increases from west to east (Doeskin and McKee 1991:302). Temperature, moisture, and potential evaporation are important factors in explaining the distribution of grassland types located within the Great Plains.

The environment of the Platte River Basin can be further described as a "mid-latitude cold steppe climate" (Gilmore et al. 1999:11). Annual precipitation ranges from 30-46 cm (12-18") and falls mostly in the spring and summer months for the Colorado Piedmont area (Gilmore et al. 1999:12). Within the Great Plains, one notable characteristic of a grassland climate is the great year-to-year variability in precipitation, and periodic droughts (Bock et al.1991; Doeskin and McKee 1991; Viau et al. 2002).

The climate in northeastern Colorado is characterized by considerable natural variability based on daily (Landsberg 1966), seasonal, annual, and inter-decadal scales (Doeskin and McKee 1991: 303). Average January temperatures range from -4° to -2° Celsius (24°-29° Fahrenheit) while average July temperatures range from 22°-24° Celsius (71°-76° Fahrenheit) (National Climatic Data Center 1982; 1984). The growing season is short averaging only 100 frost-free days (Frison et al. 1996:4). Doeskin and Mckee (1991) discovered that there has been an upward trend in both maximum and minimum temperatures for the Great Plains, with much of the increase occurring prior to 1940 (Doeskin and McKee 1991:320). Average daytime relative humidity is at 40% (Kalasz et al. 1992: 9). The sun shines about 70% of the day time remaining consistent despite different seasons (Kalasz et al. 1992: 9). Prevailing winds are from the north. April is the

windiest month with an average wind speed of over 16 km per hr (10 miles per hour) Crabb 1982:2).

Biota- Flora and Fauna

The Colorado Piedmont is classified as a short-grass prairie or a steppe vegetation zone. The distribution of flora and fauna is dependent upon many related factors such as elevation, slope, variability of temperature and precipitation, various ecological zones, and the physiographic region. Plants evolved and were naturally selected to avoid climatic stresses including drought, fire and grazing in the plains (Axelrod 1985; Bock et al. 1991:284; Harrington and Harman 1991:103-112). Cool-season grasses mature during the late spring or fall, and warm-season grasses mature in the late summer attracting game.

Kuchler (1964, 1975) mapped these 3 vegetative communities within the Platte River basin of Colorado based on dominant floral species and their respective physiognomy (Gilmore et al. 1999:17). Specifically, Kuchler identified the: (1) Grama-Buffalo Grass (*Bouteloua- Bochloe*); (2) Sandsage-Bluestem Prairie (*Artemesia-Andropogon*); and (3) the Bluestem-Grama Prairie (*Andropogon-Bouteloua*) (Kuchler 1964, 1975; Gilmore et al. 1999:17). The dominant types of vegetation found within the project area include: needle grass (*Stipa comata*), blue grama (*Bouteloua gracilis*), buffalo grass (*Buchloe dactyloides*), yucca (*Yucca glauca*), prickly pear (*Opuntia* sp.), lupines (*Lupines* sp.), beardtongue (*Penstemon* sp.), and psoralea (*Psoralea sp.*) (Burris 2006:14; Gilmore et al. 1999: 25-27; Kalasz et al. 1992:8-9; Kuchler 1964, 1975). Warm season grasses include buffalo grass (*Buchloe dactyloides*), blue grama grass (*Bouteloua gracilis*), and big bluestem (*Andropogon gerardii*) (Burris 2006:14). Cool season grasses

include western wheatgrass (*Pascopyrum smithii*) and ricegrass (Oryzopsis hymenoides) (Burris 2006:14). Along narrow riparian zones and watercourses, plains cottonwood (*Populus sargentii*), willow (*Salix sp.*) and boxelder (*Acer negundo*) have been noted in northeastern Colorado (Burris 2006:14); (Kalasz et al. 1992:8-9). Small patches of ponderosa pine (*Pinus ponderosa*) and limber pine (*Pinus flexilis)* are also found within the project area. Woody plants found in protected or moist areas include hawthorn (*Crataegus sp*), wild rose (*Rosa arkansana*), snowberry (*Symphoricarpos spp*), hackberry (*Celtis reticulata*), chokecherry (*Prunus virginiana*), and current or gooseberry (*Ribes sp.*). Woody plants located on the dryland include sagebrush (*Artemisia sp.*) and rabbitbrush (*Chrysothamus sp.*). Forbs found within the project area include yucca (*Yucca sp.*), prickly pear cactus (*Opuntia spp.*), ground cherry (*Phsyalis sp.*), and wild prairie onions (*Allium spp.*) (Burris 2006:14).

The dominant large mammals that have historically inhabited the plains include bison (*Bison bison*), pronghorn (*Antilocapra americana*), mule deer (*Odocileus hemionus*), white tailed deer, (*Odocileus virginianus*) and elk (*Cervus elaphus*) (Burris 2006:15; Gilmore et al. 1999:27-28; Kalasz et al. 1992:8-9). Medium-sized and small mammals that have historically inhabited the project area consist of bobcat (*Felis rufus*), coyote (*Canis latrans*), red fox (*Vulpes fulva*), swift fox (*Vulpes velox*), raccoon (*Procyon lotor*), badger (*Taxidea taxus*), black-footed ferret (*Mustela nigripes*), skunks (*Spirogale and Mephitus* genera), and bats (*Chiroptera* order) (Burris 2006:15; Gilmore et al. 1999:27-28; Kalasz et al. 1992:9) Lagomorphs within northeastern Colorado's grassland consist primarily of whitetail and blacktail jackrabbits (*Lepus twonsendi, L. californicus*, and eastern desert cottontails (*Sylvilagus floridanus and S. auduboni)* (Burris 2006: 15;

Gilmore et al. 1999:27-28; Kalasz et al. 1992:9). An array of rodents are located in the project area and include blacktail prairie dog (*Cynoms ludovicianus*), ground squirrels (genus *Citellus*), porcupine (*Erethizon dorsatum*), and numerous species of mice, rats, and voles (Kalasz et al. 1992; Gilmore et al. 1999:27-28). Reptiles are well represented and most notably include the bull snake (*Pituophis melanoleucus*), western or prairie rattlesnake (*Crotalus viridis*) and racer (*Colubar constrictor*) (Kalasz et al. 1992:9). Numerous lizard species are found in wet valleys and there are a staggering number of insects within the project area largely represented by grasshoppers, flies, mosquitos, beetles, ants, deer fly, ticks and gnats (Kalasz et al. 1992:9).

Paleoclimate and Paleoenvironment

The paleoclimate has also had a profound impact on the historic and current short grass prairie environment. A study on paleoclimatology conducted by Viau and colleagues demonstrated that millennial-scale climate variability caused dramatic changes in vegetation communities across all of North America (Viau et al. 2002). The climatic oscillations have been noted as having a periodicity of 1500 years during the last 14,000 years with major transitions identified in marine records, ice cores, and pollen records occurring at 600 B.P., 1650 B.P., 2850 B.P., 4030 B.P., 6700 B.P., 8100 B.P., 10,190 B.P.,12,900 B.P. and 13,800 B.P. calibrated years (Viau et al. 2002). These oscillations are primarily driven by solar forcing (Bond et al. 2001) associated with ocean-atmosphere feedbacks (Viau et al. 2002:458). The results of the study illustrate large-scale synchronicity of rapid changes between climatic regimes during the Holocene and late glacial (Viau et al. 2002:458).

The climactic models of Bryson et al. (1970), Bryson and Wendland (1974) and Wendland (1978, 1995) provide regional paleoenvironental models for the Great Plains. Glacial conditions extend into the early Paleoindian stage (~18,000-12,000 B.P.) (Antevs 1955; Brunswig 1992; Bryson et al. 1970; Gilmore et al. 1999:31; Wendland 1978, 1995; Bryson and Wendland 1974). Late Pleistocene/early Holocene environments between 12,000 and 8,000/7,500 B.P. are characterized by a long-term pattern of cyclical warming and decrease in annual precipitation, interspersed by periodic episodes of cooling (Antevs 1955; Brunswig 1992; Bryson et al. 1970; Gilmore et al. 1999:31; Haynes 1991, 1993; Holliday 1987; Wendland 1978, 1995; Bryson and Wendland 1974). The initial part of the Archaic stage (7,500 B.P. - 1,800 B.P.) is dominated by the Atlantic climatic episode also known as the Altithermal climatic maximum, or Long Drought (Antevs 1955) and is characterized by discontinuous periods of aridity and aeolian activity (Antevs 1955; Brunswig 1992; Bryson et al. 1970; Gilmore et al. 1999:31; McFaul et al. 1994:371; Wendland 1978, 1995; Bryson and Wendland 1974). Subsequent to the Atlantic episode, climate and environment began to approach conditions similar to modern levels (Antevs 1955; Brunswig 1992; Bryson et al. 1970; Gilmore et al. 1999:31; Wendland 1978, 1995; Bryson and Wendland 1974). The Late Prehistoric stage (1,800 B.P. - 400 B.P.) corresponds to the Early Ceramic period and is characterized by continued warming and drying trends, and aeolian activity (Antevs 1955; Brunswig 1992; Bryson et al. 1970; Gilmore et al. 1999:37; Wendland 1978, 1995; Bryson and Wendland 1974). The end of the Sub-Atlantic episode lasts until ca. 1,680 or 1,500 B.P. depending on the model used, and is followed in succession by Scandic, Neo-Atlantic and Pacific episodes (Gilmore et al 1999:37). The Protohistoric stage (400-100 B.P.) corresponds to the Neo-Boreal

episode dated to 400-100 B.P. (Bryson and Wendland 1974; Wendland 1978) and is characterized as a period of cooler temperatures (Wendland 1978), or cooler and wetter conditions (Wedel 1986:43). The next section will cover the forager/collector continuum within archaeological literature.

Forager/Collector Continuum

How did humans interact with their environment? Archaeological surface remains might or might not represent depositional episodes, the cultural population, or hunter gatherer behavioral systems. As a theoretical tool, archaeologists employ hunter-gather theory and utilize ethnographic research that provides a framework for interpreting prehistoric behavior. The forager/collector theoretical approach studies the relationship between the environment and the ways in which human groups positioned and organized themselves. This ecological approach examines the archaeological footprint and infers human behavior from the archaeological remains. Most hunter-gatherer groups presumably followed a mixed subsistence strategy. Ecological and biological factors affect how human cultural groups organize and adapt to their environment, subsistence strategies, and lithic technologies. Ecological and biological factors include, but are not limited to, latitude, primary biomass, relative abundance of animals, population density, available food supply, and scarcity. Traditional Ecological Knowledge (TEK) includes an intimate understanding of animal behaviors, and environmental predictability. TEK would have been used by hunter-gatherer groups occupying Northeastern Colorado to develop subsistence and procurement strategies.

Binford (1980) describes the archaeological and ethnographic variability in hunter-gatherer settlement patterns as a continuum between foraging and collecting. A foraging strategy is residentially mobile, the entire social group moves from area to area searching for food as a unit. In contrast, a collecting strategy is logistically mobile and small groups of people journey out of a base camp seeking distant resources for the larger social group. It is argued that foragers gather food only for immediate consumption, while collectors rely heavily on seasonal food storage. It can be assumed that Plains tribes utilized a continuum of foraging and collecting strategies. Lewis Binford's cross cultural analysis (1980: 13-17) suggests that residential mobility and the absence of storage are an adaptive response when food is available year-round, and is scattered homogeneously across a landscape. Logistical mobility and a dependence on stored foods appears to be an adaptive response when the availability of food fluctuates seasonally, and when the different foods are found incongruously in widely separated locations. It is argued that an optimal mobility strategy minimizes the time and energy spent on certain tasks and maximizes the return of the items such as lithic materials, floral resources, faunal resources, water, fire wood, etc.

While botanical resources played an important role in subsistence strategies, bison were sought after during most periods of human occupation on the Plains. The hunting and procurement of bison was central to subsistence strategies for Plains Indians. Furthermore, communal bison procurement appears to have been an important social activity during many periods and in many locations on the Plains (Frison and Wilson 1978). Communal bison hunting involved aggregates of large numbers of normally dispersed social groups that came together at specified locations used as kill sites. The

bison were then lured to a chosen location, were killed and processed by specific labor units, and the entire social unit participated in the hunt one way or another (Arthur 1975; Davis and Wilson 1978; Kehoe 1973; Wheat 1972). It is important to note that communal bison hunting does appear to have been selected as a means for obtaining food to store and consume during the winter time. A reliance on food storage and logistical resource procurement are responses to the environmental limitations of the Plains and needs of populations.

Throughout history, human lifeways have been conditioned by their environmental setting. Environmental variables limit what types of resources are available and Colorado has provided a rich and varied environment for its inhabitants. Chapter three will discuss the Paleoindian stage, the Archaic stage, Late Prehistoric stage, Protohistoric stage, and the Historic period.

CHAPTER 3: CULTURAL CONTEXT

Since a chronology specific to northeastern Colorado has not been established, the cultural chronology will be synthesized in this chapter. The cultural chronology will provide archaeological evidence of site types, cultural groups, artifact assemblages, faunal remains, and floral remains that have been found in northeastern Colorado during cultural resource inventories and other research endeavors. The cultural history is representative of the prehistoric and historic human occupation within the project area. The abundance of projectile points from different time periods is presumed to reflect the stability in land use through time. This chapter will cover the Paleoindian, the Archaic, the Late Prehistoric, the Protohistoric, and the Historic stages in northeastern Colorado.

The spatial patterns observed in landscapes result from complex interactions between physical, biological, and social forces. Material culture is generated from daily tasks, and the organization of space is culturally variable. Sites are often palimpsests representing earlier and later populations that utilized the same landscape over time. Continued use of the landscape produces and reinforces a cultural identity. Archaeological visibility is reflective of the duration, intensity, and purpose of site occupation in the plains of northeastern Colorado. Hunter-gatherer groups were often highly mobile, and their impact on the landscape was ephemeral. Sites are a result of cultural activity and non human factors that contribute to a site's formational history within an active, evolving landscape.

The number of archaeological components dated to a particular cultural-historical period has been used widely as a rough measure of the relative size of populations (Eighmy and Labelle 1996). The relative frequency of radiocarbon dates through time has also been used as a more detailed indicator of the intensity of occupation within regional landscapes (Eighmy and Labelle 1996. Jeffrey Eighmy and Jason Labelle (1996) conducted a statistical analysis to consider the absolute age of Plains phases. The research involved analyzing distributions of pooled radiocarbon dates to see if they correlated with temporal ranges attributed to cultural phases and complexes. Eighmy and Labelle (1996) believe that the differences between phase and complex durations reflect differences within culture-historical systematics, and also model different types of sociocultural phenomena. They discovered that preceramic complexes endured for 900 years or more, while all ceramic phases endured for less than 900 years (Eighmy and Labelle 1996). The common practice among Plains archaeologists, of using some phases and complexes without carefully defining them as cultural historical entities has led to some variation in the use of "phase" and "complex" (Johnson 1986; Eighmy and Labelle 1996). Despite the uncertainty of their "true" sociocultural meaning, the archaeological content of phases and complexes are based on index artifacts which are fairly well understood and agreed upon in correlation with radiocarbon samples within the plains of the Platte River Basin. For the purpose of this research, phase and complex systematics will be divided into temporal divisions defined by stages and periods because these archaeological delineations are easily recognized from index artifacts within the archaeological record of northeastern Colorado, and are believed to model diagnostic temporal ranges and sociocultural phenomena.

The Paleoindian stage is used to distinguish highly mobile people in North America during the Pleistocene to Early Holocene (roughly 12,500-8,500 B.P.). Paleoindian groups are divided into several periods based on diagnostic artifacts, technology and radiocarbon dates. The Paleoindian stage encompasses the Pre-Clovis period (18,000-12,000 B.P.), Clovis period (12,000-11,000 B.P), Folsom period (11,000-10,000 B.P) and Plano period (10,000-7,500 B.P) (Gilmore et al. 1999:53-80). The Paleoindian stage refers to the time when inhabitants of the Platte River Basin subsisted on now-extinct megafuana including mammoth, bison, deer, pronghorn, fish, waterfowl, rabbit and minimal floral resources. The Archaic stage is divided into three periods including the Early Archaic (7,500-5,000 B.P.), Middle Archaic (5,000-3,000 B.P) and Late Archaic (3,000 – 1,800 B.P.) (Gilmore et al. 1999:102-106). During the Archaic stage, people adapted to the Altithermal environment by broadening their resource base to include a variety of large and small mammals, and floral resources. The Late Prehistoric stage (400 B.P.-1,800 B.P.) is divided into two periods including the Early Ceramic (1,800 B.P.-800 B.P) and Middle Ceramic (800-400 B.P.). During the Late Prehistoric stage, ceramics and arrows make their first appearance, and habitation sites appear to have been occupied for longer periods of time, or were occupied with greater regularity (Gilmore et al. 1999:175-201). The Protohistoric stage is culturally dynamic and represents the period following the Middle Ceramic up until the time Europeans entered northeastern Colorado (Gilmore et al. 1999:309-318). Lastly, the Protohistoric is followed by the historic period beginning from 100 B.P. To reference stages, periods, and date ranges, see Table 3.1 below.

Table 3.1: Prehistoric Chronology of the Platte River Basin (Eighmy 1984; Gilmore et al. 1999:31- 40)

Stage	Period	Date Range, not calibrated
Protohistoric	N/A	400-100 B.P.
Late Prehistoric	Middle Ceramic	800-400 B.P.
Late Prehistoric	Early Ceramic	1800-800 B.P.
Archaic	Late Archaic	3000-1800 B.P.
Archaic	Middle Archaic	5000-3000 B.P
Archaic	Early Archaic	7500-5000 B.P.
Paleoindian	Plano	10,000-7500 B.P.
Paleoindian	Folsom	11,000-10,000 B.P.
Paleoindian	Clovis	12,000-11,000 B.P.
Paleoindian	Pre-Clovis	18,000-12,000 B.P.

Paleoindian Stage for the Northeastern Platte River Basin

Evidence for a pre-Clovis population dating in excess of 11,500/12,000 B.P. has been collected at the Lamb Springs, Selby and Dutton sites in Colorado (Eighmy 1984:33). However, archaeologists are not in agreement of these interpretations (Eighmy 1984, Jelinek 1971; Macneish 1971; Stanford 1979). All known pre-Clovis components are in the context of mammoth kill sites (Eighmy 1984:10). Archaeological characteristics of the Paleoindian stage include the presence of expedient bone tools, flaked bone, bones broken from the removal of marrow, and a few stone artifacts consisting of crude flakes and scrapers (Stanford 1979). The Paleoindian stage is characterized by highly mobile nomadic hunters preying on large Pleistocene fauna including mammoth, giant sloth, camels, bison, and horses and early Holocene fauna including large bison. Northeastern Colorado and adjacent areas delineated by the Rocky Mountain Front Range have yielded a larger proportion of Paleoindian sites than elsewhere due to the relationship between alluvial Pleistocene deposits, and the diverse

resource base present in such areas that supported Paleoindians (Cassells 1983, 1997; Kalasz et al. 1992; Greiser 1985).

Early Paleoindian groups were composed of small bands that used a subsistence strategy referred to as a "high technology forager" (Kelly and Todd 1988:239). Paleoindians needed a highly portable technology that could assist with terrestrial game hunting (Kelly and Todd 1988:237). Raw materials were transported long distances and bifaces maximized the number of stone tools (Kelly and Todd 1988). Tools demonstrated a long-term, varied use life until the artifact had reached the end of its utility (Kelly and Todd 1988:237). Paleoindians adapted to a harsh environment, but the excellence in their tools and weaponry indicates that they were far from impoverished (Frison 1991). Many of the Paleoindian sites in Colorado were found by amateur archaeologists (Cassels 1983, 1997; Gilmore et al. 1999:54-80).

The Clovis Period

The Clovis Paleoindian period (12,000-11,000 B.P.) is representative of a change in environmental conditions during the Pleistocene. Many Clovis sites are found by amateur archaeologists (Cassels 1983, 1997; Gilmore et al. 1999:54-80). Paleoindian subsistence is believed to have been largely dependent upon the hunting of big game. The Clovis period is archaeologically distinguished by the use of large, fluted and unfluted lanceolate points, plano-convex scrapers, retouched flakes, pressure retouch flakes, and core choppers (Eighmy 1984:10). Some groundstone slabs and manos also occur during this period. However, the tool assemblage reveals a heavy reliance on hunting and scavenging. Faunal remains at Clovis sites primarily consist of now- extinct mammoth

and bison remains, in addition to horse, tapir, bear and rabbit (Eighmy 1984:10; Fagan 1987:179). Clovis points are usually between 7.6 cm-15.2 cm in length, basally ground, basally concave (Eighmy 1984:35), have parallel or slightly convex edges, and are leaf-shaped (Eighmy 1984; Gilmore et al.1999:57; Wedel 1961:54). Clovis sites types typically include kill sites and game processing sites, but there is evidence for limited use of caves and rock shelters (Gilmore et al. 1999:51-78). Many Clovis sites have been found by amateur archaeologists. Clovis sites in the Platte River Basin include the Dent Site, Klein Site, Dutton Site, and Claypool Site (Gilmore et al 1999:57-64). These sites resemble one another by having a low density of artifacts and a high number of tools in the artifact assemblage. There is archaeological evidence that stone tools were cached for later use as exemplified by the Drake Clovis Cache (5L024). The sites listed in the chart below were chosen because they reveal the lifeways and material culture found at Clovis sites in northeastern Colorado. These sites also illuminate what we can expect to find in the archaeological record for the project area. Expected site types for the Clovis period in the plains of northeastern Colorado include open camps, open lithic scatters, kill sites and isolates. The sites are representative of habitation, resource exploitation of the large, now extinct megafauna, and reveal evidence of butchering/ processing activities. See Table 3.2 for a list of representative Clovis period sites and isolates within the vicinity of the project area (Eighmy 1984; Gilmore et al. (1999:57-64).

Table 3.2 Clovis Sites and Isolates for Weld County (Eighmy 1984; Gilmore et al. 1999:57-64)

Site number	Site Name	Site Type
5WL1368	Klein; Klein II	Open camp
5WL1469	N/A	Open lithic
5WL269	Dent	Kill site

The Folsom Period

The Folsom Paleoindian period (11,000-10-000 B.P.) is representative of a change in environmental conditions between the Pleistocene and Holocene that coincides with the decline of Pleistocene Megafauna on the High Plains. Folsom sites are more common than Clovis period sites within northeastern Colorado, and site types typically include campsites and bison kill sites. Many Folsom sites have also been found by amateur archaeologists (Cassels 1983, 1997; Gilmore et al. 1999:54-80). The Folsom culture is identified by distinctive projectile points that are a smaller fluted, lighter lanceolate dart points (Eighmy 1984:10). Key Folsom components in Northeastern Colorado include the following sites: Lindenmeier, Fowler-Parrish, and Powars Camp (Gilmore et al. 1999:64-69). Sites like Lindenmeier (5LR13) provide indications that Folsom hunters stayed in some campsites for extended periods (Frison et al. 1982b). There is also evidence of a more varied diet during this time period with a focus on smaller animals in conjunction with large game, and the available floral foods evidenced by the presence of ground stones within the artifact assemblages (Eighmy 1984:10). Faunal assemblages for the Folsom period shifted from the then extinct mammoth to a species of bison that subsequently went extinct. The typical artifact assemblage for Folsom sites includes unmodified flakes and blades, channel flakes, drills, punches, burins, various scrapers, bifaces, choppers, pointers, ground stone, bone needles, bone awls, and engraved bone (Eighmy 1984:10). Expected site types for the Folsom people in the plains of northeastern Colorado include open camps, open lithic scatters, kill sites, and isolates. Circular log structures are reported at the Hanson site in northeastern Wyoming suggesting that Folsom Paleoindians not only occupied campsites, but they

also constructed shelters (Frison and Bradley 1980). The sites listed in the chart below were chosen for the Folsom period because they reveal the lifeways and material culture found at the sites in northeastern Colorado. These sites also illuminate what we can expect in the archaeological record for the project area. See Table 3.3 for a representative list of Folsom sites in Northeastern Colorado (Eighmy 1984; Gilmore et al 1999:64-69).

Table 3.3 Folsom Sites and Isolates for Weld County (Eighmy 1984; Gilmore et al. 1999:64-69)

Site number	Site Name	Site Type
5WL100	Fowler-Parrish	Kill site
5WL1238	N/A	Open camp
5WL1369	Powars	Open camp
5WL182	N/A	Open camp
5WL195	N/A	Open lithic
5WL218	N/A	Open camp

The Plano Period

The Plano period (10,000-7500 B.P.) is represented in the Platte River Basin and most known Paleoindian sites or components are found at multicomponent sites (Gilmore et al. 1999:33). Diagnostic projectile points of this period and include Plainview, Milnesand, Hell Gap, Scottsbluff, Eden, Kersey, Firstview, Agate Basin and Cody. All dart points are, generally, finely worked lanceolate points with parallel flaking and basal grinding (Eighmy 1984:10; Frison et al. 1982a). Key Plano archaeological sites include Jones Miller, the Frazier site, Jurgens camp, Olsen-Chubbuck, Frasca and the Gordon Creek Burial (Gilmore et al. 1999:69-83).

Many Plano period sites were also discovered by amateur archaeologists. Site types in northeastern Colorado include open and sheltered camps, bison kill sites, and butchering/ processing sites (Eighmy 1984:10). The Plano period includes all of the

various Paleoindian cultural complexes that postdate the Folsom period. Evidence of structures is sparse during the Plano period, but the Hell Gap Site provides evidence of post molds that are interpreted as a structure. Lithic assemblages continue as they have in the past, with occasional grinding slabs and manos represented within the diverse tool assemblage (Eighmy 1984:10). The artifact assemblages typically consist of large unfluted lanceolate projectile points, scrapers, notched flakes, utilized flakes, retouched flakes, bifacial knives, end scrapers, spur perforators, and bone needles. The Plano period represents a continuation of the subsistence pattern established in the previous periods with a greater diversity of exploited resources, and more sophisticated hunting techniques such as utilizing topographic features (Kelly and Todd 1988:235, 237). Hunters drove animals into topographic traps such as steep-walled arroyos (Olsen-Chubbuck) or snow drifts. These new hunting techniques resulted in a larger number of animals killed at one time (Stanford 1975; Wheat 1967). The greater number of organized participants implies a level of social complexity. Associated faunal remains typically include bison, antelope, and deer, as well as lesser mammals and rodents (Eighmy 1984:10). Key Plano period sites for northeastern Colorado include the Wilbur Thomas Rockshelter, Keensburg, Jergens Camp, and the Frazier site (Gilmore et al. 1999:69-83). The Gordon Creek Burial site (5LR99) represents burial practices associated with the Plano period in northeastern Colorado.

Very few Plano sites can be assigned to a complex. Cultural complexes found within northeastern Colorado include Hell Gap, Agate Basin, Cody, and Kersey. The complexes differ only slightly by different projectile point typologies. The Hell Gap complex was named after several occupations in the vicinity of Hell Gap in east-central

Wyoming. Hell Gap points have a strait base with an expanding stem and shoulder (Gleichman and Gleichman 1989:25). The Agate Basin complex was named after the Agate Basin site from eastern Wyoming (Frison et al. 1982a; Roberts 1943, Gilmore et al. 1999:72) (Kalasz et al. 1992) and is scantly represented within the project area. Agate Basin points are often long and have slightly biconvex outlines that expand toward the center from both ends (Irwin-Williams et al. 1973:47). The Frazier site contains evidence of bison butchering and processing areas. The Cody complex is widespread and was named after the Cody area of northwestern Wyoming where it was first identified at the Horner bison bonebed site (Frison and Todd 1987; Gunnerson 1987; Jepsen 1953). Diagnostic artifacts for the Cody complex include Eden and Scottsbluff points, and the Cody knives that are stemmed with a 46 degree angle from the cutting edge of the blade (Agenbroad 1978:161). The Kersey complex was created by Joe Ben Wheat to describe materials recovered at the Jurgens site (Wheat 1979). Kersey points are stemless and are basally ground. The Jurgens site included a long term camp or habitation area, a short term camp, and a bone bed with twenty-one species. Associated artifacts at the Jergens site included 2,635 various stone and bone artifacts including projectile points, ground stone objects, stone and mineral specimens, bone tools, flaked stone tools, and debitage (Wheat 1979).

Wheat (1979) suggests that the Kersey complex from the South Platte drainage is representative of a regional development of the stemless lanceolate projectile point tradition. The South Platte drainage appears to be the contact area and area between the northern and southern complexes during the Plano period (Wheat 1979; Gilmore et al. 1999:77). Sites chosen for the Plano period are important because they reveal the

lifeways and material culture in the plains of northeastern Colorado. The sites also illuminate what we can expect to find in the archaeological record for the project area. See Table 3.4 for a representative Plano period site list for northeastern Colorado (Eighmy 1984; Gilmore et al, 1999:69-80).

Table 3.4 Plano Sites and Isolates for Weld County (Eighmy 1984; Gilmore et al. 1999:69-80)

Site number	Site Name	Site Type	Complex
5WL12	N/A	Unknown	Unknown
5WL23	N/A	Kill site	Unknown
5WL45	Wilbur Thomas Rockshelter	Sheltered camp	Cody
5WL46	Keensburg	Open camp	Unknown
5WL53	Jurgens Camp	Open camp	Kersey
5WL182	N/A	Open camp	Unknown
5WL268	Frazier	Kill site	Agate Basin

The Archaic Stage

Our understanding of the Archaic stage is poor because it is not well represented in northeastern Colorado. Early Archaic occupations are best known in the mountains, where as the Middle Archaic is best known on the Plains, and the Late Archaic is poorly understood everywhere in northeastern Colorado. The Archaic stage in the Platte River Basin dates to 7500 B.P. to 1800 B.P. (Gilmore et al. 1999) Local chronologies within the Plains continue to exhibit identifiable differences from one another. Archaic groups of people were nomadic and adapted to the Altithermal environment by broadening their resource base exploiting small game animals in conjunction with large game animals, and by increasing their emphasis on plant resources (Burris 2006; Eighmy 1984:11; Frison 1975). Frison (1991) suggests that a diversified subsistence pattern was a result of gradual change represented within the archaeological record by a large occurrence of

grinding implements, large stemmed and corner notched dart points, and a relative decrease in the number of kill sites during the Archaic stage.

There are a small number of kill sites relative to open and sheltered camp sites during the Archaic stage, and continued use of rockshelters for habitation (Eighmy 1984:11). There is evidence for a variety of plant foods including chenopodium and cheno-am grass, sunflowers, purslane, wax current, wild grape, yucca seeds, milkvetch, prickly pear cactus, ground cherry, chokecherry, wild rose, wild onion, bulrush, drop seed, cocklebur, amaranth, slatbrush, ricegrass, evening primrose, smartseed and ponderosa pine seeds. Faunal remains are dominated by deer and bison, but other species include elk, bighorn sheep, pronghorn, and rabbits (Gilmore et al. 1999:168). Faunal assemblages, floral remains, and ground stone assemblages found at archaeological sites during the Archaic reveal a broadened resource base representing a more diverse subsistence strategy. Typical Archaic artifact assemblages include a variety of unifacial and bifacial stone tools, and numerous grinding implements reflecting a generalized hunting and gathering economy (Eighmy 1984:11-16). Technological adaptations of the Archaic stage include a diversification of the tool kit, expansion of the ground stone assemblage, and a general decrease in the size of projectile points. Projectile points during the Archaic period are characterized by both stemmed and notched projectile types (Anderson et al. 1994). Hearths, storage cists, and architectural features including stone circles, stone alignments, and pithouses are predominant within the archaeological record, and represent the important lifeways of archaic aboriginal populations. The Archaic is divided into three time periods including the Early, Middle, and Late Archaic.

Early Archaic Period

The Early Archaic period dates to 7500 B.P. -5000 B.P. (Gilmore et al. 1999:102) in the Platte River Basin. Early Archaic occupation in the plains of northeast Colorado is sparse but sites are slightly more abundant in the hogback/foothills and mountain zones. The paucity of sites for the Early Archaic period on the Plains is either a result of lack of occupation during the Altithermal, a sampling bias, or geological process (Benedict 1979; Benedict and Olson 1978; Frison 1978, 1991; Kalasz et al. 1992:27). Most sites for this time period are represented in the Plains by open camps or sheltered camps. In the South Platte River drainage an apparent hiatus in prehistoric occupation existed between the end of the Plano period and the Early Archaic period (7500-5000 B.P.) (Eighmy 1984:13; Frison 1978, 1991). Current trends in research attribute the cultural hiatus to the inhospitable climatic conditions of the Altithermal that caused the population to take refuge in the foot hills and high mountains. Early Archaic sites typically contain a variety of unifacial and bifacial stone tools, and numerous grinding implements within the artifact assemblage (Eighmy 1984). Typical tools within the artifact assemblage include hammerstones, scrapers, drills, gravers, bifaces, flake knives, ground stone fragments, and a continued heavy reliance on bifaces. Faunal remains include deer, bison, elk, pronghorn and rabbit. Floral remains typically include chenopodium and cheno-am grass, sunflowers, purslane, wax current, wild grape, yucca seeds, milkvetch, prickly pear cactus, ground cherry, chokecherry, wild rose, wild onion, bulrush, drop seed, cocklebur, amaranth, slatbrush, ricegrass, evening primrose, smartseed and ponderosa pine seeds. Sites chosen for the Early Archaic period in Weld County were chosen because they are thought to represent the lifeways and material culture found in northeastern Colorado.

These sites can then be used to identify the site types and associated artifacts that are expected within the project area during the Early Archaic. See Table 3.5 for further details on Early Archaic sites located within the vicinity of the project area (Eighmy 1984; Gilmore et al. 1999:102-106)

Table 3.5 Early Archaic Sites for Weld County (Eighmy 1984; Gilmore et al. 1999:102-106)

Site number	Site Name	Site Type	Complex
5WL44	Slay Shelter	Sheltered camp	Mount Albion
5WL48	Kersey Camp	Open camp	Multicomponent
5WL451	Wilbur-Thomas Rockshelter	Sheltered camp	Multi-McKean & Mountain
5WL1656	Willow Bunker Site	Open camp	Multi-Hanna

Middle Archaic Period

The Middle Archaic period dates to 5000 B.P. - 3000 B.P. (Gilmore et al. 1999:118). Middle Archaic period sites are more plentiful in the foothills/hogbacks and mountains than on the plains. Middle Archaic period sites reveal a successful mobile adaptation to plains, foothills/hogbacks, and montane environments (Frison 1978, 1991). Site types in the Plains include open and sheltered camps with multiple hearth features with unlined basins, rock filled, or slab lined features. Sites dating to the Middle Archaic period in the Plains contain a broad range of flaked lithic tools that include lithic debitage and cores, unifacial flakes, worked flakes, bifaces, dart points, ground stone, and bone tools, along with occasional bone beads. Forms of the McKean-Duncan-Hanna complex and related lanceolate and stemmed indented base projectile points are widely distributed in the northeastern Plains of Colorado. This wide distribution of similar point morphologies represented a uniform lithic tool tradition on a large geographical scale that was unequaled at any other time during the archaic stage (Kalasz et al. 1992:28). Faunal

remains indicate a reliance on a wide range of large and small mammals within the plains. Macrofloral evidence indicates a reliance on a wide variety of seed and plant parts including cactus. Key examples of Middle Archaic period sites within the vicinity of the project area include Dipper Gap, the Witkin Burial, Wilbur Thomas Shelter, Bijou Creek, Owl Canyon Rockshelter (Gilmore et al. 1999:91-134), and the Kaplan Hoover bison bonebed (Todd et al.2001). A large number of habitation sites are commonly found in rockshelters or sheltered camps. Only one burial, the Witkin burial is known for this time period. The Kaplan Hoover bonebed (5LR2953) contains over 200 bison remains and the most utilized segments included rib slabs, the thorasic vertebrae, scapula, femora and lumbar-sacral units. The lithic assemblage at Kaplan Hoover includes nine corner-notched projectile points, several scrapers and flakes tools, and over 120 utilized flakes (Todd et al. 2001). The earliest architectural feature was found at Dancing Pants in the foothills, and was interpreted to represent a lean-to structure from the presence of post molds (Leistman and Kranzush 1987). The sites chosen for the Middle Archaic period are important because they are thought to represent the lifeways and material culture found in northeastern Colorado. These sites can then be used to identify the site types and associated artifacts that are expected within the project area during the Middle Archaic. See Table 3.6 for representative Middle Archaic Sites within the vicinity of the project area (Eighmy 1984; Gilmore et al. 1999:118-125).

Table 3.6 Middle Archaic Sites for Weld County (Gilmore et al. 1999:118-125)

Site number	Site Name	Site Type	Complex/diagnostic
5WL40	N/A	Sheltered camp	Multi-Hanna
5WL45	Wilbur-Thomas Shelter	Sheltered camp	Multi- McKean, Duncan& Hanna, Woodland
5WL48	N/A	Open camp	Multi-Duncan and Woodland

The Late Archaic Period

Sites dating to the Late Archaic period (3,000-1,800 B.P.) appear to be more common and widespread than those of the Early and Middle Archaic periods (Gilmore et al.1999:134-151). Site types located in the Plains include open camps, sheltered camps, continued use of rockshelters, kill sites, and burials. Campsites often contain hearth features that are either rock filled or slab lined. The Wilbur Thomas Rockshelter and Dipper Gap provide evidence that sheltered camps and rockshelter were occupied longer, or were frequented more often during the Late Archaic period. No sweeping cultural changes during the Middle Archaic period are apparent, although projectile point styles and tool reveal a higher proportion of corner-notched dart points (Gilmore et al. 1999:95). The artifact assemblage consists of a variety of chipped stone tools including scrapers, drills, perforators, bone awls, bone tubular beads, bone gaming pieces and even pendants. The tool kit suggests a continued tradition of hunting and gathering activities, and is very similar to the Middle Archaic period. Faunal remains consist of bison, deer, pronghorn, elk and rabbit. During the Middle Archaic the percentage of bison and deer were equal, where as in the Late Archaic deer surpassed bison, and rabbit was more common than larger game animals leading to the conclusion that bison herds had declined in the Plains. Macrofloral or plant remains indicate a more varied diet during the Middle Archaic period, and ground stone assemblages at sites also provide evidence of food processing activities. Key Late Archaic period sites include the Uhl Site, The Happy Hollow Rockshelter, Rattlesnake Rockshelter, and the Webster Feedlot Burial. The sites chosen for the Late Archaic period were chosen because they are thought to represent the lifeways and material culture found in northeastern Colorado. These sites

can then be used to identify the site types and associated artifacts that are expected within the project area. See Table 3.7 for representative Late Archaic sites within the vicinity of the project area (Eighmy 1984; Gilmore et al 1999:134-141).

Table 3.7 Late Archaic Sites for Weld County (Eighmy 1984; Gilmore et al 1999:134-141)

Site number	Site Name	Site Type	Complex
5WL32	Uhl Site	Sheltered camp	Multicomponent
5WL48	N/A	Open camp	Multicomponent
5WL101	Happy Hollow Rock shelter	Sheltered camp	Multi-Besant
5WL205	Webster Feedlot Burial	Burial	2060±160 B.P.
5WL1555	N/A	Open camp	Multicomponent
5WL1794	N/A	Open camp	Unknown
5WL1795	N/A	Open camp (?)	Unknown
5WL1856	Rattlesnake Rock shelter	Rock shelter	Multicomponent
5WL2011	N/A	Sheltered camp	Unknown

Late Prehistoric Stage

The Late Prehistoric stage dates to C.E. 150-1540 (Gilmore et al. 1999:175-201). The bow and arrow is introduced during the Late Prehistoric stage and represents a continued reliance on hunting and gathering, in addition to floral resources (Eighmy 1984; Gilmore et al.1999:175). Characteristic artifacts for the Late Prehistoric stage include cord marked ceramic vessels with deeply corded impressed exteriors (Kalasz et al. 1992:29), and small corner-notched projectile points (Eighmy 1984:19-21). It is not known whether the various ceramics associated with this period represent an indigenous development, were acquired through trade, or were associated with nomadic groups passing through the Plains landscape. Subsistence was based on hunting and gathering with no direct evidence of horticulture. Artifact assemblages at Late Prehistoric sites typically includes unnotched and corner notched projectile points, scrapers, gravers,

perforators, drills, awls, bifaces, bifacially flaked knives, choppers or expedient cobble tools, bone tools, expedient flake tools, cores, microdebitage, ground stone (including manos and metates), abraders and shell beads. Recognized cultural complexes at sites during the Early Archaic include Magic Mountain, Avonlea, and Besant. Faunal remains typically consist of bison and pronghorn predominantly, but also include mule deer, prairie dog, cottontail, jackrabbit, rattlesnake, turtle, pocket gopher, kit fox, and coyote. Two major periods are represented in the Late Prehistoric stage of the Platte River Basin, including Early Ceramic and the Middle Ceramic periods (Eighmy 1984:16-18). The Early Ceramic period is primarily defined by the Woodland culture while the Middle Ceramic period is defined by the Central Plains tradition.

The appearance of ceramics in the archaeological record indicates the Formative Stage defined by an increased reliance on domesticated plants and food production (Eighmy 1984). This reliance on cultigens encourages, and usually accompanies, a gradual movement away from living in small highly mobile nomadic groups into a more sedentary life with more permanent structures (Gilmore et al. 1999:177). A less nomadic lifestyle is represented throughout the Late Prehistoric stage by simple semi-permanent dwellings such as pit house depressions, extensive middens, and storage features, along with an increase in formal tools types with more specialization. Characteristic artifacts include side notched and unnotched dart points, small unnotched triangular arrow points, and small stemmed/corner notched points. New developments during the Late Prehistoric stage include more elaborate burial practices, and most likely rudimentary horticulture (Eighmy 1984; Gunnerson 1987:41). The introduction of the bow and arrow to eastern Colorado is evident in the archaeological record by the presence of smaller, lighter

corner-notched projectile points with relatively narrow neck widths (Eighmy 1984). The coincidence of larger dart points and smaller arrow points within the same contexts, suggests that these different technologies may have been used at the same time for a certain time before the bow and arrow supersede the atlatl and dart points (Gilmore et al. 1999:177). Campsites and rockshelters seem to have been occupied for longer periods of time, or were occupied with greater regularity than during the Late Archaic period (Gilmore et al. 1999:175-240).

Early Ceramic components are well represented in the Platte River Basin (Jepson et al. 1992; Wood 1967. The Early Ceramic period (150-1150 C.E..) is primarily defined by the Woodland culture and its variants, in addition to the Upper Republican materials (Gilmore et al. 1999:175; Wedel 1986:81). Sites for the Early Ceramic period typically include open camps, open lithic sites, open architectural site, sheltered architectural sites, sheltered camps, quarries, burials, game drives, isolates and continued use rock shelters, (Eighmy 1984; Gilmore et al 1999:182). The Woodland and Upper Republican cultural complexes exhibit a more diverse chipped stone assemblage. This increase in diversity represents a formalization of specialized tools. Artifact assemblages typically include lithic debitage and cores, flakes, bifaces, drills, awls, gravers, perforators, scrapers, dart and arrow points, ground stone, and worked bone artifacts. Archaeological remains reveal a great reliance on plants, specifically goosefoot, amaranth, saltbrush, wild rose, rice grass and other grasses, sunflower, prickly pear, evening primrose, purslane, smartweed, cocklebur, croton, and meager evidence of maize (Gilmore et al. 1999:236, 239-240). Faunal remains are highly fragmentary and this has been interpreted as evidence for marrow extraction and bone grease production (Gilmore et al. 1999:268). Faunal remains

are dominated by bison and pronghorn, but elk, mule deer, fox, coyote, prairie dog, rabbit, pocket gophers, wood rat, pack rat, rattlesnake and turtle are also present within faunal assemblages for the Early Ceramic period (Gilmore et al. 1999:181-240). Key archaeological sites for the Early Ceramic period include the Agate Bluff Sites, The Biggs Site, McEndafer Rockshelter, the Uhl Site, The Hatch Site, Woods Lament Site, the Wilbur Thomas Shelter, the Kerbs-Klein Burial, the Kersey Burial, Happy Hollow Rockshelter, the Cass Site, the Ehrlich Burial, the Hilltop Site, the Three O'Clock Shelter, Roberts Ranch Burial, the Lightning Hill Burials, and the Kenney Springs Site (Gilmore et al. 1999:175-261). The sites chosen in Weld County for Early Ceramic components during the Late Prehistoric were chosen because they are thought to represent the lifeways and material culture within the project area. These sites can then be used to identify the site types and associated artifacts that are expected within northeastern Colorado during the Early Ceramic period. For representative Early Ceramic sites located within northeastern Colorado see Table 3.8 below (Eighmy 1984; Gilmore et al. 1999:175-201).

Table 3.8 Early Ceramic Sites in Weld County (Gilmore et al. 1999:175-201)

Site number	Site Name	Site Type	Complex
5WL27	Biggs Site	Open camp	Unknown
5WL31	McEndaffer RS	Rock shelter	Multi-Upper Republican
5WL32	Uhl Site	Open camp	Unknown
5WL38	Hatch Site	Open camp	Multicomponent-complex unknown
5WL39	Wood's Lament	Sheltered camp	Unknown
5WL45	Wilbur Thomas RS	Rock shelter	Multi-Woodland
5WL47	Kerbs-Klein Burial	Burial	Unknown 1780 + 130, -150 B.P.
5WL48	Kersey Burial	Burial	Woodland and Unknown
5WL101	Happy Hollow RS	Rock shelter	Multi-Upper Republican/Woodland
5WL1478	Agate Bluff (A.B.) I	Rock shelter	Multi-Upper Republican
5WL1479	A.B. II/ Porcupine Cave	Rock shelter	Multi-Upper Republican
5WL1480	A.B.III/ Fire Cave	Rock shelter	Multi-Upper Republican
5WL1481	A.B.IV/Woodland Cave	Rock shelter	Woodland
5WL1483	Cass Site	Open camp	Multi-Woodland
5WL1813	Ehrlich Burial	Burial	Woodland
5WL1849	Hilltop Site	Open camp/ architectural	Multi-Magic Mountain
5WL1997	Three O'Clock Shelter	Sheltered camp /architectural / horticulture	Multi-Woodland, Dismal River; Avonlea/Besant
5WL2002	N/A	Habitation	Unknown

The Middle Ceramic Period

The decrease in sites during the Middle Ceramic may be the result of settlement pattern shifts that favored locations that are more subject to erosion and geologic processes, or may actually represent a decrease in population. The Middle Ceramic period (C.E. 1150-1540) is characterized by small, triangular unnotched or side-notched points. The artifact assemblage is based on hunting and gathering subsistence with evidence of horticulture (Eighmy 1984:18). Typical site types within the plains of northeastern Colorado include open camps, open lithic sites, open architectural site, sheltered architectural sites, sheltered camps, quarries, burials, game drives, isolates, and rock shelters, (Eighmy 1984; Gilmore et al. 1999:245-282). The artifact assemblage typically consists of unnotched, side notched, side and basally notched projectile points,

scrapers, bifaces, knives, spokeshaves, drills, ovoid choppers, cores, shaft abraders, and retouch flakes. Lithic assemblages overall during this time period represent more limited activity, or task specific functions. The ground stone assemblages typically include handstones, slab milling stones, tanning stones, and metates for the Middle Ceramic period. Bone artifacts include awls, medapodial fleshers, bone scoops, beads, and bone pendants. Faunal assemblages often contain elk, bison, pronghorn, mule deer, rabbit, packrat, pocket gopher, prairie dog, canid and bird. Floral remains are abundant within the archaeological record for the Middle Ceramic period and include chenopodium and cheno-am grass, saltbrush, wild rose, flat sedge, nut grass, prickly pear, purslane, ball cactus, raspberry, dock, buffaloberry, spiderwort, and edible Starch (Gilmore et al. 1999:269-270). Key sites for the Middle Ceramic period in the plains of northeastern Colorado include the Agate Bluff Sites, The Biggs Site, McEndaffer Shelter, the Happy Hollow Rockshelter, the Hilltop Site, the Roberts Buffalo Jump, and the T-W Diamond Site (Gilmore et al. 1999:245-261)

The Plains Village tradition exhibits traits of permanently settled villages constructed of wattle-and-daub, or stone structures with four-post support systems. Upper Republican and Dismal River complexes are present during the Middle Ceramic period within Northeastern Colorado. The Middle Ceramic period ends with the transition into the Late Ceramic period, also referred to as the Protohistoric period that begins with European contact and ends with permanent settlement by literate peoples. The sites chosen to represent the Middle Ceramic period were chosen because they are thought to represent the lifeways and material culture within the project area. These sites can then be used to identify the site types and associated artifacts that are expected within

northeastern Colorado during the Middle Ceramic period. For representative Middle Ceramic period sites located within the project area see Table 3.9 below (Eighmy 1984; Gilmore et al. 1999:245-261)

Table 3.9 Middle Ceramic Sites in Weld County (Gilmore et al. 1999:245-261)

Site number	Site Name	Site Type	Complex
5WL27	Biggs Site	Open camp	Unknown
5WL31	McEndaffer RS	Rock shelter	Multi-Upper Republican
5WL101	Happy Hollow RS	Rock shelter	Upper Republican-Lost Creek Focus
5WL1478	Agate Bluff (A.B. I)	Rock shelter/ horticulture	Multi-Upper Republican
5WL1479	A.B. II/ Porcupine Cave	Rock shelter	Multi-Upper Republican
5WL1480	A.B.III/ Fire Cave	Rock shelter	Multi-Upper Republican
5WL1481	A.B.IV/Woodland Cave	Rock shelter	Woodland
5WL1849	Hilltop Site	Open camp/ architectural/ horticulure	Multicomponent- Unknown

Protohistoric Period

In the Platte River Basin, the Protohistoric period (C.E. 1540-1860) encompasses the span of time between the earliest contact of Native Americans with trade items of European origins, and the regular onset of direct contact with Europeans (Gilmore et al. 1999:309). During the early 1800s, government sponsored explorers and private fur trappers/traders began arriving in northeastern Colorado. Events can be described in terms of specific tribal groups by various written records from early traders, explorers, and missionaries (Kalasz et al. 1992:30). Protohistoric sites are not well represented in Weld County, Colorado. The Protohistoric period is highly representative of cultural dynamism due to the effects of environmental changes such as a more normal climatic regime (Gilmore et al. 1999:309), an ever shifting population including Anglo and Spanish incursions, increased trade with Euroamericans, and the advent of pantribal,

horse-oriented cultures (Gunnerson 1987). The diffusion of horses onto the Plains starts in Spanish settlements of New Mexico in the 1600s and spread as a result of trade with the Pueblo Indians and theft (Burris 2006:63-72). Euroamerican contact brought material goods like pots and guns, and technologies including horses and irrigation. However, Europeans introduced diseases and increased tension over resource depletion. Bison eradication destroyed Native American lifeways. Undesired contact with Europeans had a profound impact on native cultures through attrition and loss of cultural knowledge.

The first recorded European within the Platte River Basin was Don Pedro de Villasur's visit to northeastern Colorado in 1720 (Burris 2006). His visit was followed by French fur traders, and trapping continued for the next 80 years (Burris 2006). In 1803, President Thomas Jefferson purchased the land as part of the Louisiana Purchase. After acquisition, Lieutenant Zebulon Pike left St. Louis in 1806 and began his search for the headwaters of the Platte River (Mehls 1984:20); Burris 2006). Major Stephen Long later explored the area in 1820 and stressed the lack of available water (Mehls 1984:1-2). During the latter half of the eighteenth century the mere presence of Anglos and Spaniards to the east and south had created fractional turmoil among the Plains Indian groups (Kalasz et al. 1992:30). Confronted with Europeans, disease, and the introduction of guns and horses, Plains groups experienced rapid cultural and territorial change. Adding to the turmoil was the discovery of gold that largely led to Euroamerican expansion into the West (Eighmy 1984). During the Protohistoric period in the Platte River Basin, the Apache, Kiowa, Kiowa-Apache, Cheyenne, Sioux, Ute, Shoshone, Comanche, Pawnee, Arapaho, Cheyenne/Arapaho, Crow and Blackfeet Native American

groups are represented within the archaeological record, ethnographic, and ethnohistoric records of Northeastern Colorado.

It is generally agreed that besides occasional hunting on the High Plains by the Utes, Apaches dominated the plains of Colorado from the 1500s until the early 1700s (Gilmore et al. 1999:313; Gunnerson and Doloris 1988). In northeastern Colorado, hunter gatherer groups often practiced horticulture and also took up horse nomadism as a dominant mode of subsistence during the Protohistoric stage. Beginning in the early 1700's, the Apache were challenged by the Comanches as they acquired horses. When the Comanches and the Utes allied, they pushed the Apaches south into New Mexico around 1730, although some Apaches sought refuge with the Kiowa (Gilmore et al. 1999:313). Then the Comanche, Arapaho and Cheyenne groups moved into the Platte River Basin (Gilmore et al. 1999:313).

Typical site types for the Protohistoric period in northeastern Colorado include open camps, open lithic scatters, open architectural (usually including stone circle sites), sheltered camps, sheltered lithic scatters, rock art, battlefields, trails, and peeled trees (Eighmy 1984; Gilmore et al. 1999:309-322). Features at sites are still dominated by hearths. The artifact assemblages for the Protohistoric period typically consists of knives, endscrapers, milling stones, corner-notched projectile points, bifaces, drills, retouch flakes, and lithic debitage. Faunal remains include bison, pronghorn, prairie dog, rabbit, turtle, pocket gopher, kit fox and coyote. The lifeways of the Protohistoric period include trade with Europeans and Puebloan cultures. This period marks the end of the Plains mobile horse adaptation as Native Americans were all moved to reservations by the 1880s. Native American populations during Protohistoric period experienced the

introduction of horses, guns, increased trade with Europeans, introduction of European diseases, depletion of the resources, bison eradication and shifting populations. The sites chosen to represent Protohistoric components in Northeastern Colorado were chosen because they represent the lifeways and material culture within the project area. These sites can then be used to identify the site types and associated artifacts that are expected within northeastern Colorado during the Protohistoric period. For a representative sample of sites for the Protohistoric period, see Table 3.10 below.

Table 3.10 Protohistoric Sites in Weld County (Gilmore et al. 1999:309-322)

Site number	Site Name	Site Type	Complex
5WL31	McEndaffer RS	Rock shelter/ Sheltered camp	Multi-Dismal River-3 complexes (?)
5WL32	Uhl Site	Open camp	Multicomponent
5WL38	Hatch Site	Open camp	160± 100 B.P. –unknown complex
5WL239	N/A	Open camp/petroglyphs	Probable Arapaho ~1800s

Historic Period

The historic period for Weld County is best summarized by Branton (2007) and Burris (2006). In 1821 Major Stephan Long labeled the plains of Northeastern Colorado as "the Great American Desert" and stressed that the area was unfit for agriculture because it lacked water resources (Branton2007, Burris 2006). Initially the arid plains did not draw homesteaders. Weld County was too remote, lacked easy access to roads and transportation, and lacked an established government. However, improved weather conditions and the arrival of the Burlington railroad changed the history of the Plains and introduced homesteaders to Northeastern Colorado. The historic period in Weld County includes two waves of homesteaders dating to 1886 and the early 1900s. Typically, harsh environmental (drought, hail, tornadoes, blizzards, and dust storms) and economic

conditions made the homesteading experience devastating and resulted in high numbers of foreclosures and tax delinquencies (Branton 2007).

The 1842 the Preemption Act allowed the purchase of 64.7 hectares (160 acres) of land at $1.25 per acre out West. By the 1850s, the fur trapping era had reached an end only to be replaced by homesteading. The Homestead Act of 1862 provided title to 64.7 hectares (160 acres) after payment of patent fees, five years residence, cultivation, and improvement of the property to any man or woman of twenty one years of age. Following the harsh winter of 1886 to 1887 a small wave of homesteaders settled in Weld County. During the dry years of the 1890s, many homesteaders were driven back East emptying prairie towns including Raymer, Keota, Grover, and Briggsdale (Branton 2007). Prime land parcels with access to water had initially been bought by the railroad company and the cattle baron John Iliff. By 1861, John Westley Iliff had become a large influence with his cow camps, and the Goodnight-Loving trail (Ball 1986). By 1877, Illiff's domain stretched from the South Platte River north to the Chalk Bluffs by the Colorado-Wyoming border and from the mountains east to the present Kansas border making Illiff the biggest cattle baron in Colorado (Ball 1986).

The second wave of pioneers were drawn to Weld County between 1900-1910 by false propaganda endorsed by the Railroad companies claiming that the rain belt had moved west creating fertile farmland in the Plains (Branton 2007). Homestead acts were improved providing marginal success rates with increased acreage. The Homestead Act of February 19, 1909 allowed for up to 129.5 hectares (320 acres), in states where 64.7 hectares (160 acres) were not adequate to support family particularly utilizing dry farming methods. The Homestead Act of 1912 reduced the homestead requirement of

five years residence to three but the individual still had to pay the patent fees, cultivate the land, and make improvements. When all requirements for the 1912 Homestead Act had been completed, the homesteaders paid a patent fee and a commission to the land agent and received the homestead patent. Homesteading continued to increase over the next few years and reached its peak between 1914 and 1918 (Branton 2007).

In 1918, an influenza epidemic struck and many died. Drought and hail also plagued the crops at this time. In 1924, cloudbursts, deep snows, high winds, tornadoes, hail, and lighting adversely affected the cash crops and homesteaders. Drought and dense dust storms prevailed during the 1930's (Borchet 1971) and coincided with the stock market crash of 1929 that drastically dropped wheat prices contributing to the depopulation of Weld County, Colorado. Soil damage was studied extensively in the late 1930's by both the State of Colorado and the United States Department of Agriculture (USDA). It was agreed that a concerted effort was needed to return the land to sod (Hartley and Schneck 1996:119). During 1933-1934 the federal government undertook a relief effort through the Work Project Administration (WPA) and the Public Works Administration to stabilize the economy and help bail out the homesteaders, but for many it was too late.

In 1937 congress passed the "Bankhead-Jones Farm Tenant Act" that authorized the soil Conservation Service to purchase sub-marginal farmland. The land purchase project was initiated and coordinated by the Farm Securities Administration. The federal government purchased farms and helped to consolidate farms to form more economical units (Hartley and Schneck 1996:119). By 1938, the Soil Conservation Service (SCS) was managing the swapped or acquired land (Hartley and Schneck 1996:119). The

majority of land transactions were concluded by 1941 (Hartley and Schneck 1996:119). Most of the original farmers migrated to the urban areas and around 200,000 acres were returned to federal ownership (Hartley and Schneck 1996:119). The SCS conducted soil rehabilitation from 1938 to 1954 when administration was transferred to the United States Forest Service (USFS). The USFS utilized a multiple-use sustained-yield concept beginning in 1954 reaffirming the right of private operators to develop mineral sources primarily including oil and gas. The Pawnee National Grassland was established by 1960 (Hartley and Schneck 1996:119). The loss of the Burlington Railroad in the 1970s further contributed to a greater loss of populace to small prairie towns.

The next chapter will discuss the methodologies utilized throughout this project. It will highlight methodologies used for analyzing the collected artifacts, survey, site recording, site features, and artifact types (both historic and prehistoric). To understand the collection habits of Mr. Hunter, a questionnaire, interviews, and participant observation were employed. This project is particularly unique because it uses ethnographic methods to provide provenience for collected artifacts, while demonstrating how artifact collection affects sites and site interpretations.

CHAPTER 4: THEORY AND METHODS

This chapter describes the general theoretical approach and the methods used for recording the private artifact collection, survey, site recording, testing, artifact analysis, and ethnographic interviews. As stated in the introduction, this research is centered on five main goals: documenting the previously collected artifacts; recording various site [collection] localities; presenting a brief summary of the landowner's collection habits; describing and analyzing the archaeological material and results and conclusions of the collected field data.

Theory

The research questions were developed using a processual approach, namely through low and middle-range theory. During site recording activities, the following data was collected (i.e., land forms, soil types, current vegetation, site elevation, aspect, nearest water resources, site type, artifact types, etc) in order to analyze ecological factors and human behavior (Binford 1977, 1978; Clarke 1973; Kelly 1995; Schiffer 1976; Slessman 2004:39). Documenting the previously collected artifacts and recording the various sites is considered to be first order, primary, or low level theory. The goal of low level theory is to be able to make inferences about human behavior from the collected data. The variables used to gather primary data for the private collection and sites were largely chosen because they have been shown to relate to the production and use of stone

tools in middle-range research based on experimental, actualistic and ethnohistorical archaeological experiments (Amick and Mauldin 1989; Binford 1977, 1981; Frison 1991:289-325; Frison and Bradley 1982; Keeley 1980; Slessman 2004:39).

In addition to a processual approach, behavioral ecology is also used in this study to understand the relationships between human decision making and resource utilization. Ecology is defined by Kelly (1995) as "the study of relations between organisms and the totality of the physical and biological factors affecting them or influenced by them" (Kelly 1995:36). The relationships between the environment and human behavior can be subsumed under general categories for subsistence-related issues, settlement and land use patterns such as "time, space, energy, and risk" (Jochim 1981; Kelly 1995; Krebs and Davies 1993; Moran 1990; Slessman 2004; Smith 1988; Winterhalder 1986). According to Kelly (1995:35-36), employing an ecological approach allows the analyses to focus on behavior and decision making in relation to environmental and cultural parameters. Complex environmental and cultural variables effect behavioral decisions that are related to subsistence practices, settlement, and land use patterns. Resource utilization and subsistence strategies are described using a forager/collector continuum (Binford 1980). While forager/collector generalizations mask much of the variability of ethnographically documented people, it serves as a framework for modeling hunter-gatherer land use in northeastern Colorado. Inhabitants of northeastern Colorado were highly mobile and used a formalized lithic technology.

The next section will describe the specific methods employed during this project. It will describe how both prehistoric and historic artifacts were recorded, what specific attributes were recorded, and the coding systems used. The interviews were used to gain

knowledge of Mr. Hunter's collection strategies and behaviors. This section will also describe methods of participant observation, and person-centered interviews.

Methods

This private collection had not been previously examined. The first task involved documenting the private artifact collection. All artifacts were collected from private land owned by Mr. Hunter. It is remarkable that the private artifact collection has remained relatively intact and Mr. Hunter recalls the site localities for many of the collected artifacts. The assemblage is accessioned and located at the landowner's house. The artifacts are stored in three separate artifact cases and boxes. To approximate the age of surface assemblages from projectile point morphology, the points were compared with those documented in radiocarbon-dated stratigraphic contexts of the Great Plains (Eighmy 1984; Frison 1978, 1991; Gilmore et al. 1999; Wood 1998).

Artifact inventory includes classifying artifacts into broad technological/morphological categories according to type and relative amount of reduction they have undergone. The coding system records various attributes for chipped stone, prehistoric ceramics, faunal assemblages, and historic artifacts. Prehistoric lithic artifacts were first divided into groupings of class, element, portion, material, color, heat treatment, cortex, and scarring (if present). Chipped stone modification is evidenced by flakes removed from the margin of an implement for the purpose of thinning, sharpening, and/or damage along the margin of an implement indicating service as a tool. The chipped stone sample was grouped into three main classes: formal tools, bifaces, and debitage. Metric attributes of formal tools were recorded as completely as possible.

Bifaces were assigned five stages of reduction based on the system outlined by Andrefsky (Andrefsky 1998:181). Debitage was further divided into element descriptions for analysis including edge modifications, regular flake scars, presence of a platform and termination, and cortex if those attributes were present on the lithic artifact.

Lithic Material Types

The general classifications such as chert, chalcedony, jasper, quartzite, petrified wood, and obsidian were utilized for sorting materials with a wide range of colors, inclusions and textures. Chert is a dense cryptocrystalline rock composed mineralogically of tightly interlocking grains of cryptocrystalline quartz. Chert is a compact siliceous rock with a wide range of opaque colors and may include the remains of siliceous materials and organisms like ostracods. Chert can occur as independent formations or nodules and irregular concretions within other formations (Rice 1955:71). Flint is a hard, sedimentary cryptocrystalline form of the mineral quartz categorized as a variety of chert and occurs chiefly as nodules and masses in sedimentary rocks, such as chalks and limestones. Inside the nodule, flint is usually dark in color, and often has a glassy or waxy appearance; the term flint is restricted to the dark nodular cherts (Frison 1991:453, 481). From a petrological point of view, "flint" refers specifically to the form of chert which occurs in chalk or limestone (Rice 1955:71). Chalcedony is microcrystalline fibrous silica and microfibrous amorphous silica that is a transparent or translucent form of cryptocrystalline quartz (Rice 1955:333). Chalcedony is derived from the same general sources as chert, and the two may occur within the same formation (Rice 1955:333).

Jasper, essentially metamorphosed chert, is an opaque to slightly translucent fine-grained cryptocrystalline quartz that is homogeneous in texture and may have a waxy appearance. This classification was chosen due to jasper's tendency toward bright colors of reds, brown, olives, and yellows. Quartzite is a granulose metamorphic rock produced by a re-crystallization of quartz sandstone under heat and pressure (Rice 1955:333). Quartzite artifacts in the project area are presumably derived from the local Pleistocene terrace deposits and gravels and range from being course to very fine grained (Rice 1955:333). Petrified wood has had the original organic material replaced by minerals and the pore spaces filled with silica (Rice 1955:333). Obsidian is a microspherulitic black volcanic glass with a satiny luster (Rice 1955:275) and is not found locally.

Certain attributes of the lithic artifacts were noted including texture, inclusions, and luster. The texture/structure of the lithic materials are based on broad general categories of microcrystalline and cryptocrystalline classifications. Inclusions, imperfections, or other properties visible within the fractural properties of the lithic material were noted. Luster is the outward appearance of a mineral and has three classifications including metallic, submetallic, and nonmetallic. The terms "glassy", "pitchy" and "earthy" are used to further describe the degree of luster. A mineral having a metallic luster has the appearance of metal including gold silver and copper, the mineral is opaque. A submetallic luster is between metallic and nonmetallic, and a mineral having such a luster can be opaque or faintly translucent. Minerals having a nonmetallic luster can be transparent or opaque. Luster is a measure of the ability of lithic materials to reflect light and was documented as being opaque, semi-translucent, and translucent (Fritzen 1959).

Length, width, and thickness were measured to the nearest 0.01mm using digital calipers on all prehistoric artifacts. Artifacts were always measured from tip to base, and width was always measured across the largest portion of the lateral margins. Thickness was measured with the jaws of the calipers oriented along the thickest portion of the cross section. For utilized tools made from intact flakes with discernable attributes such as platforms, length was always measured from platform to distal margin with the width measurement rotated 90° from the length measurement. For tools lacking discernible flake attributes and bifaces that have no discernible tip/base, length was obtained simply by measuring the longest axis from rotating the implement 90°; thickness was then measured across the thickest portion of the cross section. For projectile point measurements see APPENDIX B, PROJECTILE POINT MEASUREMENTS.

Lithic Analysis

The variables of interest in this analysis include material type, color, texture/structure and luster. Material type determinations were made largely on a subjective basis rather than through laboratory analysis. Seven samples of unprovenienced obsidian flaked nodules from Weld County Colorado were sent to Dr. Richard Hughes, the director of Geochemical Research Laboratory to undergo energy dispersive x-ray fluorescence testing. With the exception of the obsidian testing, material type distinctions are based on differences in texture and appearance as judged by the naked eye and with the use of a 20x hand lens. Material types utilized within the project area include the local cobble deposits mentioned earlier that contain quartzite, chert and chalcedony, flint, and sandstone sources. Known materials for the private collection

include locally available materials and Hartville chert from Wyoming. Hartville chert is associated with the Hartville Uplift found east of the North Platte River in eastern Wyoming and extends northward to the vicinity of Lusk (Frison 1991:7; Miller 1991; Reher 1991). Some of the artifacts from the private artifact collection demonstrate similarities to known lithic sources such as Knife River flint, Kremmling chert, Trout Creek jasper, Black Forest silicified wood, Windy Ridge quartzite and Edwards; however, no laboratory tests were conducted, so this type of material identification is based on observed qualities.

Participant Observation and Person-Centered Interviews

In an attempt to gain insight into Dirk Hunter's collection habits, ethnographic fieldwork methods were used. These methods include participant observation, person-centered interviews, unstructured interviews, semi-structured interviews, and structured interviews. Participant observation is both a humanistic and a scientific method (Bernard 1998:342). During the unstructured, semi-structured, and structured interviews careful attention was paid to make the questions person-centered, vague, and open-ended in order to shed light on Dirk Hunter's attitudes and beliefs. Follow-up questions from the initial unstructured interviews were later addressed in the form of semi-structured interview questions and a structured questionnaire.

Participant observation is the foundation of cultural anthropology and produces effective, positivistic knowledge (Bernard 1998:342). Participant observation data collection is known to produce both qualitative (photographs, artifact collection) and quantitative (questionnaire) data (Bernard 1998:344) by allowing the researcher to get

close to people and make them feel comfortable enough with their presence. This enables the researcher to observe and record information about the subject's life (Bernard 1998; Bernard 1994:136). Participant observation methods were utilized because various kinds of data can be collected , it reduces the problem of the participants reacting to the observer, participant observation helps the research have sensible questions in the native language, it gives the researcher an intuitive understanding of what's going on in a culture and allows the researcher to speak with confidence about the meaning of data, and finally, many research problems cannot be addressed adequately by anything except participant observation methods (Bernard 1998:354-356). While it took time to gain the trust of Dirk, participant observation methods produced a dataset that was not previously available that focused on the collection habits of a single individual that has collected from sites from over six decades.

The interviews were all person-centered in an attempt to understand how Mr. Hunter relates to, experiences, and understands his sociocultural context. The methods utilized during the interviews were a mixture of unstructured, semi-structured, and structured questions. Unstructured interviews are informal and do not offer a limited pre-set range of answers, questions can be changed or adapted and are tailored to the interviewee. Semi-structured interviews follow a framework of themes, but are flexible and allow new questions to be brought up during the interview as a result of how the interviewee responds. Structured interviews are open ended, yet they have a standard way in which the questions are asked with fixed wording and a particular sequence of questions; answers to the questions are often fixed or closed ended. The interviews were scheduled to last 30-45 minutes depending upon the informant's leads and interest.

Interviews were conducted in the field one-on-one while driving to sites or at site localities, and at the participant's kitchen table to ensure isolation from distractions that may shift behaviors and discourse based on socially proper responses and public behavior (Bernard1998:340). Structured and semi-structured questions were formatted to be unambiguous, without being condescending, and were written in a vocabulary that the informant/participant would understand (Bernard 1994, 1998) without archaeological jargon. Prior to the interviews, the participant was informed of why his opinions and observations of the various sites and associated artifacts are important regarding context and for understanding collection habits at the individual sites or isolates. During the first phase of informal, unstructured interviewing the researcher simply initiated conversations about the artifacts and sites during the course of the day and the conversation(s) were recorded in field notes (Bernard 1998:211).

The initial interview topics included where artifacts were collected, and what activities brought Mr. Hunter to the site initially. In addition, semi-structured and structured interviews were conducted as a follow- up with a prepared list of questions and topics that needed to be covered such as "collection histories." The semi-structured interview formats were designed to be open-ended and facilitate the collection of new information, providing the flexibility to explore different topics in depth (Bernard 1998:373) with Mr. Hunter. The structured questionnaire was aimed at data collection in order to infer and describe Dirk Hunter's artifact collection habits. An advantage of semi-structured and structured interviews is that they are based on a clear plan, but are characterized by a minimum control over the informant's responses, and are often utilized with long-term fieldwork (Bernard 1998:251-317). For results from interviews,

see (Appendix C: Questionnaire, Appendix D: Family History Interview Questions, Appendix E: Artifact Contextual Form).

It was noted during the interviews that the informant, Mr. Hunter was uncomfortable with the digital recorder but was quite talkative in the truck on the way to the various sites. During the person-centered interview process, the digital recorder was found to be distractive and obtrusive to the informant. Thus, use of a digital recorder was abandoned and only written notes were taken. Once the informant was comfortable, the interviews resulted in quality data collection and a comfortable environment for Mr. Hunter. The following questions were asked during the interviews, see Table 4.1 below.

Table 4.1 Questions, Units of Analysis and Observation

? #	Question	Units of Analysis	Units of observation
1	What types of artifacts are collected by the landowner?	Tool types including angular debris, edge damaged angular debris, worked angular debris, projectile points, awls, early, mid and final stage bifaces, cores, unmodified flake, edge modified flake, utilized flake, nodule, tested nodule, worked nodule, uniface, ceramics, other formal tools, miscellaneous historic artifacts.	Tool types include projectile points, angular debris, awls, bifaces, cores, unmodified flake, edge modified flake, utilized flake, nodule, tested nodule, uniface, ceramics, miscellaneous historic artifacts.
2	What tool types and material types exist in the private artifact collection	Tool types including angular debris, edge damaged angular debris, worked angular debris, projectile points, awls, early, mid and final stage bifaces, cores, unmodified flake, edge modified flake, utilized flake, nodule, tested nodule, worked nodule, uniface, ceramics, other formal tools, miscellaneous historic artifacts. Material types include basalt, chert, chalcedony, flint, jasper, obsidian, petrified wood, and quartzite.	Tool types include projectile points, angular debris, awls, bifaces, cores, unmodified flake, edge modified flake, utilized flake, nodule, tested nodules, uniface, ceramics, miscellaneous historic artifacts. Material types include basalt, chert, chalcedony, flint, jasper, obsidian, petrified wood, and quartzite.
3	Does the collection include both prehistoric and historic artifacts?	The artifact collection contains projectile points, angular debris, awls, bifaces, cores, unmodified flake, edge modified flake, utilized flake, nodule, tested nodule, worked nodule, uniface, ceramics, and miscellaneous historic artifacts.	Tool types include projectile points, angular debris, awls, bifaces, cores, unmodified flake, edge modified flake, utilized flake, nodule, tested nodule, worked nodule, uniface, ceramics, miscellaneous historic artifacts including a metal awl, a necklace, a harmonica. part of a metal wagon wheel base in the shape of a giant projectile point.
4	What type of sites does the land owner collect from; where are they located?	Site types include open camp, open lithic, open habitation/architectural sites, sheltered camp, sheltered architectural/habitation, sheltered lithic, quarry, rockshelter, kill sites, game drives, game processing/butchering sites, ceremonial sites, burials, rock art, battlefields, trails and peeled trees.	Site types include homesteads, historic dumps, open camps with associated lithic scatters stone circle habitation sites with ceramics, and bison kill sites. The sites are located on private land, locations are not provided at the request of the landowner.
5	What types of activities have occurred at the collection sites over time?	Farming, ranching activities are evident by plowed fields and stacks of the local sandstone rocks. Fence maintenance is a given provided the presence of barbed wire fences. Artifact collection is evident by a general lack of diagnostics associated with the lithic scatters, and stone circles.	Farming and ranching activities evidence by plowed fields, misc. vehicle/machinery parts, and agricultural implements. Artifact collection is evident as the sites typically lack diagnostics.
6	Does the landowner go out specifically to collect artifacts, or does he find them incidentally while performing farming and ranching activities?	Artifact collection is evident by a general lack of diagnostics associated with the lithic scatters, and stone circles. This will be answered in interviews, the survey and through participant observation techniques.	From the interviews it became clear that while he was farming artifact collecting was incidental, where as now that the landowner is retired he specifically goes out to collect artifacts after rain and windy conditions.
7	Have the landowner's collection habits and behaviors changed over time?	Artifact collection is evident by a general lack of diagnostics associated with the lithic scatters, and stone circles. This will be answered in interviews, the survey and through participant observation techniques.	Interviews, survey and participant observation. Artifact collection was incidental during farming and ranching activities. Now that the land owner is retired he specifically goes artifact collecting when he is bored.
8	What brings the landowner to the collection localities?	Survey answers, interviews answers and participant observation will reveal what brings the landowner to the sites.	The landowner targets areas where he has had success collecting over the decades.

Table 4.1 Questions, Units of Analysis and Observation., Continued.

9	How often are artifacts collected?	Survey answers, interviews answers and participant observation will reveal how often the landowner goes out to collect artifacts.	The landowner collects ~ 3 times per year after windy conditions and rain.
10	What types of features and artifact assemblages are present at the collection sites?	Habitation sites are evident by the presence of stone circle architecture and ceramics. Prehistoric features stone circles, include hearths, fire cracked/heat altered rock concentrations, lithic scatters and faunal remains, stone alignments, pithouses, cairns, hunting blinds, game processing/butchering areas, fasting beds, burials, petroglyphs and pictographs, trials, battlefields and peeled trees. Historic features include wells, historic dumps, isolated historic discard localities, and architectural buildings including bunk houses, houses, chicken coops, barns, outhouse, grain silos, coal shed. Associated artifacts include lithic debitage at prehistoric sites and domestic and farming/ranching artifacts at the historic sites including glass, nails, ceramics, miscellaneous metal pieces, farming equipment and miscellaneous domestic items like shoes, marbles and toy guns.	Observed features include prehistoric stone circles, include hearths, fire cracked/heat altered rock concentrations, lithic scatters and faunal remains. Historic features include wells, historic dumps, isolated historic discard localities, and architectural buildings including a bunk house, houses, chicken coops, barns, an outhouse, grain silos, coal shed. Associated artifacts include lithic debitage at prehistoric sites. Historic sites contain domestic, farming/ranching artifacts at the historic sites including glass, nails, ceramics, miscellaneous metal pieces, farming equipment and miscellaneous domestic items like shoes, marbles and toy guns.
11	Does the landowner only have artifacts from his land or does he buy sell, or trade artifacts?	Survey answers, interviews answers and participant observation will reveal if the landowner only has artifacts from his land and if he buys, sells or trades his artifacts.	No artifacts that were traded or bought are present within the artifact collection. Only artifacts found on the landowner's property are represented in the artifact collection.
12	What is the landowner's knowledge of site locations? Does the landowner have predictive modeling of where good areas are to look for artifacts; if so what does he look for?	Survey answers, interviews answers and participant observation will reveal what topographic features the land owner targets after rain, snow or wind storms. Sites are located on known topographic features including butte tops, ridges, hill tops, arroyos, sides of washes, blowouts and bare ground spots.	Sites are located on known topographic features including butte tops, ridges, hill tops, arroyos, sides of washes, blowouts and bare ground spots.
13	How do sites located on private land compare to sites that archaeologists traditionally study?	Habitation sites, rockshelters, sheltered camps, sheltered lithic, sheltered architecture, open camps, open lithic, open architecture, kill sites, game dries, game processing/butchering sites, ceremonial sites, burials, rock art, battlefields, trails, peeled trees, and homesteads.	Open architectural/open camp, open lithic, a probable kill site and historic homesteads.
14	What site types are located on private land?	Site types include homesteads, open architectural camps with associated lithic scatter, ceramic sherds and heat altered rock concentrations.	Open architectural/open camp, open lithic, a probable kill site and historic homesteads.
15	What do historic sites look like on private land? What types of buildings are present at the homestead sites? What types of artifacts are associated with the homestead sites?	Homesteads on the Pawnee National Grassland (PNG) typically include foundations (concrete or stone alignments), depressions, and associated artifact scatters. Artifacts associated with historic sites on the PNG typically include glass fragments, ceramic sherds, nails, cans, vehicle/machinery parts, structural remnants (wood), medical bottles, beverage bottles, cosmetic containers, tobacco tins, and legs from furniture or farm machinery.	Historic features at homesteads include still standing structures including a bunk house, houses, chicken coops, barns, outhouse, grain silos, coal shed, wells, and associated artifact assemblages that contain more in quantity and artifact types. Associated artifacts farming/ranching equipment, glass, nails, ceramics, miscellaneous metal pieces, farming equipment and miscellaneous domestic items like shoes, marbles and toy guns. Historic features at homesteads include still standing structures including a bunk house, houses, chicken coops, barns, outhouse, grain silos, coal shed and wells, Artifacts typically include agricultural equipment, nails, and vehicle/machine parts. Domestic items including ceramics, glass, cans, bottles, clothing, recreational/play items such as dolls or toy guns, medical, alcohol, cosmetic, tobacco or furniture items

Table 4.1 Questions, Units of Analysis and Observation., Continued.

16	Who lived at the homesteads?	Families with children are evident from historic records.	Families with children are evident in the archaeological record by domestic artifacts including small boots, toys, etc.
17	How long were the homesteads occupied ?	Diagnostic artifacts include cobalt blue and sun colored amethyst glass.	Diagnostic artifacts and information gained from interviews with the landowner.
18	What types of activities are represented at the homesteads based on the artifacts?	Artifacts such as barbed wire, vehicle/machinery parts, and agricultural implements suggest farming and ranching activities. Domestic artifacts including ceramics, glass, nails, cans, cartridges, cosmetic containers, clothing, tobacco tins, medical bottles, alcohol bottles, and beverage bottles, and furniture suggest habitation.	Artifacts such as barbed wire, vehicle/machinery parts, and agricultural implements suggest farming and ranching activities. Domestic artifacts including ceramics, glass, nails, cans, cartridges, cosmetic containers, clothing, tobacco tins, medical bottles, alcohol bottles, and beverage bottles, and furniture suggest habitation.
19	What was learned from the interviews and the landowner's collection behavior?	N/A; this will be revealed in the survey, interviews and participant observation.	N/A; this will be revealed in the survey, interviews and participant observation

Survey Methods

Class III or intensive survey methods were applied at all sites identified by the landowner, and his knowledge of the local landscape and archaeological sites. The spacing during survey was 5 meter to 70cm intervals based on the extent of surface artifacts. This spacing was utilized because previous studies of multi-scalar surveys at 5 meter intervals are considered adequate to locate surface artifact concentrations. A70cm interval provides approximately an arm's length apart for artifact analysis (Banning 2002; Burger 2002; Reitze 2004:39) and identification of site artifact concentrations or isolates. The ground surface was examined for artifacts, features or other evidence of cultural occupation, such as charcoal-stained soils, hearths, storage pits, or architectural remains. Special attention was focused on sandstone outcrops, cutbanks, arroyos, eroded areas, anthills, animal burrows, and two-track road exposures.

Based on previously recorded sites within northeastern Colorado and Weld County, it was noted that most sites were located in the cutbanks of the Kersey Terrace, along the South Platte River and its drainages, the Ogallala capstone formation, deflated

sand dunes, and large rock outcroppings/rock shelters. Therefore, these topographic features were specifically targeted during survey and site recording. Sub-surface testing was conducted in agreement with Mr. Hunter at sites and areas of interest in order to determine if buried cultural deposits are present. Subsurface testing was specific to each feature being tested. However all test units were excavated at 5 cm levels and the artifacts were screened through a ¼" mesh screen. Collected artifacts were bagged and labeled. A total of thirty-one test units were excavated in an attempt to determine if the sites contained sub-surface cultural deposits.

Location names were provided by Dirk Hunter. For this project, the criteria for a "site" includes architecture or 5+ associated artifacts or 15+ historic artifacts and or features to constitute a site rather than an isolated find/ event. The State Historic Preservation Office (SHPO) Survey Manual defines an archaeological site as "the location of a significant event; a prehistoric or historical occupation or activity; a building or structure, whether standing, ruined or vanished; where the location itself possesses historical, cultural or archaeological value regardless of the value of an existing structure" (OAHP 2005:6). Sites were categorized by type according to Gilmore (1999). Site types within the Platte River Basin include battlefields, burial, bonebed, ceremonial sites, game drives, game processing/butchering sites, homesteads, killsites, open camp, open architectural, open lithic, peeled trees, sheltered lithic, sheltered camp, sheltered architectural, quarry, rock art, rockshelter, and trails (Gilmore et al. 1999).

Site types were assigned according to the following criteria. Lithic sites contain flaked lithic materials also known as debitage usually consisting of waste flakes and chipped stone tools. Campsites consist of features or artifacts indicating domestic activity

and are defined by one or more artifact classes or features ground stone, hearths, stone circles and middens. Architectural sites contain features that include stone circles (tipi rings), stone alignments, and pithouses. Quarry sites include an abundance of raw materials and typically include lithic sources but can also include clay for ceramics. Kill sites contain evidence of intentional slaughter typically associated with multiple large animals, these sites are often associated with game processing/butchering sites. Game processing/butchering sites contain the remnants from the larger, transportable segments of reduced animals. Remnant bones from processing or butchering sites often contain butchering marks, and associated cutting/chopping tools. Ceremonial sites are those with ceremonial significance and typically include vision quest sites. Burials include the interment locations of human remains whether intentional or incidental. Rock art sites contain either pictographs or petroglyphs on rock panels and are often associated with camps. Isolated finds are usually individual artifacts or small groups of artifacts that have value as cultural/temporal diagnostics; these exposed portions are often surface expressions of buried sites, or the remnants of disturbed sites. These same designations are used for site recording the site types located on private property.

During intensive survey all features and artifacts such as architecture, individual features, tools, diagnostic artifacts and lithic debitage were mapped using the Garmin E-Trek Vista GPS unit. For prehistoric sites, the description of character and extent of lithic debitage and the presence of formal tools especially temporally diagnostic projectile points were noted and given provenience. Features such as cairns, tipi rings, and stone alignments were flagged (each individual rock was flagged) and each individual feature was described and given provenience. Surface collection was limited to temporally

diagnostic projectile points and ceramics, while all other artifacts were left in situ. For historic sites, standing buildings and structures were documented and described individually. When an isolated artifact was discovered during survey, the isolated find (IF) was then recorded using the same methods mentioned above.

Site overviews and artifacts were photographed according to the Colorado Photographic and Archival Standards. Digital photographs were taken showing site settings and important features, buildings or structures, and site overviews. Field GPS data were post-processed using *ARC GIS 9.2* software and projected into Universal Transverse Mercator (UTM) Zone 13 north, North American Datum (NAD 83). No locational data is included in this thesis at the request of the landowner, Mr. Hunter.

Ceramics

Ceramics were also analyzed as part of this project. The ceramics were assessed according to Priscilla Ellwood's work, *Native American Ceramics in Eastern Colorado* (Ellwood 2002). All artifacts (excluding diagnostics and ceramics) were analyzed in the field. Collected artifacts were also analyzed in the laboratory. Only diagnostic artifacts including ceramics and projectile points were collected as agreed upon with Mr. Hunter. Attributes of prehistoric ceramics were recorded include thickness, texture, paste, temper, clay content, exterior and interior surfaces, and decoration, and sherd type. Without rim sherds or complete vessels it is difficult to attribute a cultural group to prehistoric ceramics. The presence of prehistoric ceramics in the project area is exciting as it reflects a dietary transition and a more sedentary adaptation. Ceramics are particularly informative because they have the potential to provide information on subsistence,

population, social organization, cultural boundaries, trade networks, and alliances of past peoples. All metric data were measured with digital calipers to the nearest thousandth mm and combined with contextual and descriptive data when possible and were then entered into an Excel database.

Faunal Remains

The Plains hunting groups relied primarily on bison for food. Plains hunter-gatherers also used other animals, gathered wild plants, and traded with their agricultural neighbors for corn (Bamforth 1988:98). Faunal remains were found during this investigation and include *Bison bison* and an unidentified large ungulate that could either be elk, deer, or bison. Faunal remains were provenienced, other recorded data include the species/class, portion of the element (when applicable), a narrative description of the general condition, and context of each bone recorded.

Historic Remains

Historic archaeological artifacts were most commonly found at the homestead sites, but isolates were also found in conjunction with prehistoric material. Historic artifacts were recorded by class categories including glass, ceramics, nails, cans, cartridge cases, construction material, and miscellaneous items similar to the State Historic Preservation Office (SHPO) requirements. Individual measurements were only taken on the collected artifacts or diagnostic artifacts. Due to the sheer number of associated artifacts at the historic sites, a representative sample was documented. Identifiable maker's marks and diagnostic attributes were paid particular attention for dating

purposes. Diagnostics historic artifacts include datable maker's marks, sun colored amethyst fragments, and aqua glass fragments.

Stone Circle Features

Stone circles served as mobile shelter from the elements, the size and number of stones varies within circular stone features. Individual stones are laid out in an arc forming a circular feature, the shape of stone circles also known as tipis may be irregular from the hides being removed after use. All artifacts and individual stones within the stone circles were flagged during survey and a single UTM was taken in the approximate center of the circle. The diameter of the stone circles were taken along the east-west axis and north-south axis and recorded in meters. The stone circles were documented with the use of quadrants and split into four units of analysis; for instance the northeast portion was recorded as Quadrant 1; southeast as Quadrant 2; southwest as Quadrant 3; northeast and Quadrant 4; northwest. The diameter, total number or stones, shape, and completeness were noted and measured during site recording activities. The shape may be representative of displacement occurring during the removal of the tipi hide.

The next section will address the results of the lithic analysis and site summaries are provided based on the collected data and analysis of the previously collected artifacts and site localities. A total of seven prehistoric and historic sites were recorded and two of those included historic homesteads. The majority of the prehistoric sites include open camp sites with lithic scatters, stone circles, architectural features, and ceramics. Each site will be described in detail, summarized and analyzed. Then conclusions will be drawn regarding prehistoric land use of the project area.

CHAPTER 5: RESULTS

This chapter will cover the private artifact collection, survey data, interview data, and the artifact analysis. It also includes nine individual site descriptions for seven prehistoric sites and two historic homesteads. As mentioned earlier, the landowner, Dirk Hunter named the site localities. A total of seven prehistoric sites will be summarized including the Baugh Pasture site, Bison Kill site, Claybanks Pasture site, Flattop Butte site, Indian Overlook site, Rocky Point site, and Tower Butte site. Two historic sites will also be summarized and these include two homestead sites. The summaries include site size, topographic features, vegetation, soil, slope, archaeological features, and artifacts that are associated with the various site collection localities.

Baugh Pasture Site

The Baugh Pasture site is located on a north-south trending sandstone butte composed of the White River Rock formation. The site is a prehistoric open camp with architectural features. Archaeological evidence of habitation on-site includes twenty-eight stone circles, three heat altered rock concentrations, a moderately small lithic assemblage dominated by flakes and worked angular debris, and *Bison bison* remains. No diagnostic artifacts were previously found at this location by the landowner, or during site recording and survey.

Baugh Pasture site is located in Weld County, Colorado with an elevation range of 1,661 m (5447 ft) to 1,680 m (5510 ft). The site measures approximately 950 m in length (north-south) by 750 m in width. The surrounding topographic features include highly dissected plains, exposed arroyos, alluvial and colluvial fans, upland breaks, colluvial slopes, and isolated sandstone escarpments. Vegetation on-site includes a moderate concentration of limber and ponderosa pine, dense concentrations of side oats grama, little bluestem grass, buffalo grass, blue grama grass, western wheatgrass, prairie sandreed, sedges, and cacti. Slope at Baugh Pasture ranges from 0-5° based on a compass reading. The soils at Baugh Pasture range from a brownish grey loam to a brown silt loam. Two types of soil series are found on-site including the Kim-Mitchell and Ustic-Torriorthents series (Crabb 1982:26-27, 45-46, 75). The maximum depth of all sediments present on-site ranges between 1.52 m (59.8") to >0.5 m (19.7") based on the cut-bank. Disturbances to the site include grazing, past farming activities, water erosion, and aeolian processes. Mr. Hunter had not previously collected any diagnostic artifacts from this location, but he still visits the site to look for exposed artifacts.

The architectural features for the Baugh Pasture site include twenty eight individual stone circle features. The average diameter of the stone circle features are 3.64 m (11.94 ft) north-south by 3.52 m (11.54 ft) east-west. The largest stone circle feature measures 5.0 m (16.4 ft) north-south by 3.9 m (12.79 ft) east-west in diameter. The smallest stone circle feature measures 1.3 m (4.26 ft) north-south by 1.0 m (3.28 ft) east-west. Of the stone circle features, 64.29% are complete and the southern quadrant appears to have more deposition. Regarding the stone circle features on average, all four quadrants contained 2-3 stones on average, whereas the average total number of stones

recorded within each individual stone circle feature was calculated at thirteen. It is unclear if the stone circle features are from two different time periods/events, or are representative of social class within the tribal society. The stone circles lack interior hearths and most likely represent an open summer camp.

The three heat altered rock (HAR) concentrations within the Baugh Pasture site range in diameter from 0.50 m (19.69") north-south by 0.50 m (19.69") east-west to the larger measurements of 1 m (39.37") north-south by 0.61 m (24.02") east-west. All HAR concentrations are amorphous and highly deflated. The HAR concentrations typically have 18-19 stones comprising the feature on average. Within all site features including stone circles and HAR concentrations, the overall rock size range is 18 cm (7.09") in length by 24.2 cm (9.53") in width for the largest rocks; and 11 cm (4.33") in length by 13.4 cm (5.28") in width for the smallest rocks.

The lithic assemblage contains fifty artifacts in various stages of tool manufacture (see Appendix G1, Table 6.3 Artifact Data). Formal tools within the artifact assemblage consist of a chert projectile point tip, and a quartzite early stage biface. A quartzite thumb scraper was collected during survey. Other lithic artifacts discovered during survey include six pieces of angular debris, thirty-two flakes, one worked flake, five utilized flakes, a single uniface, and a mano. All of the lithic assemblage was recorded during survey. Four bifaces are present within the artifact assemblage in early stages and final stages of lithic production. Flakes dominate the assemblage at 64%, while angular debris accounts for 12% of the assemblage, utilized flakes represent 10% of the lithic artifact assemblage, bifaces represent 4% of the assemblage, a single worked flake represents 2%, a single uniface accounts for 2% of the assemblage, and a single mano represents 2%

of the lithic assemblage. The majority of material types from the Baugh Pasture site appear to be of local origin and include chalcedony, chert, quartzite, and flint. Chalcedony dominates the lithic assemblage at 42%, chert represents 28% of the lithic assemblage, quartzite is at 24% of the lithic assemblage, and flint is the least represented lithic material type and accounts for only 6% of the lithic assemblage at Baugh pasture. A single mano is represented within the artifact assemblage. The mano artifact demonstrates that various floral processing activities occurred at the site, and the heat altered rock concentrations might also indicate plant processing concentrations.

Bison bison faunal remains are scantly represented on-site at two distinct concentrations within arroyo features. Bison would have been an initial draw to nomadic Native Americans within the area. Bison hunting is a key component of aboriginal life on the North American Plains (Todd et al. 2001:125; Wissler 1908). The soil level of the loam/ silt loam sediments with the faunal remains is within a very distinct sediment layer 55-65 cm (21.6"- 25.6") above the arroyo's ground surface. Bone preservation is poor within exposed areas of the arroyos, and the eroding elements exhibit weathering cracks and carbonization. There are differences in the post-depositional deterioration present on the faunal remains. On the northern extent of the arroyo, a portion of the faunal remains are carbonized. The soil horizon is laden with small amounts of ash and small non-distinct carbonized faunal fragments. Very small, carbonized, and fragmented faunal remains found within the deposits in the arroyo are scantly represented by approximately twenty-five unidentified long bone fragments, a distal fragment of a tibia, and a single complete astragalus. It is unknown if the fire was a result of prehistoric activities. Differences in bone condition are most likely the result of alluvial and aeolian processes

that have exposed the faunal remains. While the site may contain the remains of a bison kill site, no artifacts or supporting evidence for a cultural event has been found previously or as a result of this investigation. Therefore it cannot be conclusively identified as a kill site.

The northern most faunal concentration exhibits 1 m (39.37") to 3 m (118.11") of deposition based on an eroded cut bank of sandy loam. It is unclear if the burning on the bison remains is a result of the cultural activities, or natural prairie fires. The faunal remains are carbonized throughout the sediment layers. No cultural materials are associated with the faunal remains.

The other bison faunal concentration is located in an arroyo south of the open camp area. The top of the faunal deposit measures 40 cm (15.748 in.) deep in the stratographic horizon. No bison crania were present upon-site recording. The bottom of the faunal deposit located in the arroyo measures 55 cm (21.654 in.) below ground surface. The bison faunal remains cover a 30-40 cm horizon within sandy loam sediment. A single historic artifact was noted within the arroyo and consists of a rusty metal ice-cream churn with a patent of: "DAZEY CHURN MFG. CO. ST. LOUIS MO, [part #] 880B". According to Mr. Hunter the site has not changed much since he was a boy despite continued erosional processes (Dirk Hunter, personal communication, 2004).

Three test units were placed at the Baugh Pasture site. The Lithic assemblage from the three test units at Baugh Pasture include nine chalcedony flakes, four semi translucent chalcedony flakes, ten chert flakes, and five quartzite flakes. Eleven different material types were found within the three test units. Thirteen pieces of fire cracked rock, one charcoal sample, and three ceramic sherds were also collected from testing. The

testing artifacts are not included within the general artifact summary. Cultural materials were found at a depth of 10-20 cm below ground surface. Charcoal remains were found to a depth of 20 cm below ground surface.

The overall site area exhibits moderate disturbance resulting from typical plains environmental conditions, farming activities, and the disturbance caused when the USDA Forest Service built water diversion terraces/ watersheds through a few of the stone circle features at an unknown date. Many of the stone circle features are buried according to the landowner (Dirk Hunter, personal communication, 2004). The Baugh Pasture site consists of an open camp. When comparing the stone circles, it is evident that the diameters of some stone circles are larger than others. No doorways were clear enough to attach a cultural affiliation. In addition, the artifact collection lacks diagnostics. It is clear that prehistoric people camped here, and maintained their lithic tool kit as evidenced by the presence of angular debris, flakes, worked flakes, utilized flakes, and early stage bifaces. The processing of floral or botanical remains at Baugh Pasture is suggested by the presence of a single quartzite mano.

Bison Kill Site

The Bison Kill Site was named by Mr. Hunter. The site contains the sub-surface remains of a moderately dense layer of bone from the species *Bison bison*. The site is contained within an arroyo that intersects the base of a north-south trending sandstone cliff. The site is located in Weld County, Colorado, with an elevation range of 1664 m (5460 ft) to 1703 m (5588 ft). The site measures 186 m east-west by 10 m north-south based on eroding, exposed bone concentrations. However, the bonebed may extend

further than the surface expression. Surrounding topographic features consist of highly dissected plains, exposed arroyos, alluvial and colluvial fans, upland breaks, colluvial slopes, and isolated sandstone escarpments. The moderate scatter of bison bone is concentrated on the western bank of the arroyo 2.4 m (94.5") to 3.0 m (118.1") below ground surface. Bone preservation is poor on the surface with the eroding elements exhibiting weathering cracks, but the buried deposits show few if any weathering cracks. There are differences in the post-depositional deterioration in bone. In areas of the site the faunal remains are solid and stable, while in other areas the faunal remains are more weathered and broken where they have been exposed to the elements. While the site may contain the remains of a bison kill site, no artifacts or supporting evidence for a cultural event have been found previously or as a result of this investigation. Therefore it cannot be conclusively identified as a bison kill site or a processing/butchering site.

The deeply cut arroyo runs north/ north-west and comes to an abrupt halt at the base of the White River rock formation /sandstone cliff that is 1650 ft (502.9 m) in height (Crabb 1982:45-46). At the base of the cliff, is a very green moist area most likely the result of a natural underground spring that would have attracted bison to graze in the area. Large sandstone boulders are located at the base of the White River sandstone cliff near the spring. Slope on-site ranges from 0-10° based on a compass reading. On-site vegetation includes a dense ground cover of grasses including blue grama, western wheatgrass, buffalograss, and sedges. The *Prunus virginiana*, commonly known as the choke cherry bush is also present on-site. Slope varies between zero to nine percent on-site. The soils at the Bison Kill site range from light brownish grey/brown calcareous loam to a brownish grey to brown loam/silt loam including the Kim-Mitchell series and

the Ustic-Torriorthents series, also known as the White River sandstone outcrop (Crabb1982:26-27, 45-46, 75). Overall, the site's soil depth varies from a minimum depth of 25.4 cm (10") to 177 cm (69.7").

Nine bison skeletal elements were visible eroding out of the surface, but the soil stratographic horizons and Dirk Hunter's accounts confirm subsurface deposits. The exposed, skeletal elements on the ground surface at the time of site recording include an exposed frontal occipital portion of single cranium, an unspecified long bone fragment, a rib (RB1), two proximal unspecified rib fragments, an atlas, a thoracic, a first phalanx, and a second phalanx. Most of the faunal deposits are buried within the Kim Mitchell loam sediments, and the soils range from loam to sandy silt at the base of the north-west trending unnamed intermittent drainage/arroyo of Crow Creek. No cultural artifacts were noted on the surface, in association with the bison remains, or within the private artifact collection.

Natural disturbances include aeolian, alluvial, colluvial, and residual erosional activities. In Dirk's youth, he and his brothers excavated an estimated 80 *Bison bison* crania and lined the two track driveway of their homestead with the cranial remains suggesting potential for a dense concentration of sub-surface faunal remains. The account of Mr. Hunter explains why cranial fragments may be missing from different sediment layers. The temporal period for the bonebed is unknown, as no diagnostics were found in situ during site survey, and no artifacts for the site are present within the private artifact collection. Excavation of the site could reveal information such as seasonality, herd composition, body size and health, probable carnivore modification, a time period/ cultural affinity, butchery practices, hunting tactics, mobility patterns, technological

organization, and role of food storage. If the site is a kill site, it would also be illuminating to find out if the site represents a single episode or continued use of the natural topographic landscape. The site was not tested for sub-surface deposits since the deposits are visible in the exposed arroyo, and commonly the lithic tools are located at the very bottom of the bonebed.

Claybanks Pasture Site

The Claybanks Pasture site contains bison faunal remains in a blowout with an associated Paleoindian (Hell-Gap) projectile point found next to a sandstone remnant created by wind and water erosion. An additional lithic concentration is located on the flat butte northeast of the old washout. The landowner had previously collected artifacts from this location, known as Devils Chair. The site is located in Weld County, Colorado with an elevation range of 1632 m (5355 ft) to 1690 m (5545 ft). The site location is concentrated in two distinct areas (as mentioned before) and includes the north-south trending butte, an erosional feature resulting from aeolian activity. The site area measures 450 m north-south by 750 m east-west. Surrounding topographic features consist of highly dissected plains, exposed arroyos, alluvial and colluvial fans, upland breaks, colluvial slopes, and isolated sandstone escarpments. Slope on-site ranges from 0-5° based on a compass reading. On-site vegetation includes a moderate to sparse cover of blue grama, western wheatgrass, buffalo grass, sedges, needlethread grass, and fourwing saltbrush. Two types of soil series are present within Claybanks Pasture site including the Kim Mitchell soil series and the Thedalund series (Crabb 1982:26-27, 45-46, 75). Maximum depth to bedrock varies between 10.16 cm (4 in) to 152.4 cm (60 in) based on

observations made during site recording activities. The Kim Mitchell soil series consists of a light brownish gray to brown loam in color; while the Thedalund loam is described in color as grayish brown/brown fine textured silt loam mixed with deteriorating sandstone (Ustic Torriorthents) inclusions (Crabb 1982:43-44, 82).

All faunal remains are concentrated within a blowout caused by wind erosion. Thirteen skeletal elements are associated with this feature and all were found on the surface. Of the bison faunal elements, second phalanges are the most common (30.7%) followed by first phalanges (23.1%), and metacarpals (15.4%). Also present were a radial carpal, a fused second and third carpal, a humerus, and a third phalanx individually represent (7.7%) of the faunal assemblage. Bones missing from the bonebed seem to be the result of various taphonomic factors including trampling, rainstorms, snowmelt, bioturbation, butchering/processing areas, as well as human transport. Despite the small sample size, only low meat/marrow yielding skeletal elements are present at the site. However, differences in skeletal frequencies are not definite evidence of human butchering, processing and storage. Bone preservation is fair to good on the surface with the eroding elements exhibiting limited weathering cracks. In some areas of the site with deposition, the faunal remains are solid and stable, where as in other areas the faunal remains are more deteriorated and in a fragile condition.

Mr. Hunter had previously collected a total of fifteen projectile points and five bifaces from this site. He knew the exact location where he had found of one point, a Hell Gap projectile point. The diagnostic projectile points collected from this locality by the landowner date to the (1) Paleoindian, (2) Middle Archaic, (10) Late Archaic, and (5) Late Prehistoric time periods. The Hell Gap point dates to between 10,700-10,400 years

ago. During survey and site recording, three additional projectile points were found including two late Prehistoric points and a Late Archaic period point. The diagnostic artifact assemblage consisting of eighteen projectile points, excluding the single Paleo point, was found on the top of a north-south trending butte (northwest of bison bone concentration). Hell Gap, McKean, and Avonlea diagnostic points provide the temporal and cultural context for the multicomponent site.

The lithic assemblage consists of 18 projectile points, and five final bifaces (see Appendix G1, Table 6.3 Artifact Data). No lithic debitage is present at the site within the washout feature or on top of the butte. The artifact assemblage represents hunting activities. The Late Archaic time period is most represented archaeologically at this site with ten individual points making up 56.5% of the lithic assemblage. There were four Late Prehistoric points representing 17.4% of the lithic assemblage. A single Paleoindian Hell Gap point was found on-site and constitutes 4.3% of the lithic assemblage. Final bifaces make up five individual items and account for 21.7% of the lithic assemblage. Material types on-site appear to be of local material. However, the Hell Gap point is visually similar to Hartville chert material. Chalcedony dominates the lithic assemblage by 43.3%. Chert represents 39.1% of the lithic assemblage, followed by jasper at 8.6%. Petrified wood is moderately represented and constitutes 8.7% of the lithic assemblage, while quartzite materials represent only 4.3%.

Two test units were excavated to determine if sub-surface deposits are present. Bedrock was reached at 18 cm and 25 cm below ground surface. Both test units were negative for cultural deposits, suggesting a lack of sub-surface deposits for Claybanks Pasture site. The sediment consists of a very fine sandy loam. The two test units

excavated at the site location were dug to a depth of 29.5 cm below ground surface where bedrock was encountered.

The washout contains a concentration of faunal remains and a single Hell Gap projectile point. The majority of the projectile points are from the top of a north-south trending butte located northwest of bison bone concentration. Recent disturbances include cattle, grazing, farming activities, aeolian, alluvial, and colluvial processes. All artifacts and faunal elements were found on the surface. The site lacks subsurface deposits.

Flattop Butte Site

The Flattop Butte site consists of an open lithic scatter located on top of a butte. The only feature at this site consists of a single prehistoric hearth. The site is located in Weld County, Colorado with an elevation range of 1635 m (5363 ft) to 1688 m (5539 ft). The site is situated on top of a sandstone butte protruding from highly dissected plains. Surrounding topographic features include dissected arroyos and deposits of sandstone escarpments. Flattop Butte site measures 150 m north-south by 300 m east-west and extends where the topography flattens out to the northeast of the sandstone butte. The flat grassland below and southeast of the butte is where eleven Avonlea projectile points have been collected by Mr. Hunter over the years.

On-site vegetation includes a moderate cover of side oats grama, little bluestem, blue grama, and prairie sandreed. Slope on-site varies from two to ten percent. The White River rock outcrops represent approximately 20% of the exposed surficial sandstone escarpments on-site (Crabb 1982:45-46) and range in characteristics from a gravelly

sandy loam to a silt loam that is highly variable and calcareous in texture. The White River rock outcrop has a pale brown colored surface layer that ranges to a darker brown (Crabb 1982:45-46). Within Flattop Butte site, the maximum soil depth is 25.4 cm/10 in to 152.4 cm/ 60 in based on observation. Soils surrounding the protruding rock outcrop include the Kim-Mitchell loam and the Epping silt loam sediments (Crabb 1982:24, 26-27, 73, 75). Disturbances to the site are all natural and include high water erosion with slow to rapid runoff from slope and the shallow depth to bedrock.

The open lithic scatter is concentrated on the southern most area of the butte. The Flattop Butte site contains only one site feature, as mentioned above. The feature is a single intact hearth that measures 75 cm/29.5 in. (north-south) x 80cm/35 in. (east-west) with a total of 31 stones. The hearth lacked any evidence of fire altered rock or faunal remains, but the circle of stones are still intact.

The Flattop Butte site was tested for sub-surface deposits. Only one of the two test units had cultural remains present on the surface. The test units were dug to bedrock which was reached at a depth ranging from 4cm - 40cm below ground surface. No subsurface deposits were present within the two test units.

Mr. Hunter had previously collected nine projectile points dating to the Late Archaic stage, and four bifaces (see Appendix G1, Table 6.3 Artifact Data). A single Avonlea projectile point and a single ceramic sherd were found during site recording, survey, and testing. The diagnostic artifacts were collected from the field. Formal tools at the site include projectile points and bifaces. All of the diagnostic artifacts were previously collected by the landowner, excluding the single Avonlea point and the ceramic sherd collected during testing. The lithic debitage associated with the site

includes three angular cores, three pieces of angular debris, twenty-one flakes, a utilized flake, and two unifaces. The lithic debitage was recorded during survey and site recording. The diagnostic points belong to the McKean and Avonlea complexes. A single non-diagnostic sherd with a cord marked exterior with a sand and crushed rock temper was found on-site.

Lithics are the most common artifacts on the site and represent 97.5% of the entire artifact assemblage at Flattop Butte. A single pottery sherd accounts for the other 2.5% of the total artifact assemblage. The lithic assemblage consists of flakes, projectile points, angular cores, final bifaces, and unifacially worked flakes. Flakes dominate the lithic assemblage and represent 53.8 % of the recorded artifacts, followed by projectile points representing 25.6% of the site's lithic assemblage. The other chipped stone elements present in the artifact assemblage are sparsely represented by angular cores and final bifaces at 7.7 %. Lastly, unifaces are the least represented artifact at 5.2% for the artifact assemblage from Flattop. Of the various material types used at this site, chalcedony accounts for 38.5 %, and chert accounts for 36 % of the lithic assemblage. Secondary material types utilized on-site include quartzite which represents 12.8% of the lithic assemblage, flint at 7.7%, and jasper at 5%.

The Flattop Butte Site consists of an open lithic scatter with a single hearth feature. The site lacks subsurface deposits. Cultural complexes represented at this site include McKean and Avonlea projectile points. Recent disturbances include cattle, grazing, farming activities, aeolian, alluvial, and colluvial processes.

Indian Overlook Site

Indian Overlook is an open architectural site containing eight stone circle features, two heat altered rock concentrations, an associated lithic scatter, and a prehistoric ceramic concentration. Prehistoric features at the site include eight stone circles including a possible eagle trap or rock lined structure, and two heat altered rock concentrations. The butte has historically served as a breeding ground for raptors and eagles, and continues to be a draw to avian wildlife. Surrounding topographic features consist of highly dissected plains, exposed arroyos, alluvial and colluvial fans, upland breaks, colluvial slopes, and isolated sandstone escarpments. Site boundaries measure 1109 m in length by 289 m in width and contain three separate concentrations. The three locations are located in close proximity and were lumped together as one site with three separate activity areas. Mr. Hunter also considers these areas to be included in the site locality. Elevation on-site ranges from 1671 m (5481 ft) to 1697 m (5569 ft). Indian Overlook site is predominately located on a flat north-south trending sandstone butte and a basin due west of the butte. Eighteen fragments of non-diagnostic cord marked body sherds were discovered on-site. The lithic materials for Indian Overlook are dominated by chert flakes. On-site vegetation consists of blue grama, western wheatgrass, sedges, buffalo grass, and fourwing saltbrush (Crabb 1982:27).

There are two types of soil series present at Indian Overlook including the Kim-Mitchell loam (Crabb 1982:26-27, 75) and Ustic Torriorthents (Crabb 1982:45). Maximum soil depth on-site is 25.4 cm (10 in) to 152.4 cm (60 in) based on observations and the Weld County soil chart (Crabb 1982:26-27, 45-46, 75). Ustic Torriorthents fine sandy loam sediments have a brown color, while the Kim-Mitchell loams are course in

texture and a light grayish brown in color (Crabb 1982:26-27, 45-46). Disturbances to the site are all natural and include high water erosion with slow to rapid runoff from slope (Crabb 1982:45-46). Only surface deposition was noted during survey and site recording.

At Indian Overlook all artifacts were prehistoric and include lithic debitage and ceramics. The landowner previously collected eighteen sherds of ceramics. During survey and site recording an additional five ceramic sherds were collected, and the lithic debitage was documented. A total of 45 chipped stone artifacts are present including a single late stage biface, two bifaces with regular margins and thinning, two tested nodules, ten pieces of angular debris, and thirty flakes. Flakes dominate the assemblage at 66.7%, followed by angular debris at 22.2%, late stage bifaces at 4.4%, tested nodules at 4.4%, and final bifaces at 2.22% of the lithic assemblage. All materials are available locally and include chalcedony, chert, flint, and quartzite. Chalcedony is the dominant lithic material at Indian Overlook Site and accounts for 46.7% of the assemblage, chert accounts for 35.6% of the assemblage, while flint and quartzite are equally represented at 8.9% of the artifact assemblage.

Eighteen fragments of non-diagnostic cord marked exterior body sherds are associated with this site. Ceramic thickness averages 6.04 mm; thickness varies between 4.4 mm to 9.2 mm on all 18 fragments. The average length of the 18 ceramic fragments is 22.09 mm. The average width is 16.10 mm while the average thickness is 6.04. The largest fragment of non-diagnostic cord marked exterior body sherds with sand and crushed rock temper measures 43.7 mm in length x 26.9 mm in width x 7.1 mm in thickness while the smallest sherd measures 8.9 mm in length x 4.5 mm in width x 5.7

mm for the thickness. Unfortunately no rim sherds were present for assigning a cultural group or time period.

Of interest is a single three course stone circle feature, measuring 2.65 m (8.69 ft) in diameter (north-south) by 3.14 m (10.30 ft) in diameter (running east-west). The circular feature is 45cm (1.4 ft) high and is in a collapsing state. The feature is shallow, with a total of approximately eighty-five sandstone rocks. This feature is set atop a bluff away from the other features and is contextually associated with the 18 ceramic sherds and two mid stage bifaces. The location offers a great view of the surrounding Plains. A mid stage biface was found inside of the feature by Mr. Hunter many years ago (Dirk Hunter, personal communication, 2004). The artifact is made of red quartzite and has regularly thinned margins. The circular stone feature is unusual because it has multiple stacked courses. The feature could represent a habitation structure, possible hunting blind or it may be the remains of an eagle trap, as they have nested here for at least the last 80 years (Dirk Hunter, personal communication, 2004).

The Indian Overlook site contains seven stone circle features and one circular stone feature. The site also contains a hearth feature and two heat altered rock concentrations. The average diameter of the stone circle feature is 4.89 m (16.04 ft) m north-south by 4.63 m (15.19 ft) east-west. The smallest stone circle feature's north-south diameter is 4.06 m (13.32 ft) by 4.8 m (15.75 ft) east-west diameter. The largest stone circle feature has a north-south diameter of 5.6 m (18.37 ft), and an east-west diameter of 5.6 m (18.37 ft). Sixty two percent of the stone circles are complete. Shapes of the stone circle features are both circular and irregular. It is not clear if the irregular shape was from pulling the hide off of the tipi, or from taphonomic processes. The soil is deflated

and features measured to a depth of eight cm below ground while others are shallow, eroded and only expressed on the surface. Gaps in the stones are noted and predominately fell within the eastern quadrant. Quadrant 1, the northeast quadrant was more eroded than any other quadrant. Two more stone circles with associated hearths are located on the sandstone bluff south of the coursed stone circle. The last stone circle concentration is situated in the intermittent drainage below the bluffs near an ephemeral drainage and contains the remains of five incomplete stone circle features. Mr. Hunter recalls more stone circle features at this location, but they have since been covered by aeolian deposition (Dirk Hunter, personal communication, 2004). This location is protected from the wind offering shelter possibly representing a fall/winter camp consisting of a small band or family unit. This area of the site has experienced more deposition which has adversely affected the architectural remains. No lithic debitage was found in association with the stone circles.

Two heat altered rock concentrations are highly deflated and lack integrity. One of these features measures 55 cm in length (southwest/northeast) x 62 cm in width (southeast/northwest). The other heat altered rock concentration measures 39 cm in length (north-south) x 48 cm in width (east/west). The sandstone and quartzite heat altered rocks do not exhibit pot lids, but they are heat-treated, and include local lithic materials. The heat altered rock concentrations may represent some form of plant processing areas.

Disturbances to the Indian Overlook site include erosion, cattle grazing, and past farming activities. This site contains important information regarding stone circle features, local ceramics, and has potential for subsurface deposits. The site is unique as it

contains a relatively large quantity of prehistoric ceramics. The site was tested for sub-surface deposits. A total of nine test units were excavated. In four out of the nine test units, cultural materials were encountered. No projectile points were previously collected by the landowner at this site. The artifact collection only includes ceramics (see Appendix G1, Table 6.3 Artifact Data). The proximal end and distal end of two projectile points, and a thumb scraper were collected during survey and testing. The artifact assemblage from Indian Overlook at the time of the site recording consists of five cord marked ceramic sherds that were discovered on the surface, three fire-cracked rock fragments, 16 white chert flakes, and seven micro debitage white chert flakes. All buried cultural deposits were found 5-10 cm below ground surface. The artifacts found during testing are not included in the summary of the site assemblage. Diagnostic artifacts including ceramics were previously collected by Dirk Hunter at the Indian Overlook site. All stone circle concentrations are located on the butte tops and in the valley below. The presence of the ceramic concentration around the single circular, stone feature with three courses may be attributed to ceremony or habitation. The lithic assemblage reveals that local materials were being expediently used based on the twelve chipped stone artifacts.

Rocky Point Site

Rocky Point is an open camp consisting of two stone circle features, a single hearth, two heat altered rock concentrations, and a cave with piled sandstone rocks at the entrance. The site is located on top of a sandstone butte protruding from highly dissected plains, known as the White River Rock formation. Surrounding topographic features include many dissected arroyos and sandstone escarpments. Rocky Point site is located in

Weld County, Colorado with an elevation range of 1,661 m (5449 ft) to 1,681 m (5515 ft). The site area measures 206 m in length (north-south) by 153 m in width (east-west). Surrounding topographic features consist of highly dissected plains, exposed arroyos, alluvial and colluvial fans, upland breaks, colluvial slopes, and isolated sandstone escarpments. Artifacts associated with the site represent a diversified tool kit including three non-diagnostic cord marked ceramic fragments, three finalized bifaces, and fourteen projectile points dating to the Middle Archaic, Late Archaic and Late Prehistoric (see Appendix G1, Table 6.3 Artifact Data). McKean and Avonlea cultural complexes are represented in the artifact assemblage. A single bison metacarpal was found on-site. Mr. Hunter had previously collected ten projectile points, four bifaces, and one uniface. During survey and site recording four McKean projectiles points, and one Middle Archaic point were found and collected. Lithic debitage associated with the site includes flakes, a utilized flake, and a worked flake.

Vegetation on-site includes a moderate to dense concentration of limber and ponderosa pine, side oats grama, little bluestem grass, buffalo grass, blue grama grass, western wheatgrass, prairie sandreed, sedges, and cacti. Slope on-site ranges from 5-10° based on a compass reading and data from the previous soil survey for Weld County (Crabb 1982:27). There are two types of soil series at Rocky Point including the light brownish grey/ brown Kim-Mitchell loam, and a brown fine sandy loam known as the Ustic Torriorthents soil series (Crabb 1982:26-27, 45-46, 75). Maximum soil depth on-site is 25.4 cm (10 in) to 152.4 cm (60 in) (Crabb 1982:26, 45-46, 75) based on observation and the Weld County Soil Survey data. Disturbances to the site are all natural

and include high wind erosion. Only surface deposits were observed during survey and site recording.

The dominant lithic material at Rocky Point is quartzite and accounts for 42.8 % of the assemblage, chert represents 32.6% of the lithic assemblage, chalcedony represents 16.3% of the lithic assemblage. Jasper represents 6.12% of the lithic assemblage while flint only represents 2.04% of the lithic assemblage. Formal tools at the site include projectile points and bifaces. Other lithic artifacts found at the site include flakes, utilized flakes, worked flakes, and unifaces. Flakes dominate the assemblage at 63.3% and projectile points represent 19.7% of chipped stone elements. Angular debris moderately represents 6.1% of lithic assemblage, followed by final bifaces at 4.2%. Minimally flaked bifaces represent 2.1% of the Rocky Point tool types whereas utilized flakes account for 2.8%. Worked flakes, unifaces and early stage bifaces individually account for 1.4% of entire site's chipped stone elements.

Three fragments of non-diagnostic, cord marked exterior ceramic body sherds are present and are located within three meters of two stone circle features and an associated hearth. However, no rim sherds are present. Ceramic thickness averages 5.93 mm; thickness varies between 4.8 mm to 7.1 mm on all 18 fragments. The average length of the three ceramic fragments is 30.33 mm, the average width is 24.57mm while the average thickness is 5.93mm. The largest fragment of non-diagnostic cord marked exterior body sherds measures 41.3 mm in length, 35.6 mm in width and 7.1 mm in thickness. In contrast, the smallest sherd measures 21.3 mm in length, 15.7 mm in width, and 4.8 mm for the thickness.

Two stone circle features and a hearth were found associated with two concentrations of heat altered rock. The stone circles average 3.2 m (10.5 ft) in diameter north-south by 4.1 m (13.45 ft) in diameter east-west, with an average total number of five stones in the feature, the rest of the stones are most likely buried. The largest stone circle feature measures 3.7 m (12.14 ft) north-south by 4.6 m (15.09 ft) east-west. The smallest stone circle of the two measures 2.7 m (8.86 ft) north-south by 3.6 m (11.81 ft) east-west. The stone circle features have moderate depth and gaps appear in the northern half of the feature, making the feature incomplete. The hearth measures 93.98cm in diameter north-south by 40.64cm in diameter east-west. The hearth is associated with the stone circles but is not placed within either stone circle feature. The rock depth of the hearth is twelve cm below ground surface, but no charcoal or bone is present. Two heat altered rock concentrations were also noted during site recording. One heat altered rock concentration has a single large sandstone rock present, but is highly deflated. The feature measures 51.0 cm in diameter north-south by 88.90cm in diameter east-west. The other heat altered rock concentration is very diffuse with small rocks and measures 63.5 cm in diameter north-south by 3.05cm. A west facing small cave eroded out of the sandstone was built up with sandstone rocks when Dirk Hunter discovered it as a boy seeking shelter from a storm. The cave was devoid of any artifacts when Mr. Dirk Hunter climbed in as a boy. Perhaps this cave feature represents a cache location for floral, faunal, or lithic resources.

Disturbances to the Rocky Point site include erosion from wind and farming activities. A single test unit was excavated to a depth of 41 cm below ground surface. No

cultural materials were encountered within any of the five centimeter levels. Potential for sub surface deposits is low because little deposition has occurred.

Rocky point consists of an open camp with no subsurface deposits. The landowner had previously collected diagnostic projectile points including McKean and Avonlea Complexes. The lithic assemblage reveals that the formal tools are predominately bifacial, and are made out of good quality local materials, or have been transported with the tool kit.

Tower Butte Site

The Tower Butte site is a multicomponent open architectural site. The open camp contains 49 stone circle features in two distinct concentrations, five heat altered rock concentrations, a moderate lithic scatter, and historic dump. The stone circle features and artifacts are located on a relatively flat plain, under a small sandstone overhang. The Bison *bison* faunal remains are located in a north-south trending arroyo located east/northeast of the dump. The lithic assemblage contains fire cracked rock, 26 flakes, two minimally flaked bifaces, and two final bifaces. There are five projectile points from this site and they date to the Early Archaic, Late Archaic and Protohistoric time periods, and the Historic stage (see Appendix G1, Table 6.3 Artifact Data). Mr. Hunter had previously collected the five diagnostic projectile points and four bifaces. Without talking with Mr. Hunter this site would not have temporal and cultural affiliations because the diagnostic artifacts are in his collection. During survey and site recording lithic debitage was noted in addition to *Bison bison* faunal remains.

The site is located on a flat butte with an elevation range of 1689 m (5541 ft) to 1706 m (5596 ft). The site area measures 620 m in length (north-south) by 404 m in width (east-west). Surrounding topographic features include highly dissected plains, exposed arroyos, alluvial and colluvial fans, upland breaks, colluvial slopes and isolated sandstone escarpments. Vegetation on-site includes a moderate to dense concentration of blue grama grass, sideoats grama, little bluestem, threadleaf sedge, prairie sandreed, and needlethread. There are two types of soil series at Tower Butte site including Kim-Mitchell loam and Ustic Torriorthents-Rock Outcrop (Crabb 1982:26-27, 45-46, 75). Ustic Torriorthents fine sandy loam sediments are brown in color while the Kim Mitchell soils are a light brownish grey/ brown loam (Crabb 1982:26-27, 45-46). Maximum soil depth on-site is 25.4 cm (10 in) to 152.4 cm (60 in) (Crabb 1982:26, 45-46, 75) based on observation and the Weld County Soil Survey data. Disturbances to the site include high water erosion with slow to rapid runoff from slope and the shallow depth to bedrock. Only surface deposits were recorded during survey and site recording

Five test pits were excavated and three contained cultural materials. Cultural materials include a sandstone fragment of fire cracked rock, a quartzite fragment of fire cracked rock, five chert flakes, two chalcedony flakes, and seven burnt fragments of unidentified faunal remains. All cultural materials were found 5-10 cm below ground surface. Artifacts discovered from subsurface testing are not included within the site summary of the lithic assemblage.

The Prehistoric features are dominated by stone circles. Stone circles represent 80% of the features whereas heat altered rock concentrations represent 20%. The stone circle features are disturbed by a dirt two-track road, construction of a radio tower, and

windmills. The stone circle features may have been in a single concentration, but have been initially disturbed by farming activities. The average stone circle is 3.3 m (10.83 ft) in diameter (north-south) by 3.27 m (10.73 ft) in diameter (east-west). The largest stone circle feature is 5.1 m (16.73 ft) in diameter (north-south) by 4.2 m (13.78 ft) in diameter (east-west). The smallest stone circle feature is 1.16 m (3.80 ft) in diameter (north-south) by 1.28 m (4.19 ft) in diameter (east-west). Individual stones within the stone circle feature have an average depth of thirteen cm below ground surface. Gaps appear in the northeast and southwest quadrants but are most likely the result of biostratinomic factors and taphonomic processes. The average number of stones present in each stone circle was ten. The stone circle features are both circular and irregular in shape. Fifty-five percent of the stone circle features are incomplete. The stone circle features lack interior hearths suggesting summer occupation. A test pit was placed within a hearth feature underneath a sandstone overhang. The hearth consists of eight purple quartzite stones with a diameter of thirty-two cm. The test unit was excavated to a depth of ten cm. Within the bell shaped hearth fill, the following cultural materials were encountered including two heat altered cortical chalcedony flakes, a chalcedony flake, two chert flakes, five unidentified ossified bone fragments, and two long bone fragments with green bone breaks and no evidence of burning. Located north of this feature *Bison bison* remains were discovered in an arroyo. However, no associated cultural materials were found with the faunal remains. The historic dump contains diagnostic artifacts including aqua glass fragments, cobalt blue glass fragments, and the Glenshaw Glass Co. makers mark on the base of a glass vessel. From diagnostic artifacts present at the site it was determined that the historic dump was used continually from the late early 1900s through the late 1970s.

Chipped stone artifacts and lithic debitage are moderately represented on-site. Flakes represent 76.7% of the lithic assemblage while projectile points account for 11.6%. Both early stage and final bifaces represent 4.6% of the lithic assemblage, and minimally worked tested nodules account for 2.3% of the chipped stone artifacts at the Tower Butte Site. Chert is the most common material type in the lithic assemblage comprising 30.5%, chalcedony at 25%, flint at 22.2%, quartzite at 19.4%, and a single metal point accounts for 2.8% of the total artifact assemblage. Late Archaic projectile points dominate the assemblage at 60% followed by the Early Archaic and Protohistoric points accounting for 20% of the total diagnostic projectile points from the Tower Butte Site.

Three test pits were excavated and two hearth features were bisected. The hearth features tested positive for cultural materials. The three test units were excavated to a depth of 35 cm below ground surface and contained no cultural materials. One hearth feature was excavated to a depth of 25 cm below ground surface, cultural materials including flakes and a petrified wood fragment lacking cultural modification were found 5-10 cm below ground surface. The second hearth feature was excavated to a depth of 12 cm below ground surface, cultural materials include flakes, charcoal fragments, small non-diagnostic ossified bone fragments, large bone fragments with green bone breaks and no evidence of burning. All artifacts from the second hearth were found 5-10 cm below ground surface also.

The diameter of the isolated stone circle feature measures 4.90 m north-south by 5.0 m east-west. A probable hearth is also associated with the tipi ring measuring 90cm in diameter north-south by 50cm east-west. In addition, some bison faunal remains are

located in an arroyo. The site is limited to the extent of visible artifacts and features on the surface. Disturbances to the site include aeolian, alluvial, colluvial deposition, disturbances from farming, and windmill construction and maintenance.

Collected Artifacts with an Unknown Provenience

There were some prehistoric and historic artifacts that Mr. Dirk Hunter could not provide locational data. The prehistoric artifact assemblage of unknown provenience is dominated by projectile points and bifaces (see Appendix G1, Table 6.3 Artifact Data). It is composed of six unifacial flakes, 19 final stage bifaces, 16 early stage bifaces, and three ceramic sherds. Seven tested nodules of obsidian are also present within the private artifact collection and come from an unknown location and source (Hughes 2008:5). A Late Archaic obsidian projectile point was given to Dirk Hunter's father, but no contextual information for the artifact is known. Two Middle Archaic projectile points, ten Late Archaic projectile points, four Late Prehistoric points, and a metal Protohistoric point are also present within the artifact collection, but lack provenience. A metal awl, and a large, metal projectile point are also in the private artifact collection. Two eccentric white chert notched projectile points were given to Dirk Hunter's father by a woman who had found them in a tree trunk after a road grader had hit the dead tree located along the side of a county road (Dirk Hunter, personal communication, 2004).

1909 Homestead

The 1909 Homestead site contains the remains of a single concrete structure with two dense artifact concentrations consisting of a glass concentration and a can

concentration. The site is located on a relatively flat plain in Weld County, Colorado. Surrounding topographic features include a north-south trending sandstone butte, dissected plains, fans and upland ridges. Elevation on-site is 1625 m (5330 ft). On-site vegetation consists of blue grama, western wheatgrass and fourwing saltbrush. There are two types of sediments present and these include the Epping and Thedalund soil series (Crabb 1982:24, 43-44, 73, 82). Epping sediments are a fine to medium course grained light brownish gray to a brown silt loam (Crabb 1982:24, 73). The Thedalund-Keota loams are grayish brown to brown in color; they are fine grained and include sandstone, shale and siltstone inclusions (Crabb 1982:43-44, 82). The depth to siltstone ranges from a minimum of 10" to a maximum of 40" on-site; in some areas the surface later is loam (Crabb 1982:24, 44).

This homestead was built around 1910. The family moved to Grover Colorado from Warrensburg Missouri in 1909. The site was occupied by a couple and their four children, including three boys and a single girl (Dirk Hunter, personal communication, 2004). The first year that the family lived in Grover, they stayed in a tent that blew over three times during the extreme winter prompting for a house to be constructed when the weather improved (Dirk Hunter, personal communication, 2004).

The homestead structure is vernacular in style and still remains intact today, only the brick chimney has fallen. The footprint of the homestead is square and measures 16.5 ft in length by 16.3 ft in width. The concrete structure has a pyramid roof and is constructed out of a wooden balloon frame. The foundation is constructed of a layer of wire and local stones covered with cement. The fire place heats the house on both levels (main level and basement) and is constructed out of bricks. There are two fixed double

sash windows located on the north and west walls of the main floor. The three panel, two-tier doors are located on the east and west sides of the main floor. A stoop covers a doorway to the subterranean basement on the eastern side of the structure with a three panel, two-tier style door. The floor is constructed from milled lumber. There are an additional three fixed double sash windows in the basement located on the north, south and west wall. In the basement are the remains of a kitchen complete with a cast iron Schill wood burning stove, shelves, a table, and a mattress.

Located approximately 82 ft north/northwest of the house is the cement well. The poured cement well measures five ft by five ft with an unknown depth; the feature is currently covered with boards of wood to keep people and animals from falling into the well (Dirk Hunter, personal communication, 1994). Near the vicinity of the house is old farming equipment including a Buck rake and a historic cast iron stove with a "Schill Bros. Co." maker's mark. There is a milled lumber concentration approximately 164 ft (50 m) north of the homestead covering the collapsed potato cellar that was later used as a shed (Hunter, personal communication 2004). The footprint of the shed measures 12.58 ft in length north-south by 11.75 ft east-west. Within the milled lumber concentration there are sixteen, round, clear, screw top glass jars. Seven of the glass jars measure 8 8/16" in length with a diameter of 4 8/16"; these have a diagnostic "Duraglass" label on the base dating to 1940-1963. Four additional "Duraglass" clear glass jars measure 6" in length and had a diameter of 3"; these also date to 1940-1963. Two glass jars have a length of 4 8/16 " with a diameter of 2 8/16", and a width of 2 8/16"; these jars have the following diagnostic marks on the base "L-602A" and a "3" and "73" and an "Anchor Hocking" Glass Corporation label dating to 1938-1971. Three jars measure 5.5" in length

and had a diameter of 4", and a width of 4"; the base had the following diagnostic information including the number "17" and the letter "G" and "CL-5" and the "Owens-Illinois" trademark dating to 1929-1954. Other materials within this artifact concentration include an old window screen, two modern paint cans, broken glass fragments, and two round sanitary cans with a height of 3 8/16", a diameter of 4 8/16", and a width of 4 8/16. Both sanitary cans have crimped seams and a solder dot marking.

Not far from the lumber pile and glass jar concentration is a large can dump that measures 11.75 ft by 12.58 ft and contains hundreds of sanitary cans located in the location of the old barn. Some artifacts are historic, but modern cans are mixed in also. There were seven matchstick filler solder cans with a diameter of 3", a height of 4", and a width of 3". Approximately 1,500 sanitary cans are smashed flat and multiple cans are stacked inside of each other. The sanitary cans have crimped seams and a height of 4". Five cylindrical, 25 oz., "KG" external friction baking soda cans are present and measure 3" in diameter with a length of 6 12/16". Six cylindrical cans are present and measure 4 12/16" in diameter with a length of 5 12/16" and a width of 4 12/16". Fourteen cylindrical cans are noted on-site and measured 5" in diameter, with a length of 6" and a width of 5". Twenty five cylindrical sanitary cans are also present and measure 4 4/16" in diameter 3 8/16" in height and a width of 4 4/16". Ten modern sardine cans were noted with a length of 4.5", a width of 3" and a height of 1". Three spice tins are included within the can dump; they measure 3" in length, 2" in width and have a height of 1". The older cans either a have church-key or knife cut openings, while the modern cans are opened with a can opener. Mixed in with the cans are various metal fragments of an

unknown nature. The cans are resting on a destroyed cement foundation, the remnant of an old barn. The barn is collapsed but the foundation measures 12.92 ft by 16 ft.

The 1909 site was tested for subsurface deposits. The site contained artifacts from the surface and to a depth of 15 cm. Artifacts from the single test unit include a poured concrete fragment, two clear glass fragments, a single fragment of coal, and a short 0.22 caliber round. The test unit was dug to a depth of 30 cm below ground where bedrock was hit. No cultural materials were found 15 cm below ground surface.

1920s Homestead

The homestead contains 15 structures with associated artifacts concentrated around the buildings, farming equipment, vehicles, and a large artifact concentration consisting of farming equipment and domestic items located on the western edge of the site. The 1920s homestead site was occupied by a couple and their eight children; three of the children died early in childbirth. The family practiced dry land farming and ranching activities. They raised goats, cows, horses, sheep, chicken, turkeys, domestic geese, bison at times, and mules that were sent to Missouri (Dirk Hunter, personal communication, 2004). Topography consists of a relatively flat plain with a slope of 0-9%. Surrounding topographic features include highly dissected plains, buttes, and arroyos. Vegetation on-site consists of blue grama, western wheatgrass, sedges and buffalo grass (Crabb 1982:26-27).

Soil on the site consists of the Kim-Mitchell complex, Otero sandy loam, the Ustic Torriorthents rock outcrop, and the Wages fine sandy loam (Crabb 1982:26-27, 34, 45-46, 48, 75, 78, 83). All sediments on the site have a maximum subsurface depth of 60"

(Crabb 1982:26-27, 34, 45-46, 48). The Kim Mitchell loam soil series varies from a brown silt loam to a light brownish grey / light grey loam (Crabb 1982:26-27). The Otero sandy loam soil series ranges in color from a brown to a light yellow brown appearance with a gravely surface layer (Crabb 1982:34, 78). The Wages soil series is a fine sandy loam that is grayish brown to a yellowish brown in color. The Ustic Torriorthents fine sandy loam varies in color from a grayish brown (10YR 5/2) to a yellowish brown (10YR 5/4) color and is found on dissected plains and alluvial fans with a slope range of 9-40% (Crabb 1982:45-46).

The site is quite extensive and the majority of the buildings are still standing. Buildings include the original boy's bunkhouse (the Old Craig schoolhouse moved in from a few miles down the road), the Grover house, Frank's house, Clay and Gladys's main house, a coal shed, a two-seater outhouse, two chicken coops, a sheep barn, a horse barn, a cellar, a water cistern and windmill, two grain silo foundations. Three other poured concrete foundations remain, and one foundation was used for a propane tank in modern times. Many of the building were moved in from other locations including the town of Grover.

The sheep barn was structurally standing on the eastern end and somewhat intact at the time of site recording but has subsequently collapsed. The sheep barn was constructed in the vernacular style. The rectangular foundation is constructed from poured cement and measures 98.43 ft in length, by 78 ft in width, and has a height of 3.16 ft. The structure is front gabled, constructed out of milled lumber with split shake wood shingles with notched rafter joints. The structure's windows are single, closed sash style

and two windows are located on the east side. The walls have a simple 5" board cladding detail. The building is white and trimmed in red paint.

The horse barn was collapsed at the time of the site recording, but the foundation and milled lumber piles still remain. The horse barn was constructed in the vernacular style and was moved from Grover approximately three miles east of the historic Grover Depot. The foundation is constructed out of concrete, on the northern and southern end is a single area constructed out of bricks where the building sat on the bricks while the concrete foundation was poured. The foundation measures 42.65 ft in length, with a width of 35.43 ft, and a height of 49". The barn is constructed out of milled lumber. The building support system for the walls and roof is unknown.

The Boy's bunkhouse was moved three to four miles and originally functioned as the school house nearby (Dirk Hunter, personal communication, 2004). The structure has no formal foundation instead the building is just placed on level ground. The building style is vernacular, rectangular in shape and measures 14.34 ft by 9.42 ft. The building has a balloon frame and the walls are also constructed out of milled lumber. The roof is side gabled and constructed of split shake wood shingle boards in the open cave style. The structure has an over wood frame with exterior wall cladding. The boards are 5" thick and are vertical whereas the interior boards measure 1.4" in thickness and are constructed horizontally. The structure has three fixed windows and they face east/west. A single door frame is located on the southern end of the structure. The structure is deteriorated, but is still standing. The boys used this house as their bunkhouse until the "Grover house" was moved in (Dirk Hunter, personal communication, 2004). After the

"Grover house" was moved in, hired help stayed in the boy's bunkhouse, also known as the old Craig School house (Dirk Hunter, personal communication, 2004).

The Grover house was moved in with the horse barn from Grover in the early 20th century and was previously located approximately three miles east of the Grover Depot (Dirk Hunter, personal communication, 2004). The building may be the remains of the original Hall (family) residence (Dirk Hunter, personal communication, 2004). This building is constructed out of milled lumber, is single story, and has five rooms. The building is roughly square in shape with a cross gabled roof shape extended parallel rafter plate joints. The roof is constructed out of boards and overlain with split shake wood shingles. The structure is vernacular in style, and has a balloon frame, and simple wall cladding. Two boys, the landowner and his older brother John, lived in the two northern most rooms (Dirk Hunter, personal communication, 2004). The house measures 41.66 ft in length by 34.12 ft in width. One interior door has decorative crown molding with four panels, while the rest of the door panels have an architrave trim construction style. All doorknobs on this building have the old skeleton key locks. On the eastern wall are four fixed sash windows of various sizes. On the northern wall are two separate, four panel doors with a single window in between them. Dirk Hunter and his brother John used to occupy these two rooms (Dirk Hunter, personal communication, 2004). The western wall has four fixed sash windows of various sizes. The southern wall of the structure has two fixed sash double windows and a single door. The southernmost exterior has simple wall cladding with coursed shingles.

Frank's house was later moved from Gooseneck Pasture where the house originally had a poured concrete foundation (Dirk Hunter, personal communication,

2004). The structure is vernacular in style, rectangular in shape and has two rooms determined to be a kitchen and bedroom based on the artifacts within the structure. At the 1920's homestead location, the foundation is constructed of large wooden logs. The building measures 31.08 ft in length by 14.33 ft in width. The structure is one story and has a front gabled building plan. The roof is constructed out of milled lumber boards and is covered with both split and shakes wood shingles placed in an open cave construction style. The walls are constructed out of milled lumber with a balloon frame and simple cladding details for the walls. There are a total of five fixed windows located on all sides of the house. Two door frames are present and are located on the south and east sides of the house. The floor is constructed out of milled lumber. This house was occupied by the landowner's mother until the late 1960s or early 70s (Dirk Hunter, personal communication, 2004). In 2008, the structure began to fall.

The main house is a single story building with an irregular-shaped, rectangular ground plan with five rooms. The building has a wooden foundation, with a balloon frame, and measures 39 ft in length (east west) by 16 ft in width north/south. The roof is side gabled in design with split shake wood shingles and extended parallel rafter construction style. The walls have a simple cladding detail and are constructed of milled lumber 5" thick. Windows were originally a fixed, single sash style. Two windows and a single door are located on the southern wall. On the eastern wall, a single window is present on the northeast corner of the structure and overlooks the cellar and well. On the northern wall three fixed single sash windows are present and a single door. The western wall has a single fixed sash window. The building has been updated with running water, electricity, and a laundry room, and other modern wall treatments including drywall, and

an artificial wood veneer. Gladys lived in this building until the late 1970s. A cellar is located just to the northeast of the main house and is constructed out of poured concrete. The cellar measures 25.59 ft by 15.42 ft.

Four outbuildings are present including an outhouse, a coal shed, and two chicken coops. The outhouse measures 6.88 ft by 4.265 ft and contains two seats, one hole was smaller in diameter for the children. The coal shed is constructed out of milled lumber and was collapsed at the time of the initial site recording in 2004. The building measures 9.8 ft by 6.2 ft. A collapsed chicken coop is constructed out of milled lumber and measures 19 ft by 15.4 ft. The other chicken coop is also constructed from milled lumber, and measures 6.8 ft by 11.8 ft.

Two other historic poured concrete foundations are present and include two grain silos located on the southern end of the site. The grain silos measure 44.8 ft (538") in diameter. The three remaining circular poured concrete foundations were installed in the 1960s. The three circular poured concrete foundations have 12.08 ft, and 19.417 ft diameters. The third remaining foundation is rectangular in shape and was utilized for a propane fuel tank and measures 6.99 ft in length and 2.58 ft in width. Artifacts concentrated around the buildings and structures include farming equipment such as a manure spreader, a header barge, a grain thrashing machine, a yellow Minneapolis Moline combine, a corn lester, a corn ripper, a hay bailer, and two grain drills. Other artifacts include many cast iron and metal machinery parts from farming equipment, and vehicle parts. Common artifacts include aqua, amethyst, brown, green and clear glass and ceramics including porcelain, stoneware, and vitreous white bodied earthenware sherds. Miscellaneous artifacts include toy guns, marbles, kid sized boot heels, a small metal

animal trap, small padlocks, a saddle, a stove, a grain drill, nails, various flat metal fragments, and barbed wire fragments. Only artifacts located directly around the buildings were recorded since the associated artifact concentrations were so dense, and it was a representative sample of artifacts at the site. This site had been disturbed by grazing activities. Currently the historic site has cattle and horses grazing around it, and they are often inside the homestead enclosure.

The 1920s homestead site was tested for subsurface deposits. Cultural materials were noted from the surface to 20 cm below ground surface. Artifacts found during testing include aqua glass fragments, clear glass fragments, and brown glass fragments, stoneware sherds with Bristal and Albany glazes, porcelain sherds, nails, can fragments, miscellaneous metal fragments, metal wire fragments, and metal canning jar pieces. The thick sand layer above bedrock was hit at 40cm below ground surface. Testing was stopped due to many 5 cm levels lacking cultural deposits.

The next section will summarize the collection habits of Mr. Hunter, in addition to follow up questions regarding collecting behavior and the historic homesteads. This information was obtained from interviews, a questionnaire, and participant observation. Mr. Hunter's behavior habits have been observed for over six years.

Collection Habits Based on Interview Data

In 2002, Mr. Dirk Hunter had a total of 152 prehistoric and historic artifacts within his private collection. Fourteen projectile points have been added to the collection with provenience data as a result of this research. The majority of his artifacts are prehistoric projectile points. An initial questionnaire and interviews were conducted with

follow up questions in order to discover Dirk Hunter's collection habits. Analysis of the artifacts reveal that the private collection only contains local items that he has found on his private property, with the exception of one projectile point that his wife found, an obsidian point that was given to his father, and two eccentric notched white chert points that were given to him by a neighbor. Mr. Dirk Hunter does not buy, sell, or trade any artifacts.

Mr. Hunter has always had an interest in archaeology and continues to read books on the subject. As a young child (~6 years old), the landowner began a life-long hobby of collecting artifacts. When Mr. Hunter was younger, he liked to explore beyond the homestead looking for prehistoric artifacts. As Mr. Hunter matured, he visited the collection-sites for the sole purpose of artifact collecting. Other activities that resulted in incidental finds include farming, fence maintenance, hunting, or feeding animals. Two to three times a year, Dirk Hunter will specifically venture out to collect artifacts, typically in the spring time, and after a good rain or wind storm. Dirk G. Hunter targets known sites, bare ground, blowouts, the sides of washes and arroyos. Mr. Hunter's collection contains projectile points, early, middle and late stage bifaces, awls, and unique "interesting" material types in the forms of flakes. Other artifacts include ceramic sherds and a few historic artifacts consisting of a bone and coin necklace, a harmonica and worked metal objects. The artifacts are mainly collected from sites that have yielded surficial finds over many years. Dirk Hunter originally had the projectile points in a glass case, but the rest of the collection was in a box. Currently, the artifacts are accessioned in artifact cases as a result of this project. Within the collection, projectile points span the many time periods including the Paleoindian (11,000-10,000 BP), Middle Archaic (5000-

3000 BP), Late Archaic (3000-1800 BP), Late Prehistoric (1800-800 BP) and the Protohistoric (400-100 BP). Three cultural complexes are represented within the collection and include a Hell Gap Paleo point, Middle Archaic McKean projectile points and Late Prehistoric Avonlea projectile points. The next section will address the results of the questions introduced in the introduction.

Person-Centered Interviews and Participant Observation

Question 1, what types of artifacts are collected by the landowner? The landowner stated that he only collects prehistoric artifacts including projectile points and ceramic sherds. After recording the private artifact collection and watching Mr. Hunter's collection behavior at sites, it was observed that his collection is dominated by prehistoric artifacts. The artifact assemblage includes projectile points, awls, early stage bifaces, mid stage bifaces, late stage bifaces, unmodified flakes, edge modified flakes, utilized flakes, tested nodules, worked nodules, unifaces, and ceramics. However, his collection contains a few pieces of lithic debitage and historic artifacts. Although he used to collect historic artifacts, they are no longer of any interest to him. Currently, Mr. Dirk Hunter is only interested in prehistoric projectile points, complete ones are preferred.

Question 2 asks what tool types and material types exist in the private artifact collection. The landowner prefers to collect formal tool types that include awls, projectile points, early mid and late stage bifaces, unmodified flakes, worked/edge modified flakes, utilized flakes, manos, and ceramics. Historic artifacts include a segment from a metal wagon hoop in the shape of a large arrowhead, a necklace, a harmonica in a wooden case, a miscellaneous metal awl, and toy guns. Now Dirk Hunter specifically targets projectile

points when he revisits the sites to collect artifacts, he is more selective in what artifact types he collects.

Question 3, does the collection include both historic and prehistoric artifacts? The answer is yes, Mr. Hunter targets known site localities in search of prehistoric artifacts, while he does not target historic artifacts or historic sites because he is not interested in historic trash that he can relate to at his grandparents and parents homestead. Dirk's interest is primarily in prehistoric artifacts, explaining why prehistoric artifacts dominate the artifact collection.

Question 4 asks what type of sites does the land owner collect from and where are they located. All of the collection localities or sites are located on his land. The landowner collects from sites located on butte tops, hill tops, exposed areas, blowouts, arroyos, and drainages where artifacts become exposed by the wind (Dirk Hunter, personal communication, 2004). The site types that the artifacts are collected from include habitation sites, open camps, open architectural sites with associated lithic concentrations and historic isolates. Features typically include stone circles, hearths, heat altered rock concentrations, and associated lithic scatters. These sites and features are only representative of the sites that the landowner has collected from. It is likely that other expressions of site types are located on his private landholdings but he does not collect from them because he seeks prehistoric lithic formal tool types.

Question 5, what types of activities have occurred at the collection-sites over time? Mr. Hunter has engaged in dry land farming, ranching, and livestock grazing. In the last decade, Mr. Hunter has been specifically going to the site localities including Baugh, Claybanks, Flattop Butte, Indian Overlook, Rocky Point, and Tower Butte to

collect artifacts (Dirk Hunter, personal communication, 2004). Mr. Hunter does not seem interested in historic sites and tends to avoid historic homesteads.

Question 6, does the landowner go out specifically to collect artifacts or does he find them incidentally while performing farming and ranching activities? When Mr. Hunter was a child, he would go off to explore and collect prehistoric artifacts while he was supposed to be herding sheep. Dirk Hunter also recalls finding artifacts while he repaired barbed wire fence, walked around in plowed fields during farming and ranching activities as an adult. In recent years, Mr. Hunter has deliberately sought artifacts after rain and windy conditions (Dirk Hunter, personal communication, 2004). Occasionally isolates are found while he is out in a pasture chasing after loose horses, cattle or while repairing barbed wire fences (Dirk Hunter, personal communication, 2004). After retirement, Dirk specifically goes out to collect artifacts and if he hasn't found an arrowhead at one of the site localities within fifteen minutes he moves onto the next site.

Question 7, have the landowner's collection habits and behaviors changed over time? Initially as a child, Mr. Hunter would explore Rocky Point and other areas for artifacts while herding sheep, and conducting other chores. As an adult, Mr. Hunter would collect artifacts when they were incidentally found from farming and ranching activities. In his retirement, Mr. Hunter specifically goes out after rainstorms and windy conditions to search for artifacts at known site locations where he has had success in the past, and also in known topographic features that are likely to yield artifacts (Dirk Hunter, personal communication, 2004).

Question 8, what brings the landowner to the collection localities? The open camp sites have yielded diagnostic artifacts for decades. The sites have become familiar

to Mr. Dirk Hunter. The landowner has names for each site and some names are based on what they resemble topographically, or who previously owned the land. Dirk particularly likes to collect from Rocky Point and Tower Butte Site since he grew up near Rocky Point, and the Tower Butte site is close enough that he can ride his horse over to go look around and collect artifacts (Dirk Hunter, personal communication, 2004). The surface expressions have yielded artifacts from these sites for over six decades including many formal tools, the exposed deposits draws Mr. Hunter to these collection localities.

Question 9, how often are artifacts collected? Artifacts were collected about three times a year after rainstorms and heavy winds until the landowner retired. It has been observed that prehistoric artifacts are often collected when Mr. Hunter has free time or is bored. Artifacts are typically collected in the spring, summer, and fall due to nice weather conditions (Dirk Hunter, personal communication, 2004).

The following questions were addressed during survey, site recording, artifact analysis, and participant observation. The information could not be obtained through interviews alone. Many of these questions were addressed after survey and site recording.

Question 10, what types of features and artifact assemblages are present at the collection sites? At the open camp sites, prehistoric features include stone circles, hearths, fire cracked rock concentrations/ heat altered rock concentrations, lithic scatters, and faunal remains. Associated prehistoric artifacts include lithic debitage (angular debris, cores, tested nodules, worked nodules, flakes, microdebitage, etc.), ceramics, and lithic tools at prehistoric sites. Historic features include wells, historic dumps, and isolated historic trash discard localities. Historic architectural features located on Mr. Hunter's land include a bunk house, houses, chicken coops, barns, an outhouse, grain

silos, and a coal shed. At historic sites domestic artifacts and farming/ranching equipment are common. Artifact assemblages include glass fragments, ceramic sherds, nails, miscellaneous metal pieces, cans, shoes, marbles, and toy guns.

Question 11 asks does the landowner only have artifacts from his land or does he buy, sell, or trade artifacts? Mr. Hunter predominately has artifacts that he has collected from his private land excluding the point that was given to his father and the two eclectic points given to him by a friend. Mr. Hunter does not buy, sell, or trade artifacts. However, he does let certain individuals keep artifacts that they find on his land. A few hunters have found stone hatchets with the shaft still intact, but the artifacts could not be relocated amongst the ponderosa tree line after the hunt. Mr. Hunter is only interested in having artifacts that he has found, or that were found on his land (Dirk Hunter, personal communication, 2004).

Question 12, what is the landowner's knowledge of site locations? Does the land owner have predictive modeling for where sites will occur if so, what does he look for? Dirk Hunter knows various site localities that he has collected from for over 60 years. Dirk has developed a sense for where sites will be located based on his experience and intimate knowledge of the land. He specifically targets areas that contain bare ground spots including butte tops, the sides of washes and arroyos, blowouts, and known site localities. Mr. Hunter has demonstrated an intimate knowledge of the land and understands the needs of prehistoric people. He states that sites typically have good views, access to wood, and proximity to intermittent streams and drainages (Dirk Hunter, personal communication, 2004).

Question 13, how do sites located on private land compare to sites that archaeologists traditionally study? Sites located on private land have had the diagnostic artifacts collected from them for several decades similar to sites that archaeologists typically study on public land. However, the private artifact collections can provide general provenience, cultural and temporal information that can be attributed to the stone circle features. Paleoindian site types typically studied by archaeologists include open lithic, open camp, open architectural, sheltered architectural, stone quarry, sheltered camp, kill site, burial and isolated finds for the Paleoindian stage. Archaic site types typically studied by archaeologists include lithic sites, camp sites, architectural sites, quarry sites, kill sites, game processing/butchering sites, ceremonial sites, burials, rock art and isolates. During the Late Prehistoric stage archaeologists typically study open camps, open lithic sites, open architectural sites, sheltered architectural sites, sheltered camp, quarry, burial, game drive, isolated finds and/or a combination of the above. Archaeologists typically study open camps, open lithic scatters, open architectural, sheltered camps, sheltered lithic scatters, rock art, battlefields, trails and peeled trees from the Protohistoric period. Site types present on Mr. Hunter's private land include open architectural/habitation sites and historic homesteads. While the expected site types for the area include quarry sites, game processing/butchering sites, ceremonial sites, sheltered camps, burials, game drives, battlefields, trails, or peeled trees, none of these sites types are present in the survey area. A complete cultural resource inventory of the landowner's property would likely reveal more site types. The areas that were surveyed are biased by the landowner's predictive model and collection habits.

Question 14, what site types are located on private land? Prehistoric site types present on Mr. Dirk Hunter's private land include open architectural/habitation-sites, open lithic scatters, and faunal assemblages located in arroyos, at the base of a cliff or within washout geologic features. Historic sites include homesteads, historic dumps, and isolated historic trash discards events. It's important to keep in mind that these site types only include the site locations that artifacts were collected from and are a biased sample. The site types do not represent the expected variety of sites located in the project area.

Question 15, what do historic sites look like located on private land, and what types of buildings and artifacts are associated with homesteads? The homesteads on Mr. Dirk Hunter's land include some structures that are still standing and a few that are dilapidated, with large associated artifact concentrations. The 1909 homestead contained the main house, a well, a milk barn, and a barn that was later converted into a garage. The 1920s homestead contained horse and sheep barns, a bunk house, three main houses, two chicken coops, an outhouse, two grain silos, a coal shed, a well, and large associated artifact concentrations. Associated artifacts include farming/ranching equipment, vehicle/machinery parts, glass sherds, nails, ceramic sherds, miscellaneous metal fragments, can fragments, and miscellaneous domestic items like silverware, shoes, marbles, toy guns, and remnants of furniture. The landowner is not interested in small artifact scatters, or isolated dumping incidents, and therefore does not collect from these sites.

Question 16, who lived at the homesteads? Families with children lived at both homesteads. It was typical for families to be large, so that the children could help out

with the chores (Dirk Hunter, personal communication, 2004). The families practiced dry farming and ranching activities.

The 1909 homestead was occupied by two adults Thomas J and Anne Dea. They had four children including Zopher, Frank, Clay and Althea. The family practiced farming and ranching. The family raised dairy cows, chickens, saddle and work horses, and at times they also raised goats, sheep, mules, turkeys, and geese. After her father's death, Althea continued to live at the homestead where she raised her brother's child after his wife died in childbirth. Althea's uncle, George, came to live with her, and he occupied the main floor while Althea stayed in the basement of the house (Dirk Hunter, personal communication, 2004).

The 1920s homestead was occupied by Mr. Hunter's parents and children. Clay and his wife Gladys had eight children including Tom, Marian, Charles, Rodney, Mary-Ellen, John, Juanita, and the landowner/collector. Three of the children died in early childhood. The family practiced farming and ranching. They also raised goats, cows, horses, sheep, chickens, turkeys, domestic geese, bison, and mules (Dirk Hunter, personal communication, 2004).

Question 17, how long were the homesteads occupied? The 1909 homestead was occupied through the 1970s by Althea. The 1920s homestead was occupied until the 1990s by the landowner's mother, Gladys. (Dirk Hunter, personal communication, 2004). Both homesteads contain historic and modern archaeological deposits.

Question 18, what types of activities are represented by the homesteads based on the associated artifacts? Activities inferred from the artifacts include farming, ranching and domestic habitation. Farming and ranching activities are evident from

vehicle/machinery parts, barbed wire, and agricultural implements including a manure spreader, a header, a barge, a grain thrasher, a combine, a corn lester and ripper, a hay baler and two grain drills. Domestic artifacts related to the habitation include glass fragments, porcelain sherds, non vitreous white bodied earthenware sherds, stoneware sherds, cans, can fragments, nails, cosmetic containers, clothing, tobacco tins, children's toys, and furniture.

Question 19, asks what was learned from the interviews and the landowners collection behavior. The interviews and artifact collection supplemented the archaeological remains present at the various sites. The artifacts provided cultural and temporal affiliations for the prehistoric sites. This information changed site interpretations. The interviews added a humanistic touch through family stories of hardships that the early homesteaders faced. Information gleaned while Interviewing Mr. Hunter about his collection behaviors was supported by participant observation. It confirmed that Mr. Hunter's collection behaviors have changed over time, and that he only targets projectile points and ceramics now. It was learned that while time consuming, talking to private landowners about their collection habits at sites provides valuable information about the local archaeology, artifacts, other collectors, and temporal and cultural data that was not evident from visiting the site localities. While taphonomic processes affect sites, collector behaviors also change the archaeological record.

The next chapter will discuss what conclusions can be made based on the results of this investigation. The research from this project contributes to the archaeology of northeastern Colorado, and represents land that is not commonly visited by professional archaeologist. Working with collectors increases knowledge of local sites, provides

general provenience for collected diagnostic artifacts, and influences site interpretations. This research provides a model for artifact collecting behaviors. Formal tool types are often missing from sites because those artifacts are typically collected.

CHAPTER 6: CONCLUSIONS

This thesis started with the basic goal of documenting Mr. Dirk G. Hunter's private artifact collection and recording the various site [collection] localities. Additionally understanding Mr. Hunter's collecting habits, integrating general contextual information provided by Mr. Hunter with the archaeological record, the impact of collecting upon the archaeological record and site interpretation, and fostering a positive working relationship with a landowner/collector became focal points of this project. This chapter presents conclusions and interpretations of the artifact assemblages, sites, and collecting behavior of the landowner.

The research and publication resulting from this project contributes to the archaeology of northeastern Colorado. This collection was analyzed, and the site collection localities were documented as a result of this project. This research contributes to the general theory of archaeology by helping to develop a method for working with amateur archaeologists and collectors. It also provides information on behaviors of a collector, his knowledge of archaeological resources, what attributes he looks for in choosing locations to collect artifacts, (i.e. land forms, known collection locality, etc), and what type of artifacts are collected. This research model can be used to predict what types of artifacts one can expect to find on federal, state, and private lands that have been looted or collected, and help explain the lack of bifaces, formal tools, and diagnostic artifacts at many sites on the Plains. Artifact collecting is a hobby of many individuals

and it's important to understand how this behavior affects the archaeological record. Many features cannot be assigned to a cultural group or time period without the contextual information provided by diagnostic artifacts that have been collected from sites. The purposive sampling methods used to survey the landowner's property only include areas that the landowner has identified as having sites present. The archeological survey and site inventories fail to represent the variety of landscape types, diversity of site types, and full range of archaeological resources that one would expect to find distributed over the landowner's property and northeastern Colorado.

Archaeology of Northeastern Colorado

The landscape and ecological resources of northeastern Colorado have attracted various cultural groups that are archaeologically identifiable, and are discussed within the regional culture context in terms of a stage-period structure. Chapter three synthesized a Plains regional context for northeastern Colorado and revealed that five broad cultural periods are represented in the project area including the Paleoindian period, the Archaic period, the Late Prehistoric period, the Protohistoric period, as well as the Historic period. The goal in developing a regional context for northeastern Colorado is to address two questions: (1) *What do we know about material culture and lifeways of the region?* and (2) *What type of archaeological resources are expected in the project area?* Archaeologists use absolute dates, site features, spatial patterns of features and artifacts, and associated artifacts including diagnostics to define a culture group by their typical site structure and associated material culture. Based on previous cultural resource inventories and research conducted in northeastern Colorado, archaeologists can

reasonably expect to find similar site types and artifact assemblages within the project area.

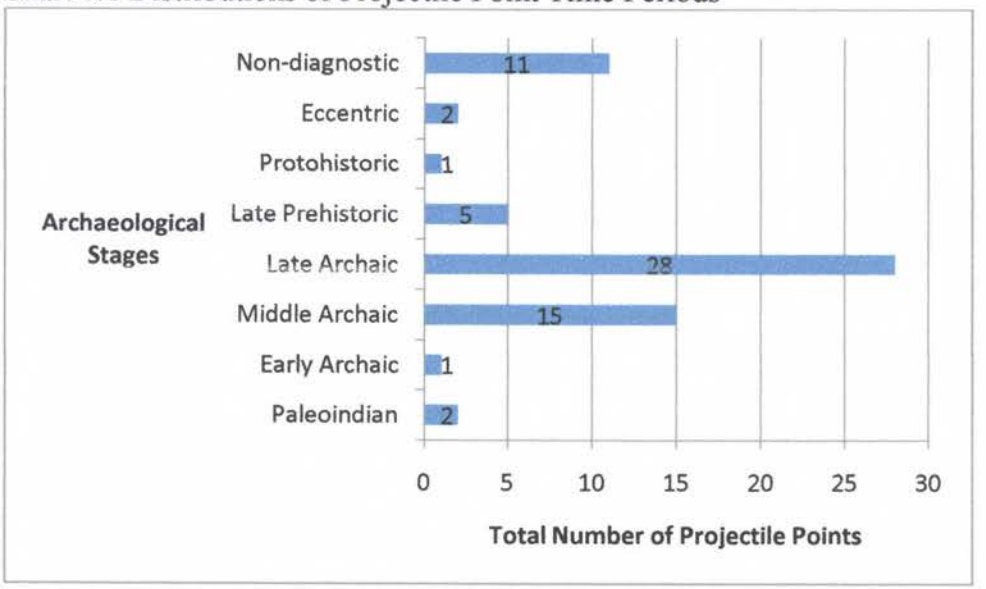
Archaeology of the Project Area

Chapter three and the previous section addressed what we know about material culture and lifeways, and what type of archaeological resources are located in the project area. This research recorded two historic homesteads, four prehistoric open camps, a prehistoric lithic scatter with a single hearth feature, a washout with bison faunal remains, a single bison bone with cut marks, a bison bone concentration at the base of a cliff where it adjoins to an arroyo with no indications of human activity at the site. Two historic homesteads were investigated and include associated outbuildings and artifact scatters.

Prehistoric sites in the project area include open camps and faunal concentrations. Prehistoric architectural features are dominated by stone circles and hearths. Most of the open camps are located on top of buttes offering good views of approaching wildlife that contained ponderosa and limber pine forests at one time. The exception is an open camp with stone circle features located above an arroyo on a west/northwest facing hill slope. One faunal concentration was found at the base of a very tall cliff in an arroyo, while the other was found in a blowout, or highly eroded area with exposed bedrock. Prehistoric features for the project area include stone circles, hearths, and fire cracked rock concentrations. Artifacts associated with the open camps include projectile points, awls, gravers, final stage bifaces, mid to late stage bifaces, early stage bifaces, worked and utilized flakes, unifaces, primarily secondary and tertiary flakes, few tested nodules, few cores, and angular debris. Faunal remains consist of bison and unknown large

artiodactyls. A single rib fragment containing green bone breakage and cut marks demonstrates hunting, processing, and consumption of large artiodactyls within the project area. Three manos are represented within the artifact assemblage and provide evidence of floral processing as part of the subsistence strategy in addition to hunting. Many of the sites contain fire cracked rock concentrations that might represent floral processing activities. Prehistoric activities within the project include hunting, processing and consumption of both floral and faunal foods, and the manufacture and maintenance of tools to accomplish these tasks as evidenced by the artifact assemblage. Artifacts within the private artifact collection include Paleoindian, Early Middle and Late Archaic, Late Prehistoric, Protohistoric, and eccentric projectile points. See Bar Graph 6.1 below for the distribution of projectile points for the various time periods. Cultural complexes represented by the diagnostic projectile points include McKean, Avonlea, and Hell Gap.

Chart 6.1 Distributions of Projectile Point Time Periods



It was expected that the prehistoric sites in the project area would include quarry sites, rockshelters, kill sites, game processing/butchering sites, and burials. However, no evidence of these site types were found most likely a result of the landowner's bias towards sites located on bluffs that are windblown exposing the cultural deposits that often contain formal tools. At the site localities, often no diagnostic artifacts were present making consideration of the artifact collection imperative for assigning cultural and temporal affiliations. Projectile points and formal tools are often missing at sites because they are coveted, collected artifacts. Collected tool types include awls, gravers, early and late stage bifaces, projectile points, utilized flakes, worked flakes, and unifaces. When sites located on private, state and federal lands are investigated, often times only lithic debitage, few tools, and features remain because the diagnostic artifacts have been collected. This project demonstrates the need to work with collectors or amateur archaeologists as they often collect the only cultural or temporally diagnostic artifacts for many site localities.

Technological organization refers to ways in which adaptive strategies were developed and used for the manufacture, transport, and eventual discard of stone tools necessary for obtaining economic products from particular sets of resources. A basic premise of many technology-based, lithics-mobility studies is that more highly mobile hunter-gatherer groups, due to constraints of time, energy, local or regional lithic material availability, and other factors, rely more heavily on bifacial tools or preformed cores. In contrast, less mobile groups with more location-based time tend to manufacture and use more expedient and easily produced flake tools. Examination of the private artifact collection and sites indicate that mixtures of expedient and maintained formal tools are

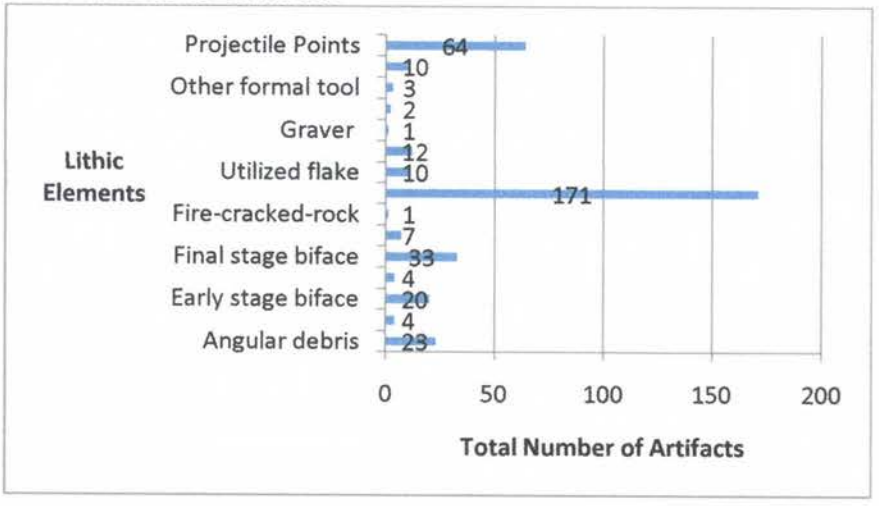
present within the lithic assemblage. The artifacts suggest a lithic raw material utilization strategy where abundant, low quality local materials are made into expedient tools and higher quality materials, either imported or local, are worked into bifaces. The lithic assemblage is composed mainly of lower quality local materials including chert, chalcedony, petrified wood, and quartzite. Bifaces made from lower quality lithic materials are dominated by quartzite. Bifaces are also typically large and thick, and exhibit irregular margins. Known material types found within the project area include quartzite, chert, chalcedony, petrified wood, Flattop and Hartville chert, and small quantities of obsidian. The majority of collected artifacts are formal tools that are comprised of local higher quality materials including chert, chalcedony, flint, jasper, and fine grained quartzite. The formal tools are often heavily reworked, or are in an exhausted state preventing reuse of the artifact. Small finely crafted, finished chipped stone formal tools were not as widely represented in the archaeological record as the abundance of chipping debris and poorly formed expedient tools that were commonly discarded at the site localities. This research suggests that formalized tools were transported with the people as part of their tool kit, while many primary, secondary and tertiary flakes, and tested nodules represent the lithic debitage resulting from expedient tool manufacturing and tool maintenance activities. Lithic debitage is more plentiful at sites than formal tools as one would expect given the site features, collection behaviors of the landowner, and taphonomic processes areas. See Table 6.1 below for data. Tool types for the project area including the private collection are displayed below in Table 6.1 titled Lithic Assemblage, Number of Elements and Percentage of Assemblage for all Prehistoric sites

within the project area, and Chart 6.2 titled Lithic Elements. Also see Appendix G.1, Table 6.6 Artifact Data.

Table 6.1 Lithic Assemblage, Number of Elements and Percentage of Assemblage for All Prehistoric Sites within the Project Area

Lithic Assemblage	Total # of EL	% of Assemblage
Angular debris	23	6.30%
Awl	4	1.10%
Early stage biface	20	5.48%
Late stage biface	4	1.10%
Final stage biface	33	9.04%
Core	7	1.92%
Fire-cracked-rock	1	0.27%
Flake	171	46.85%
Utilized flake	10	2.74%
Worked flake	12	3.29%
Graver	1	0.27%
Tested nodule	2	0.55%
Other formal tool	3	0.82%%
Uniface	10	2.74%
Projectile Points	64	17.81%
Total	365	100.000%

Chart 6.2 Lithic Elements



The dominant lithic material type for chipped stone artifacts within the private artifact collection and site inventories is chert, followed by chalcedony, quartzite, flint,

jasper, obsidian, and petrified wood. Lithic raw material is an important component of the subsistence technologies employed by mobile individuals. Studies from both ethnographic and archaeological lithic assemblages suggest that formalized tool kits are associated with high residential mobility and expediency dictated tools kits, in most cases, are related to groups employing reduced mobility strategies. Chert, chalcedony, flint, jasper, obsidian, petrified wood and high quality quartzite were preferred by the prehistoric inhabitants of Northeastern Colorado for formal tool production. These lithic materials can be found locally, or were imported. See Table 6.2 Material Type, Total Number of Chipped Stone Elements, and Percentage of Assemblage for all Prehistoric Sites below.

Table 6.3 Material Type, Total Number of Chipped Stone Elements, and Percentage of Assemblage for all Prehistoric Sites

Material Type	Total # of CS	% of Assemblage
Chert	123	33.70%
Chalcedony	115	31.51%
Flint	20	5.48%
Jasper	11	3.01%
Obsidian	8	2.19%
Petrified wood	2	0.55%
Quartzite	86	23.56%
Total	365	100.00%

Chart 6.4 Material Types and Total Number of Artifacts

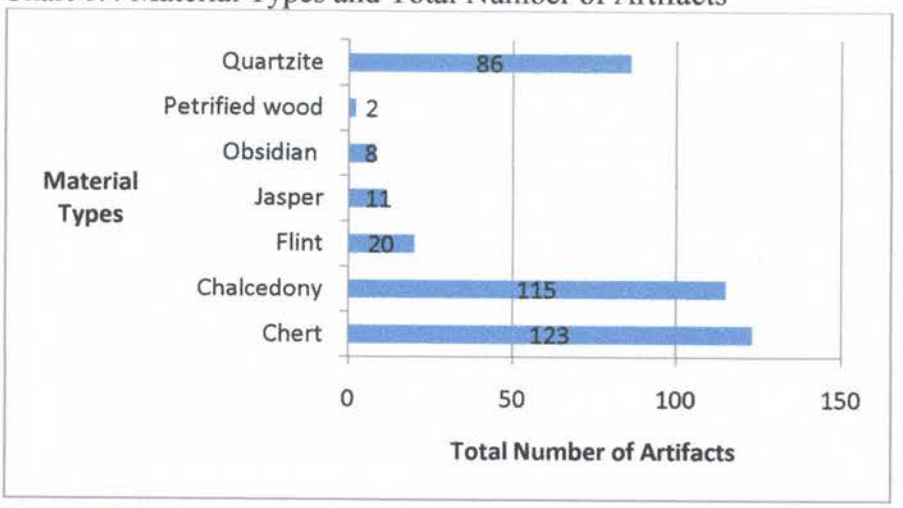
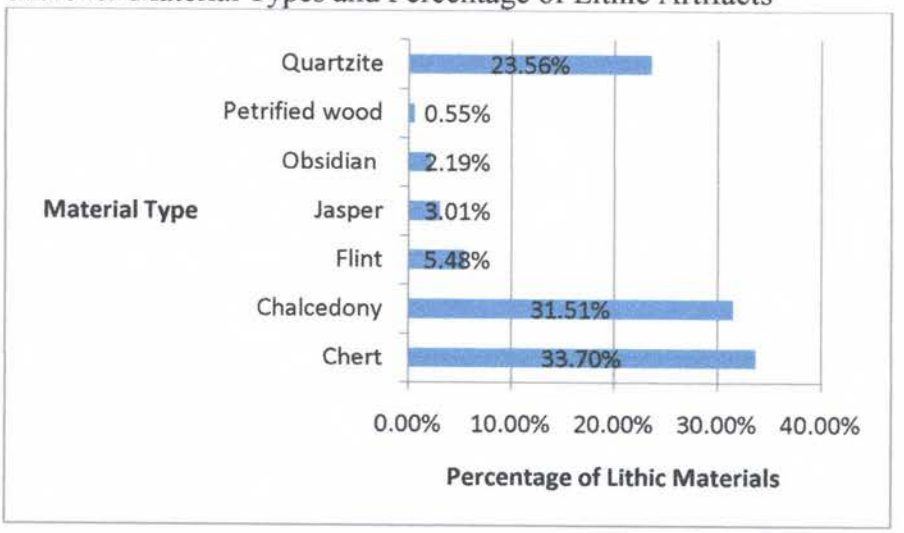


Chart 6.5 Material Types and Percentage of Lithic Artifacts



Ceramics

Non-diagnostic cord marked exterior body ceramic sherds are present within the collection and are somewhat rare for the area. The presence of ceramics typically indicates a communal, sedentary lifestyle and practice of horticulture. Flattop Butte, Indian Overlook, and Rocky Point site localities all contained ceramics and architectural

features. Ceramic thickness averages 5.79 mm; thickness varies between 0.4mm to 9.2 mm on all 25 fragments. The texture of the ceramics is course and friable. The paste color ranges from a neutral tan to brown (5YR 4/3-6/3) and a neutral light grey to a very dark grey (7.5YR 6/1-3/1). The temper is composed of sand, sand sized sub-angular quartz fragments, and sub-angular crushed rock. The clay also contains a small amount of muscovite mica. Fracture patterns are uneven and irregular on the ceramic sherds. The exterior surface is finished with obliterated cord marks. The interior surface is roughly smoothed. The variation in obliterated cord marks are the only form of decoration. No cultural affiliations could be determined.

Stone Circles

Stone circle features are the only major prehistoric architectural remains (excluding rock shelters) identified so far in the South Platte drainage of northeastern Colorado (Morris et al. 1983). Most researchers believe that stone circles are the archaeological manifestations of hide lodges, commonly referred to as tipi rings (Banks and J. Signe Snortland 1995:125). Tipis served as portable shelter from the elements. Stone circles vary in size and can be found isolated or in large concentrations. Stone circles are found in the plains, in the foothills/ hogbacks, and in the mountains, but they tend to be concentrated near water, fuel sources, good hunting areas, edible plants and other resources. Stone circles may have single or several courses, have walls constructed of piled up stones (Malouf 1961), or may be of unusual size with lines of rocks inside that act as medicine wheels (Kehoe 1958).

Archaeological and ethnographic data demonstrate that tipis first appeared at least 5,000 years ago and continued to be used into the historic period (Brasser 1982; Brumley 1983:184). From ethnographic histories it is known that rocks were placed around the base of the tipis during windy conditions, or when the ground was too frozen for wooden stakes (Bradley 1900; Dempsey 1956; Ewers 1955; Lewis 1942). Other anchoring strategies for tipis involve using bison bone pegs (Finnigan 1982:9), sod blocks (Kehoe 1960:424), logs (Wilson 1924:243), and after European expansion and trade, wooden pegs fashioned by steel axes (Adams 1983; Grinnel 1923:51; Wissler 1908:481). Ring structures in northeastern Colorado usually range from two and a half to five meters (Morris et al. 1983). It has been suggested, but not proven, that occasional sites with consistently larger rings reflect horse transportation mechanisms (Morris et al. 1983).

Most stone circle sites are highly visible, but also have a tendency to lack artifacts other than the tipi ring rocks themselves (Burley 1990:343). Elizabeth Morris (Morris et al. 1983) notes that stone circles in Colorado have small surface assemblages that typically lack projectile points, ceramics, and other diagnostic artifacts that would provide typological chronological placement. Morris explains the paucity of artifacts to a nomadic lifeway that prevents an accumulation of cultural goods in dwelling sites, as well as agricultural practices that destroy surface manifestations at sites, and looting (Morris et al. 1983). Data from this project supports the paucity of artifacts at open camp sites with stone circle features.

Eighty seven stone circles features were recorded as a result of this project. The average diameter of the stone circle features is 3.77 m (12.37 ft) north-south by 3.71 m

(12.17 ft) east-west. Some of the stone circles have interior hearths while others have exterior hearths. The largest stone circle feature measures 5.84 m (19.16 ft) north-south by 5.3 m (17.39 ft) east-west. The smallest stone circle feature measures only 1.3 m (4.26 ft) north-south by 1.0 m (3.28ft) east-west. This smallest feature lacked heat altered rock and no potlids were present on the stones, so it is not likely a hearth feature and its function is unknown. The majority of stone circles are incomplete. No cultural affiliations can be obtained by the orientation of a doorway because the stone circle features were too fragmentary to draw such conclusions. Stone circle features are located on butte tops, and northeast hill tops within the project area. The stone circles typically are clustered in small groups of two to five possibly representing small bands.

Historic Sites

Two historic homesteads were recorded in the project area. According to the landowner, Weld County land patent records, and census data the earliest homestead was occupied in 1909, but the homestead certificate was obtained in 1913. At the 1920s Homestead, the land patent was granted in 1916. The 1920s Homestead is where the landowner grew up. The landowner generally does not collect historic artifacts because he views them as trash, and can relate to the artifacts. The only historic artifacts within the private artifact collection include a necklace that was given to the landowner's mother at a Wild West Show, a metal awl found by the landowner/collector, two toy guns that belonged to the landowner and his brother, an old harmonica that the collector found with a homemade wooden case, and a large metal artifact made from part of an old wagon hoop in the shape of a large arrowhead (Dirk Hunter, personal communication, 2004).

The homestead features include houses, wells, barns (cow, sheep and horse), a milk shed, a coal shed, chicken coops, cellars, outhouses, fences, and a bunkhouse that was a one room school house. Artifacts associated with the homesteads include vehicle/machinery parts, and agricultural/ranching implements. Domestic items include glass sherds, cans and can fragments, porcelain sherds, non-vitreous white bodied earthenware sherds, stoneware sherds, clothing (shoes, buttons) recreational items (marbles, toy guns, tobacco products), cosmetic containers, medical containers, alcohol and beverage containers, and remnants of furniture. Miscellaneous items included pad locks, some small traps, and remnants of an old wood saddle. The historic sites found within the project area fit the expectations based on the regional cultural context discussed in Chapter 3.

Sites located on Federal and Private Land

As mentioned previously, prehistoric site types within the plains of northeastern Colorado, and specifically the Pawnee National Grassland, include: open lithic scatters, open and sheltered camps, rockshelters, quarry sites, kill sites, processing/butchering sites, burials, open architectural sites, sheltered architectural sites, and isolates. Prehistoric artifacts include cores, angular debris, tested nodules, primary stage flakes, secondary stage flakes, tertiary stage flakes, worked flakes, utilized flakes, early stage bifaces, middle stage bifaces, late stage bifaces, awls, gravers, projectile points and ground stone. Typical historic sites within the Pawnee National Grassland include abandoned townsites with homestead remains, depressions and associated artifact assemblages, isolated dumps, and small isolated artifact concentrations. As of 2008, the United States Department of Agriculture (USDA) Forest Service had recorded over 438

prehistoric sites in the Pawnee National Grassland (Lawrence Fullenkamp, personal communication, 2008). Seventy-eight percent of these sites recorded in the Pawnee were prehistoric (Lawrence Fullenkamp, personal communication, 2008). A total of ninety nine historic sites have been recorded in the Pawnee National Grassland as of 2008 (Lawrence Fullenkamp, personal communication, 2008). Eighteen percent of the sites located on the Pawnee are historic (Lawrence Fullenkamp, personal communication, 2008). Twenty-three multicomponent sites had been recorded as of 2008 by the Forest Service in the Pawnee National Grassland (Lawrence Fullenkamp, personal communication, 2008). Multicomponent sites represent only four percent of the recorded archaeological resources in the Pawnee National Grassland (Lawrence Fullenkamp, personal communication, 2008). Isolated finds were also dominated by prehistoric artifacts. In fact, ninety three percent of the isolates recorded on the Pawnee were prehistoric (Lawrence Fullenkamp, personal communication, 2008)

Site types and artifact assemblages are similar on private lands and federal lands with one exception. On the Pawnee National Grassland, abandoned structures were burned and torn down at the time of abandonment in order to deter squatters, leaving a small archaeological footprint in comparison to historic sites located on private land that often contain structural remains including standing structures. Typically, historic remains on federal lands only include sparse evidence of foundations and building materials, depression features are common, along with associated artifact concentrations where as sites located on private lands often have standing structures. The artifact assemblages from historic sites on private and federal lands are similar except that at the private land holdings the diagnostic historic artifacts remain. It is likely that prehistoric artifacts are

favored over historic artifacts for collection on federal, state, and private lands. On both federal and private land investigated during this project, prehistoric formal tools including projectile points are largely absent. The absence of formal tools on federal lands within the Pawnee National Grassland could be a result of collection activities. For years sites have been collected from despite the illegality of such actions. Legislation and enforcement has been implemented to deter artifact collections from federal and state lands, but sites continue to be looted largely because they are not monitored, and legislation is not enforced. This project demonstrates that collectors can provide useful information regarding local sites and artifacts. It is necessary to work with collectors because they often find site localities and alter the archaeological record by collecting the cultural and temporally diagnostic artifacts.

Collection Behaviors of the Landowner/Collector

Upon questioning the landowner, it became clear that Mr. Hunter mainly collected projectile points. However, from the artifact collection it became clear that he also collected early stage, mid stage, late stage and finalized bifaces, flakes, and eccentric points made of interesting lithic materials. The percentages of chipped stone elements are summarized in Table 6.1. In general, the landowner does not collect from the historic sites on his land, as he is not interested in historic trash that he can relate to at his grandparents, or parents homestead that he grew up on. Prehistoric artifacts were well represented, but only a few historic artifacts were in the collection.

Whether it's the excitement from the find, or the data that it reveals to archaeologists both amateur and academic archaeologists are interested in individual

artifacts and sites. However, many amateur archaeologists or collectors like to collect artifacts without taking any contextual information including provenience. Despite being introduced to academic questions regarding the cultural and temporal context, subsistence strategies, artifact assemblages, settlement patterns, etc., the landowner continues to collect the artifacts as he has in the past because he is not interested in the same questions as academic archaeologists. The land owner is not interested in site interpretations. He is only interested in how old the artifact is, or more accurately how long the artifact laid there. The landowner/collector fails to comprehend the damage that is caused to the site by collecting the diagnostic artifacts from the various site localities.

The landowner initially collected artifacts during dryland farming and livestock grazing activities, but he also made excursions based solely on collecting artifacts starting at a young age. His collection behaviors have changed over time. The landowner/collector had found artifacts while working the land, but now he also specifically ventures out to the site localities to collect artifacts. Artifact collecting has increased with retirement. The collector targets butte tops, hill tops, sides of washes, blow outs, bare ground, exposed areas, arroyos, and land exposed to high winds that tend to expose the artifacts. From collecting so long, the landowner can predict site localities and he frequently visits open camp sites as they have provided diagnostic artifacts over the years of collecting. Before retirement, the landowner collected artifacts approximately three times a year after rainstorms, snow storms or after heavy winds. In his retirement, the landowner frequently goes out to look for artifacts and if he hasn't found a point within 15 minutes, he stops and goes to other known collection localities.

During the course of this project, it took a long time to gain the trust of the Mr. Hunter. Initially there was a fear that my research might put the artifact collection at risk. But once a relationship was built, the landowner was more willing to divulge information about the sites and his collecting behaviors. When conducting this type of research that combines both cultural and archaeological data collection, it is important to build social capital with the informant. It is important to develop a trusting relationship and this can be done by becoming part of the collector community. Building social capital can be accomplished by participating in new things such as learning how to build fence, picking up bales of hay, serving lunch in the field during harvest, learning how to start and drive tractors, riding horses, playing prairie golf, and attending rodeos with the landowner, his family and friends.

Avocational Archaeologists/Artifact Collectors

This research contributes to understanding collection behaviors of surface hunters, artifact collectors, pothunters, and looters. A method was developed for documenting unprovenieced artifact collections and archaeological resources located on private land. This project provides documentation of archaeological sites in Northeastern Colorado that have not been previously inventoried. This project also addresses Mr. Hunter's collection habits and behaviors and explains why formal tools often times are not present at the archaeological sites. Data on artifact collection behavior and habits helps to illuminate the possibility of why these artifacts may be lacking from other prehistoric sites. This research has demonstrated that amateur or avocational archaeologists have a profound impact on the archaeological record and that they also possess a tremendous

knowledge of local sites, artifacts, and other collectors and collections. Understanding collection behavior is important because so many people have collected in the past, and continue to collect artifacts. This study suggests that projectile points are the most coveted of the prehistoric artifacts. This research has demonstrated that private artifact collectors target known site localities, have knowledge of local archaeological sites types and site locations, recognize prehistoric and historic artifacts, and are able to identify prehistoric architecture including stone circles. It has been demonstrated that artifact collectors are able to recognize and predict where prehistoric sites and historic sites are likely to be located in the local landscape. Collecting artifacts adversely affects the archaeological record and site interpretations at both prehistoric and historic sites.

Ignoring the community of artifact collectors and their knowledge about sites is simply not productive especially since many prehistoric sites are found by collectors. It is in the best interest of archaeology to work with artifact collectors because they live and collect in areas that archaeologists rarely visit. Without interaction and cooperation from private artifact collectors, archaeologists will never benefit from their knowledge accumulated over years of artifact hunting. The willful ignorance of collection behaviors leads to a very biased perspective on the archaeological record because collectors alter the surface expressions of sites by removing cultural material similar to other natural processes.

Future Research

Future research for the area could include interviewing more collectors to learn about their collecting behaviors and collections, provided that the collections were legally

obtained. Faunal remains could be more intensely analyzed. Broader surveys could reveal a greater variety of site types located on private land rather than representing only the collection localities. Complete cultural resource inventories of the private land holdings would also illuminate local chronologies, lithic procurement and preferential raw material selection strategies, lithic technology, and resource exploitation patterns. It would be ideal to use a high accuracy GPS unit to record each individual rock within each individual stone circle feature to address issues of settlement patterns, and site location variables.

Some private artifact collectors are interested in learning about local archaeology. In order to promote stewardship of archaeological resources, future efforts should be aimed at education and public outreach. Resources are available for public outreach and education through local clubs like Colorado Archaeological Society. In order to promote stewardship of cultural resources, educational outreach should begin at a young age within local school systems and continue from grade school through high school. In addition, programs put on by local chapters such as Colorado Archaeological Society have the ability to reach local communities and promote stewardship of archaeological sites and resources to a diverse group of people while providing educational opportunities that are positive and nonthreatening.

REFERENCES CITED

Adair, M.J.

1988 *Prehistoric Agriculture in the Central Plains*. University of Kansas Publications in Anthropology 16, Lawrence, Kansas.

Adams, Gary.

1983 Tipi Rings at York Factory: An Archaeological-Ethnographic Interface. In Microcosm to Macrocosm: Advances in Tipi Ring Investigation and Interpretation, edited by L. Davis. *Plains Anthropologist Memoir 19*, (28): 7-15.

Agenbroad, L. D.

1978 Cody Knives and the Cody complex in Plains Prehistory: A Reassessment. *Plains Anthropologist* 23 (80):159-161.

Ahler, S.A.

1977 Lithic Resource Utilization Patterns in the Middle Missouri. Missouri *Archaeological society Research Series No. 8.* Columbia: Missouri Archaeological Society.

Amick, D.S. and R.P. Mauldin (editors).

1989 *Experiments in Lithic Technology*. Bar International Series 528, Oxford.

Anderson,J.L., L.C. Todd, G.R. Burgett, and D.J. Rapson.

1994. *Archaeological investigations at the Massey Draw Site (5JF339): Archaic Occupation along the Rocky Mountain Front Range, Jefferson County, Colorado.Colorado* Department of Transportation Archaeological Research Series, No. 3, Denver

Andrefsky, William Jr.

1998 *Lithics: Macroscopic Approaches to Analysis*. Cambridge University Press, Cambridge.

Antevs, E.

1955 Geologic-Climatic Dating in the West. *American Antiquity* 20(4):317-335.

Arthur, G.
1975 *An Introduction to the Ecology of Early historic bison hunting Among Northern Plains Indians*. Paper No 40, National Museum of Man Mercury Series, Archaeological Survey of Canada, Ottawa.

Axelrod, D.I.
1985 Rise of the Grassland Biome, Central North America. *Botanical Review* 51:163-201.

Ball, William P.
1986 *Early History of Crow Creek*. Pony X-Press, Cheyenne Wyoming.

Bamforth, Douglas B.
1988 *Ecology and human Organization on the Great Plains*. University of Nebraska, Lincoln Nebraska. Plenum Press, New York and London.

Banks, Kimball and J, Signe Snortland.
1995 Every Picture Tells A Story: Historic Images, Tipi Camps, and Archaeology. *Plains Anthropologist* 40(152):125-144.

Banning, E.B.
2002 *Archaeological Survey Manuals in Archaeological Method, Theory and Technique*. Klower Academic/ Plenum Publishers, New York.

Benedict, James. B.
1979 Getting Away From if All: A Study of Man, Mountains and the Two-Drought Altithermal. *Southwestern Lore* 45(3):1-12

Benedict, J.B. and B.L. Olson
1978 The Mount Albion Complex: A Study of Prehistoric Man and the Altithermal. *Center for Mountain Archaeology*, Research Report No. 1, Ward, Colorado.

Bernard, H. Russel.
1994 *Research Methods in Anthropology* Second Edition. Sage Publications, Inc. pp. 1 36-165; 208-237; 237-256.

Bernard, H. Russell.
1998 *Handbook of Methods in Cultural Anthropology*. Altimira Press, A Division of Sage Publications Inc., Walnut Creek.

Binford, Lewis.R.
1977 Forty-seven Trips: A Case Study in the Character of Archaeological Formation Processes. In *Stone tools as Cultural Markers: Change, Evolution and Complexity*, edited by R.V.S. Wright, pp. 24-36. Australian Institute of Aboriginal Studies, Canberra.

Binford, Lewis.R.
1978 *Nanamuit Ethnoarchaeology: A Case Study in Archaeological Formation Processes*. Academic Press.

Binford, Lewis.R.
1980 Willow Smoke and Dog's Tails: Hunter-Gatherer Settlement Systems and Archaeological Site Formation. *American Antiquity* 45 (1) 1-17.

Binford, Lewis.R.
1981 *Bones, Ancient Men and Modern Myths*. Academic Press, New York.

Binford, Lewis.R.
1991 When the going gets tough, the tough get going: Nanamiut local groups, cmapgin patterns and economic Organization. *In Ethnoarchaeological Approaches to Mobile Campsites*, edited by C.S. Gamble and W.A. Boismier, pp. 25-137. International Monographs in Prehistory, Ethnoarchaeological Series 1.

Bock, J. H., W.D. Bowman and C. E. Bock.
1991 Global Change in the High Plains of North America. *Great Plains Research* 1(1):283-301.

Bond, G., B Kromer, J. Beer, R. Muscheler, N.E. Evans, W. Showers, S. Hoffman, R. Lotti-Bond, I. Hajads; G. Bonani.
2001 Persistent Solar Influence on North Atlantic Climate during the Holocene. *Science* 294:2130-2136.

Borchert, J. R.
1971 The Dust Bowl in the 1970s. *Annals of the Association of American Geographers* 61(1):1-22.

Bradley, James H.
1900 *Affairs at Fort Benton*. Montana Historical Society Contributions 3.

Branton, Nicole.
2007 "Even the Damn Weather is Going Democratic": the Archaeology of Homesteading's End on the Pawnee National Grassland. Paper presented at "Homesteading reconsidered" 33rd Interdisciplinary Symposium, Center for Great Plains Studies, University of Nebraska, Lincoln.

Brasser, Ted J.
1982 The Tipi as an Element in the emergence of Historic Plains Indian Nomadism. *Plains Anthropologist*, pp. 27-88.

Brumley, John H.
1983 An Interpretive Model for Stone Circles and Stone Circle Sites within Southeastern Alberta. *In Microdosm to Macrocosm: Advances in Tipi Ring Investigation and Interpretation*, edited by L. Davis. Plains Anthropologist Memoir 19, 28:171-191)

Brunswig R.H. Jr.
1992 Paleoindian Environments and Paleoclimates in the High Plains and Central Rocky Mountains. *Southwest Lore* 58 (4): 5-23.

Brunswig R.H. Jr.
1996 *Paleoenvironmental and Cultural Change in Northeastern Colorado's Late Archaic through Middle Ceramic Periods*. Ph.D. dissertation, Department of Anthropology, University of Colorado, Boulder.

Bryson, R.A., D. A. Baerreis, and W. M. Wendland
1970 The Character of the Late Glacial and Post Glacial Climatic Changes. In *Pleistocene and Recent Environments of the Central Great Plains*, edited by W. Dort, Jr. and J.K. Jones, Jr., pp 53-74. Department of Geology, University of Kansas, Special Publications 3.

Bryson, R.A. and W. M. Wendland.
1974 "Dating Climatic Episodes of the Holocene". *Quaternary Research* 4: 9-24

Burger, Oskar.
2002 *A Multi-scale Perspective for Archaeological Survey*. Published Master's thesis, Department of Anthropology, Colorado State University, Fort Collins.

Burley, David V.
1990 Tipi Rings and Alberta Prehistory: Toward a Historical and Critical Review of Legislated Archaeology. *Plains Anthropologist* 35:343-357.

Burris, Lucy.
2006 *People of the Poudre An Ethnohistory of the Cache La Poudre River National Heritage Area, AD 1500-1880*. Published by National Park Service, U.S. Department of the Interior; Friends of the Poudre; Cache la Poudre River National Heritage Area.

Butzer, Karl W.
1982 *Archaeology as Human Ecology: Method and Theory for a Contextual Approach*. Cambridge University Press, London.

Canouts, Veletta and Francis P. McManamon.
2001 Protecting the Past for the Future: Federal Archaeology in the United States. In *Trade in Illicit Antiquities: The Destruction of the World's Archaeological Heritage.* McDonald Institute for Archaeological Research, University of Cambridge Press, Cambridge pp. 97-109.

Cassells, Steve.
1983, 1997 The Archaeology of Colorado. Johnson Printing, Boulder.

Chronic, John and Halka Chronic.
1972. Prairie Peak and Plateau: A Guide to the Geology of Colorado. Colorado Geological Survey Bulletin 32. Denver, Colorado.

Clarke, D.L.
1973 Archaeology: the loss of innocence. *Antiquity* 47, pp. 6-18.

Crabb, James A.
1982 *Soil Survey of Weld County Colorado: Northern Part.* U.S. Department of Agriculture, Soil Conservation and Forest Service, Washington D. C..

Davis, Hester A.
1991 Avocational Archaeology Groups: A Secret Weapon for Site Protection. Featured In *Protecting the Past*, edited by George S. Smith and John E. Ehrenhard,pp. 175-180, CRC Press, London.

Davis L and M Wilson.
1978 *Bison Procurement and Utilization*: A Syposium. Memoir 14, Plains Anthropological Society.

Dempsey, Hugh A.
1956 Stone "Medicine Wheels"-Memorials to Blackfoot War Chiefs. *Journal of the Washington Academy of Sciences* 46:177-182

Diffendal Jr. R. F.
1991 Plate Tectonics, Space, Geologic Time and the Great Plains. *Great Plains Quarterly* 11:83-102.

Doesken Nolan, J and Thomas B. McKee.
1991 Observed Variations in Great Plains Seasonal Temperatures During the Past Century. *Great Plains Research* 1(1):302-323.

Eighmy, Jeffrey L.
1980 *Archaeomagnetism: A Handbook for the Archaeologist.* Technical Report No. 58. Washington D.C., U.S. Department of the Interior.

Eighmy, Jeffrey L.
1984 *Colorado Plains Prehistoric Context*. Office of Archaeology and Historic Preservation, Colorado Historical Society, Denver.

Eighmy, Jeffrey L and Jason Labelle.
1996 Radiocarbon Dating of Twenty-Seven Plains Complexes and Phases. *Plains Anthropologist* 41(155): 53-69

Ellwood, Priscilla B.
2002 Native American Ceramics of Eastern Colorado. *Natural History Inventory of Colorado, No. 21, April 2002*. University of Colorado Museum Boulder Colorado.

Ewers, John C.
1955 The Horse in Blackfoot Indian Culture. *Bureau of American Ethnology Bulletin 151*.

Fagan Brian.
1987 *The Great Journey: The Peopling of Ancient America*. Thames and Hudson, New York.

Fagan Brian.
1996 Enlightened stewardship. Featured in *Archaeological Ethics* by Karen Vitelli, pp 106-109. Altamira Press, London.

Finnigan, Jamer T.
1982 Tipi Rings and Plains Prehistory: A Reassessment of Their Archaeological Potential. *National Museum of Man Mercury Series, Archaeological Survey of Canada, Paper No. 108*

Foutz, Dell R.
1994 *Geology of Colorado Illustrated*. Your Geologist. Grand Junction, Colorado.

Frison, George C.
1978, 1991 *Prehistoric Hunters of the High Plains*, second edition. Academic Press, San Diego,

Frison, George C and Bruce Bradley.
1980 Folsom Tools and Technology of the Hanson Site, Wyoming. University of New Mexico Press, Albuquerque.

Frison, George C and Bruce Bradley.
1982a *Fluting of Folsom Projectile Points. The Agate Basin Site: A Record of Paleoindian Occupation of the Northwest High Plains*, edited by George C Frison and D.J. Stanford, pp. 209-212.

Frison, George C and Bruce Bradley.
1982b Folsom Components. In *The Agate Basin Site: A Record of Paleoindian Occupations of the Northwestern High Plains*, edited by G. C. Frison and D. J. Stanford, pp. 37-71.

Frison, George C and Robert C. Mainfort.
1996 The Northern Great Plains Study Area. Featured in *Archaeological and Bioarchaeological Resources of the Northern Plains* (pp. 1-7). Tri-Services Cultural Resource Research Center USACERL Special Report 97/2 December 19996, U.S. Army Corps of Engineers Construction Engineering Research Laboratory, and U.S. Department of Defense Legacy Resource Management Program.

Frison, George C and Dennis Stanford.
1982 *The Agate Basin Site: A Record of the Paleoindian Occupation of the Northwestern High Plains*. Edited by G. C. Frison and D. Stanford. Academic Press, New York.

Frison, George C and L.C. Todd.
1987 *The Horner site: The Type Site of the Cody Cultural Complex*. Academic Press, Orlando.

Frison, George C and M. Wilson.
1975 An introduction to Bighorn Basin Archaeology. Twenty-Seventh Annual Field Conference, 1975 *Wyoming Geological Association Guidebook*, Volume 19, Number 35.

Frison, George C and M. Wilson.
1984 Avocational Archaeology: It's Past, Present, and Future. Featured in *Ethics and Values in Archaeology*, edited by Ernestine L. Green. Collier Macmillian Publishers, London.

Fritzen, D.K.
1959 *The Rock-Hunters Field Manual*. Harper and Brothers Publishers, New York.

Gilmore, Kevin P, Marcia Tate, Mark L Chenault, Bonnie Clark, Terri McBride Margaret Wood.
1999 *Colorado Prehistory: A Context for the Platte River Basin*. Submitted by Tate and Associates, Inc. and SWCA, Inc. Environmental Consultants. Colorado Council of Professional Archaeologists (CCPA).

Gleichman and Gleichman.
1989 *Prehistoric Paleoindian Cultures of the Colorado Plains*. Multiple Property Listing. Colorado Historical Society.

Greiser, S.T.
1985 Predictive Models of Hunter-Gatherer Subsistence and Settlement Strategies on the Central High Plains. *Plains Anthropologist* Memoir No. 20.

Grinnel, George Bird.
1974 *The Cheyenne Indians: Their History and Ways of Life*. Originally published in 1923. Yale University Press, New Haven, Connecticut.

Gunnerson, J.H.
1987 Archaeology of the High Plains. *Cultural Resource Series* No.19, USDA Bureau of Land Management, Colorado State Office, Denver.

Gunnerson, James H and Dolores A.
1988 Ethnography of the High Plains. Archaeology of the High Plains. *Cultural Resource Series* No.26, USDA Bureau of Land Management, Colorado State Office, Denver.

Harrington Jon A J.R. and Jay R. Harman.
1991 Climate and Vegetation in Central North America: Natural Patterns and Human Alterations. *Great Plains Quarterly Spring* 11(2):103-112.

Hartly, Ralph and James Schneck.
1996 *Administering the National Forests of Colorado: An Assessment of the Architectural and Cultural Significance of Historical Administrative Properties*. United States Department of the Interior National Park Service Midwest Archaeological Center Lincoln, Nebraska. Prepared for the U.S. Forest Service, Rocky Mountain Region Interagency Agreement No. 1102-0002-93-023.

Haynes, C. Vance, Jr.
1991 Geoarchaeological and Paleohydrological Evidence for a Clovis Drought in North America and its Bearing on Extinction. *Quaternary Research* 35:438-450.

Holen, S.
1991 Bison Hunting Territories and Lithic Acquisition Among the Pawnee: An Ethnohistoric and Archaeological Study. In *Raw Material Economies Among Prehistoric Hunter-Gatherers*, edited by A. Montet-White and S. Holen, pp. 399-411. University of Kansas Publications in Anthropology, Vol. 19, Lawrence Kansas.

Holliday, V.T.
1987 Geoarchaeology and the Late Quarternary Geomorphology of the Middle South Platte River, Northeastern Colorado. *Geoarchaeology: An International Journal* 2 (2):317-319.

Hughes, Richard E.
2008 *Geochemical Research Laboratory Report 2007-91*. Submitted to Larry Todd GRSLE.

Irwin-Williams C., H.J. Irwin, G. Agogino, and C.V. Haynes.
1973 Hell Gap: Paleo-Indian Occupation on the High Plains. *Plains Anthropologist* 18(59): 40-53.

Jelinek, A.J.
1971 Early Man in the New World: A Technological Perspective. *Arctic Archaeologist* 8(2): 15-22

Jepsen, G.L.
1953 Ancient Buffalo Hunters of Northwestern Wyoming. *Southwestern Lore* 19:19-25.

Jochim, M.
1981 *Strategies for Survival: Cultural Behavior in an Economic Context*. Academic Press, New York.

Jodry, Margaret A. Brierty.
1999 *Folsom Technology and Socioeconomic Strategies: View from Stewart's Cattle Guard and the Upper Rio Grande Basin, Colorado*. PhD, on file at American University, Washington, D.C..

Kaiser, Timothy.
1993 The Antiquities Market. *Journal of Field Archaeology* 20(3):347-355.

Kalasz, S.M.., C.J. Zier, D.A. Jepson, M. McFaul, W. Doering and M. A. Van Ness.
1992 Archaeological Excavation of the Cass Site (5WL1483), Weld County Colorado Centennial Archaeology, Inc. submitted to the Archaeological Unit, Colorado Department of Transportation, Denver Colorado.

Keeley, Lawrence H.
1980 Experimental Determination of stone Tool Uses. In *Prehistoric Archeology and Ecology Series*, edited by K.W. Butzer and L.G. Freeman, pp. 1-83, University of Chicago Press, Chicago Illinois.

Kehoe, Thomas F.
1958 Tipi Rings: The "Direct Ethnological" Approach Applied to an Archaeological Problem. *American Anthropologist*, 60(5): 861-873.

Kehoe, Thomas F.
1960 Stone Tipi Rings in North-Central Montana and the Adjacent Portion of Alberta, Canada: Their Historical, Ethnological and Archaeological Aspects. *Anthropological Papers* No. 62 Bureau of American Ethnography, Bulletin 173, Smithsonian Institution.

Kehoe, Thomas F.
1973 *The Gull Lake Site: A Prehistoric Bison Drive in Southwestern Saskatchewan.* Milwakee Public Museum Publications in Anthropology and History No. 1

Kelly, Robert L.
1995 *The Foraging Spectrum.* Smithsonian Institution Press, Washington D.C..

Kelly, Robert L. and Lawrence C. Todd.
1988 Coming into the Country: Early Paleoindian hunting and mobility. *American Antiquity* 53(2):231-244.

King Thomas F.
1991 Some Dimensions of the Pothunting Problem. In *Protecting the Past* edited by George S. Smith and John E. Ehrenhard, pp. 83-92, CRS Press, London.

Krebs, J., and N. Davies.
1993 *An Introduction to Behavioral Ecology.* Blackwell Science, Cambridge.

Kuchler, A.W.
1964 The Potential Natural Vegetation of the Conterminous United States. *American Geographical Society*, Special Research Publication No. 36.

Kuchler, A.W.
1975 The Potential Natural Vegetation of the Conterminous United States. In *Distributions of Mammals, Reptiles, and Amphibians by BLM Physiographic Regions and A.W. Kuchler's Associations for the Eleven Western States*, edited by S.R. Bernard and K.F. Brown. United States Department of the Interior, Bureau of Land Management, Denver.

Labelle, Jason M.
2003 Coffee Cans and Folsom Points: Why We Cannot Continue to Ignore the Artifact Collectors. In *Ethical Issues in Archaeology*, edited by Larry J. Zimmerman, Karen D. Vitelli and Julie Hollowell-Zimmer, pp.115-127.

Landsberg, H.E.
1966 Interdiunral variability of pressure and temperature in the conterminous United States. *U.S. Weather Bureau* Technical Paper No. 56. Washington, D.C.

Leistman, T.L., and K.J. Kranzush.
1987 Dancing Pants Shelter: Prehistoric Occupation of the South Platte Canyon below Cheeseman Dam. Engineering Science Inc. Prepared for the Denver Water Department, Denver.

Lewis, Oscar.
1942 The Effects of White Contact Upon Blackfoot Culture. *Monograms of the American Ethnological Society VI.*

MacNeish, Richard S.
1971 Early Man in the Andes. *Scientific American* 224(4):33-46.

Malouf, Carling.
1961 The Tipi Rings of the High Plains. *American Antiquity*, 26(3): 381-389

McAllister, Martin E.
1991 Looting and Vandalism of Archaeological Resources on Federal and Indian Lands in the United States. Featured in *Protecting the Past*, edited by George S. Smith and John E. Ehrenhard,pp. 93-99, CRC Press Inc., London.

McFaul, Michael, William R Doering and Christian J. Zier.
1991 Late Prehistoric-Early Holocene Soil Sediment Relationships on the Kersey Terrace, Northeastern Colorado. *Current Research in the Pleistocene* 8:117-119.

McFaul, M., K.L. Traugh, G.D. Smith, W. Doering and C.J. Zier.
1994 Geoarchaeologic Analysis of South Platte River Terraces: Kersey, Colorado. *Geoarchaeology* 9(5): 345-374

Miller, James C.
1991 Lithic Resources. *In Prehistoric Hunters of the High Plains*, edited by G.C. Frison, pp 449-476. Academic Press, San Diego, Second Edition.

Moran, Emilio, F.
1990 Ecosystem Ecology in biology and Anthropology: A Critical Assessment. In *The Ecosystem Approach in Anthropology: From Concept to Practice*, edited by Emilio F. Moran, pp. 3-40.

Morris, Elizabeth Ann, Daniel Mayo, Richard C. Blakeslee and Patrick W. Bower.
1983 Current Perspectives On Stone Ring Structures in Northeastern Colorado. *Plains Anthropologist* 27 (102 part 2): 45-58.

National Climatic Center.
1982 Monthly Normals of Temperature, Precipitation and Heating and Cooling Degree Days 1951-1980. *Climatography of the United States* No. 81

National Climatic Center.
1984 *Climatological Data Annual Summary, Colorado 1984*, Vol 89, No. 13. National Oceanic and Atmospheric Administration, National Climatic Center, Asheville.

Nichols, Deborah L., Anthony L. Klesent, and Roger Anyon.
1999 Ancestral Sites, Shrines, and Graves: Native American Perspectives on the Ethics of Collecting Cultural Properties. Featured in *The Ethics of Collecting Cultural Property*, edited by Phyllis Mauch Messenger pp. 27-38, University of New Mexico Press, Albuquerque.

Reher, Charles A.
1991 Large Scale Lithic Quarries and Regional Transport Systems on the High Plains in Eastern Wyoming. In *Raw Material Economies Among Prehistoric Hunter- Gatherers*, edited by Anta Montet-White and Steven Holen, pp. 399-411. University of Kansas Publications in Anthropology, 19. University of Kansas, Lawrence.

Reitze, William T.
2004 *High Altitude Occupation and Raw Material Procurement: Dollar Mountain, a northwestern Wyoming Example*. Master's Thesis, Department of Anthropology, Colorado State University.

Rice, Prudence, M.
1955 *Dictionary in Geologic Terms*. Edwards Brothers, Inc. Ann Arbor Michigan.

Roberts, F.H.,Jr.
1943 A New Site. *American Antiquity* 8(3):300.

Schiffer, Michael B.
1976 *Behavioral Archaeology*. Academic Press, New York.

Slessman, Scott.
2004 *The Frazier Site: An Agate Basin Occupation and Lithic Assemblage on the Kersey Terrace, Northeastern Colorado*. Published Master's Thesis, Department of Anthropology, Colorado State University, Ft. Collins Colorado.

Smith, E.A.
1988 Risk and uncertainty in the "Original Affluent Society": Evolutionary Ecology of Resource Sharing and Land Tenure. In *Hunters and Gatherers, Vol. I: History, Evolution and Social Change*, edited by T. Ingold, D. Riches and J. Woodburn, pp. 225-251. Berg Publishing, Oxford.

Solomon, Susan and John S. Daniel.
2004 Lewis and Clark Pioneering Meteorological Observers in the American West. *American Meteorological Society*, pp. 1273-1288.

Stanford, Dennis .J.
1975 The 1975 Excavations at the Jones-Miller Hell Gap Site, Yuma, County Colorado. *Southwestern Lore* 41(4): 34-38.

.
Stanford, Dennis .J.
1979 The Selby and Dutton Sites: Evidence for a Pre-Clovis Occupation of the High Plains, in *Pre-Llano Cultures of the Americas: Paradoxes and Possibilities*, edited by R.L. Humphrey and D. Stanford, pp. 101-123. The Anthropological Society of Washington, Washington D.C.

Thornbury, W.D.
1965 *Regional Geomorphology of the United States*. Wiley, New York.

Todd, Lawrence C, David C. Jones, Robert S. Walker, Paul C. Burnett and Jeffrey Eighmy.
2001 Late Archaic Bison hunters in Northern Colorado: 1997-1999 Excavations at the Kaplan-Hoover Bison Bonebed (5LR3953). *Plains Anthropologist* (46)176:125-147

Tweto, Ogden.
1979 *Geologic Map of Colorado.* U.S. Geological Survey, Denver, Colorado.

Viau, A., K. Gajewski, P. Fines, D.E. Atkinson, and M.C.Sawana.
2002 Widespread Evidence of 1500 Yr Climate Variability in North America during the Past 14,000 Yr. *Geology* 30(5):455-458.

Wedel, Waldo R.
1961 *Prehistoric Man on the Great Plains*. Norman: University of Oklahoma Press.

Wedel, Waldo R.
1986 *Central Plains Prehistory*. University of Nebraska Press, Lincoln Nebraska.

Wendland, W.M.
1978 Holocene Man in North America: The Ecological Setting and Climatic Background. *Plains Anthropologist* 23(82):273-287.

Wendland, W.M. and R.A.Bryson.
1974 Dating Climatic Episodes of the Holocene. *Quarterly Research* 4:9-24.

Wendland, W.M.
1995 Environmental history at Lubbock Lake and the Episodic nature of Holocene Climates. *In Ancient Peoples and Landscapes*, edited by Eileen Johnson, pp. 341-348.

Wheat, Jo Ben.
1972 The Olsen-Chubbuck Site: A Paleoindian Bison Kill. *Society for American Archaeology Memoir 26.*

Wheat, Jo Ben.
1967 A Paleoindian Bison Kill. Scientific American 216 (1):44-52

Wheat, Jo Ben.
1979 The Jergens Site. *Plains Anthropologist* Memoir No. 15, Lincoln, Nebraska.

Wilmsen, Edwin N., and Frank H.Roberts.
1984 Lindenmeier, 1934-1974: *Concluding Report on Investigations.* Smithsonian Contributions to Anthropology No. 24. Smithsonian Institution Press, Washington D.C.

Wilson, Gilbert L.
1924 The Horse and the Dog in Hidatsa Culture. *Anthropological Papers of the American Museum of Natural History* 15(2).

Winterhalder, B.
1986 Diet, choice, Risk and Food Sharing in a Stochastic Environment. *Journal of Anthropological Archaeology* 5: 369-392.

Wissler, Clark.
1908 Types of Dwellings and their Distribution in Central North America. *Proceedings of the Sixteenth International Congress of Americanists*, pp. 477-487.

Wood, J.J.
1967 Archaeological Investigations in Northeastern Colorado. Unpublished Ph.D dissertation, Department of Anthropology, University of Colorado, Boulder.

Wood, J.J.
1998 *Archaeology of the Great Plains*, edited by Raymond Wood. University Press of Kansas, Lawrence Kansas.

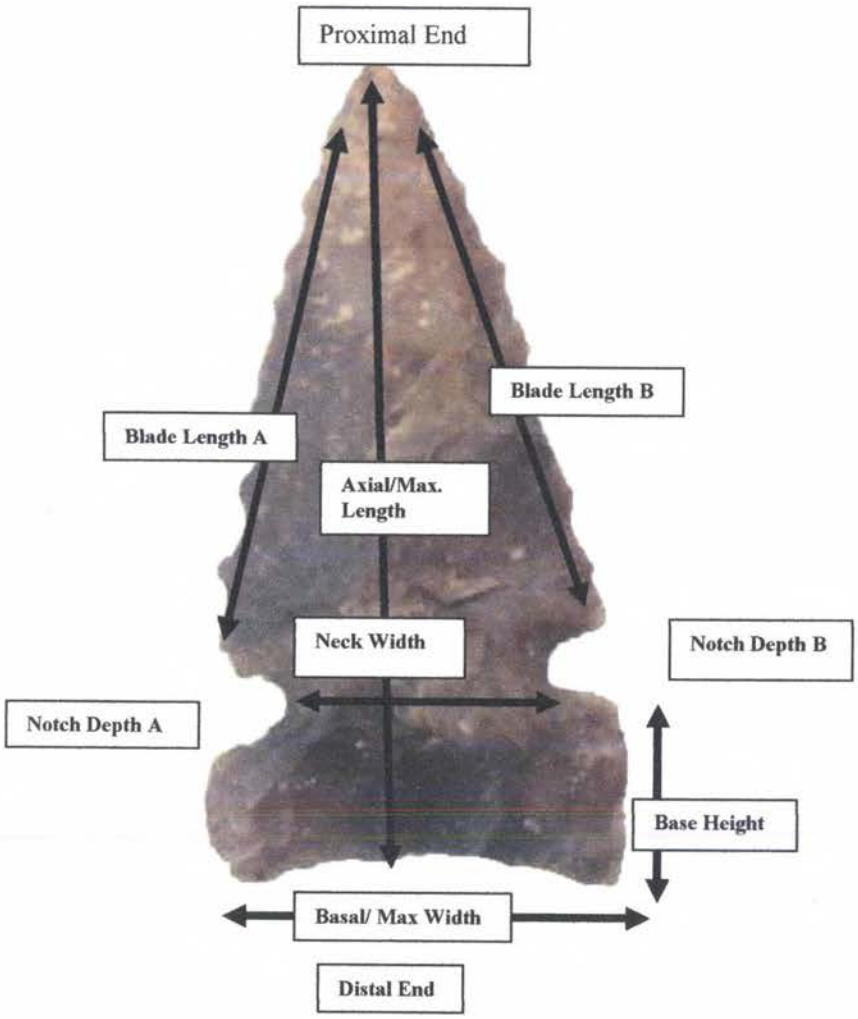
Wormington, H. Marie.
1957 *Ancient Man in North America*. Denver Museum of Natural History Popular Series No. 4.

Wormington, H. Marie.
1984 The Frazier Site, Colorado. In, *AMQUA 1984: Field Trip 2-Paleoindian Sites of the Colorado Piedmont*, assembled by Adrienne Anderson et al., pp. 12-13. University of Colorado, Boulder.

APPENDIX A: GENERAL CODES/DESCRIPTIONS

ELEV	Elevation of site locality/ survey area
NAME	GPS Waypoint Name
DATE	Waypoint date
Site/IF	Site, isolated find, or other name
SURVEY	Sampling method
FLG	Flag color
CON	Context-flat butte, washout, plowed field
CL	Artifact class or category-the most general description
EL	Artifact element or type
POR	Artifact portion or completeness
MAT	Artifact material type
CLR1	Dominant color and opacity
CLR2	Secondary color and opacity
CLR3	Inclusion color and opacity
C/T	Clast or technological measurements
CTX	Cortex Values
HEAT	Heat Modification/ treatment
MLEN	Maximum length (mm)
MWID	Maximum width (mm)
MTHK	Maximum thickness (mm)
PTW	Platform width
PTT	Platform thickness
SCR	Scar count on lithic debitage
COMMENTS	Additional artifact comments
PHOTO #	Digital photograph number
AXLEN**	Axial or midline length
BLL1**	Blade length 1
BLL2**	Blade length 2
ND1**	Notch depth 1
ND2**	Notch depth 2
NW**	Neck or haft width
NH**	Neck or haft height
BH**	Base height-from proximal to widest point on base
BW**	Base Width
Time	Time period/ cultural affiliation if known
**	Denotes column in spreadsheet for projectile points only

APPENDIX B: PROJECTILE POINT MEASUREMENTS



APPENDIX C: QUESTIONNARE

Note: * An artifact is any man-made object, but refers here to such items as arrowheads, potsherds and pots, historic bottles and other objects found at prehistoric or historic sites.

1. Sex: Male__X__Female _____
2. How long have you lived in Grover Colorado? *My whole life I am 73 years old.*
3. Your occupation is/ was if retired? *I was a rancher now I am supposedly retired.*
4. Are you interested in local archaeology? Yes__X__No _____
5. Have you read any books or taken any classes on archaeology or local history?

   Yes _X____No _____. –books I haven't taken any classes
6. What types of items do you collect? Arrowheads _X____; Whole pots_____;

   Potsherds _X____; Other stone tools such as scrapers, awls, __X_ ; Bottles__X___

   Miscellaneous historic items_X____; Others such as:__harmonicas, etc.___.
7. Do you collect unbroken artifacts? Yes __X___ No _____.
8. Approximately how many items are in your collection? *Just over 100 I would say.*
9. Does you collection consist completely of found items (from the surface)? Yes _X____ No ___ ;

   Or do you: Trade for items _____ Buy items ____.

   Other means of acquiring them? If so how do you acquire them? ___N/A__.
10. Do you display your collection? Yes ___ No __X___.

    Do you display the collection in your home? Yes _____ No ___X___.
11. Have you ever sold any artifacts that you have found? Yes _____ No _X___.
12. Have you ever bought any artifacts? Yes _____ No __X___.
13. Does your artifact collection primarily consist of local private finds?

    Yes __X___ No _____.
14. Do you specifically look for certain objects? Yes __X___ No _____ *Yes, arrowheads are my favorite.*
15. Do you know any professional archaeologists? Yes __X___ No _____.
16. Is artifact hunting or digging for artifacts a family activity? Yes _____ No __X___. *It never was even as a child.*
17. Did you first become involved in theses activities through?

    Your parents as a child ____; Your friends as a child _____;

    Your own interest __X___; Others as an adult _____.
18. What initially got you interested in prehistoric and historic artifacts? Boredom I guess, I would explore the buttes while I was herding sheep.
19. Is artifact collecting a personal hobby? Yes __X___ No _____.

APPENDIX C: QUESTIONNARE CONTINUED.

20. When did you first hunt for artifacts? 0-5 years ago _____ ; 6-11 years ago _____;

12 -19 years ago _____; over 20 years ago _____ ; since I was a child __X___

21. How often do you look for artifacts? Times per year? __3___Times per month __1___; casually __*after rain storms and windy conditions*

22. When was the last time you collected any artifacts? This week _____

This month _____; within the past six month's __X___;

Within the past twelve months _____ ; Within the past year ____.

23. Usually, where do you go to find artifacts (Pawnee, Flat Top area, Pine Bluff Ridge, TV Tower pasture, Rock Point Barber Pasture, Clay Banks Washout, etc*)? All of those places, I like the Tower Butte site a lot since its close I can ride over there on my horse, or just drive quickly to look around for awhile.*

24. Have your parents or older family members collect artifacts? Yes _X___ No _____.

25. Do your friends do this? Yes ____ No __X__.

26. Do your children do this? Yes ____ No __X__.

27. Of the people you know, approximately how many collect artifacts? None _____

A few __X___ ; Half _____; Most _____ All _____.

Are these people mostly male _X____ or female __X___.

28. Of those people answered for question 27, what are age ranges primarily?

Under 14 ____ ; 14-21 _____ ; 22-29 __X___ ; Over 30 __X__; over 60 ___X___.

29. When do you collect artifacts most often? One weekdays _____; weekends ____;

Holidays _____; whenever I am working or hunting out in the field ____. N/A, *whenever I specifically go collecting after rain and dust storms.*

30. Do occupational responsibilities such as farm work make a difference as to when you

go collect artifacts? Yes _____ No __X__. *I used to collect them while doing my chores because I always look at the ground. Now I specifically go to collect artifacts and look around.*

31. How do you decide where to go? Easy place to get to __X___; found objects at location

previously __X___; Heard location was good from friends family or others_____

32. Considering all the locations you have visited, would you estimate these locations

are: within 2 miles of each other _____; 3-5 miles apart ____;

6-10 miles apart __X___;11-20 miles apart _____; 21-30 miles apart ____.

33. What is the land status of the areas you usually go collect artifacts? Private__X___ Public _____;

My own land __X___; I don't know the land status _____.

Based on "Collector Data" Sheet and Accompanying "Questionnaire" (Jepsum 1988).

APPENDIX D: FAMILY HISTORY FORMAL INTERVIEW QUESTIONS:

1. Your family homesteaded in Grover in 1909, where did they migrate from?–*Warrensburg, Missouri*
2. Do you remember any stories that your parents used to tell about the area, natives, archaeology or historic times?-*They said there was a homestead about every 160 acres a; little bit of farming mostly grass-you couldn't farm very much with horses anyway.*
3. What was it like to grow up in Grover?–*A place to grow up I guess.*
4. Did you have any siblings?–*Yes, I had let's see... 4 boys and 3 girls... 4 are dead and four are left; 3 died in childhood and one as an adult.*
5. Has the land always been used for farming; what other uses has it had –i.e. cattle ranching?–*We did both and we had sheep.*
6. How were the various landscapes and artifact distributions different during the dustbowl in the Great Plains?–*You know, I don't know, the dust bowl was before my time... I know that you couldn't see the sun for days.*
7. You had mentioned that when you were little you used to collect the bison crania can you tell me more about that kill site? *Oh, well a lot of bushes grew... there were none of them bushes in there when we were little they have all grown since. When we was digging in it... and getting the heads out was in the late 40s and early 50s. I was 10 or 12 years old at the time... We put them around the garden and they deteriorated there.*
8. What activities took place near or at the bison kill site?–*Just us collecting the skulls when we were little.*
9. Did your family visit sites such as the bison kill site? If so what were the conditions that you went- i.e. picnics, hunting, etc?–, *No.*
10. You had mentioned that your grandmother had gotten a necklace which is in your frame; can you tell me that story again?-*Yeah she was in a Wild West Show that my Uncles had out in Cheyenne Wyoming... and the Indian Chief's name was Henry Makes Enemy he gave her the necklace some time on the years that she did the show, they had a group of Indians that traveled with them all the time and they were Sioux Indians.*
11. Did your parents have contact with natives in the area?–*No, I don't think so.*
12. There is a cliff that eagles nest at located at your property, can you tell me about that?-*Yeah it was there in 1909, I don't know how many years it was there prior to that. But my Dad robbed eggs out of it for his collection one year. Somebody held a rope and he went over the cliff and went into the nest and robbed the eggs. But I don't know what happened to the collection I remember seeing the Eagle eggs in it, I suppose one of my brothers or sisters has got it.*
13. Did your parents and siblings also collect artifacts? –*Yes.*
14. Do you find many artifacts and sites as you are farming? –*I have found quite a few out around when I am plowing.*

15. In what other contexts do you see artifacts such as hunting, fishing, fixing barbed wire, etc? - *Um, I look at the ground all the time. It is hard telling what I miss when I am going somewhere.*
16. What do you do with the artifacts once they are collected?-*Hoard 'em, put 'em in my frame or a box... I had them all in boxes and this guy that collected a lot of arrowheads around the country give me that (artifact case) one day.*

APPENDIX E: ARTIFACT CONTEXTUAL FORM

Artifact #/ Name:_____

Why do you come here to this specific location?

_____

_____

How many times have you been here, how often do you visit? _____

_____

_____.

What types of activities bring you out here? _____

_____

_____.

How has the site changed over time in terms of the archaeology (ie. erosion)?_____

_____

_____.

Can you give me a rough estimate of the time that you have spent here? _____

_____

_____.

Why do you think this site is here? (-is it a good view, game are plentiful, it is near water etc.) _____

_____

_____.

The topography/ site setting consists of:

_____

The vegetation consists of: _____

_____.

The soil type is: _____

_____.

General Comments, etc:_____.

APPENDIX E: ARTIFACT CONTEXTUAL FORM, CONTINUED.

GPS Coordinates 13T: _____Em _____Nm.

UTM	
Datum	
Elevation	
Artifact/Photo #	
Context	
Class	
Element	
Portion	
Material Type	
Color 1	
Color 2	
Color 3	
Clast/Tech	
Max Length	
Max Width	
Max Thickness	
Axial length	
Blade length	
Neck width	
Base width	
Basal grinding	
Cortex	
Assoc. photo #	
Comments	

Notes:

APPENDIX F.1: BAUGH PASTURE SITE PHOTOS

Baugh Pasture Site overview, facing east

Baugh Pasture Site Overview, facing west/northwesterly

APPENDIX F.1: BAUGH PASTURE SITE PHOTOS, CONTINUED.

Baugh Pasture Site, quartzite mano

Baugh Pasture Site, artifact collection
From left to right Artifact Accession Numbers: 26, 27, 28
Data are in Appendix G.1, Table 6.3, Artifact Data.

APPENDIX F.1: BAUGH PASTURE SITE PHOTOS, CONTINUED

Rib fragment with cut marks from unidentified large ungulate

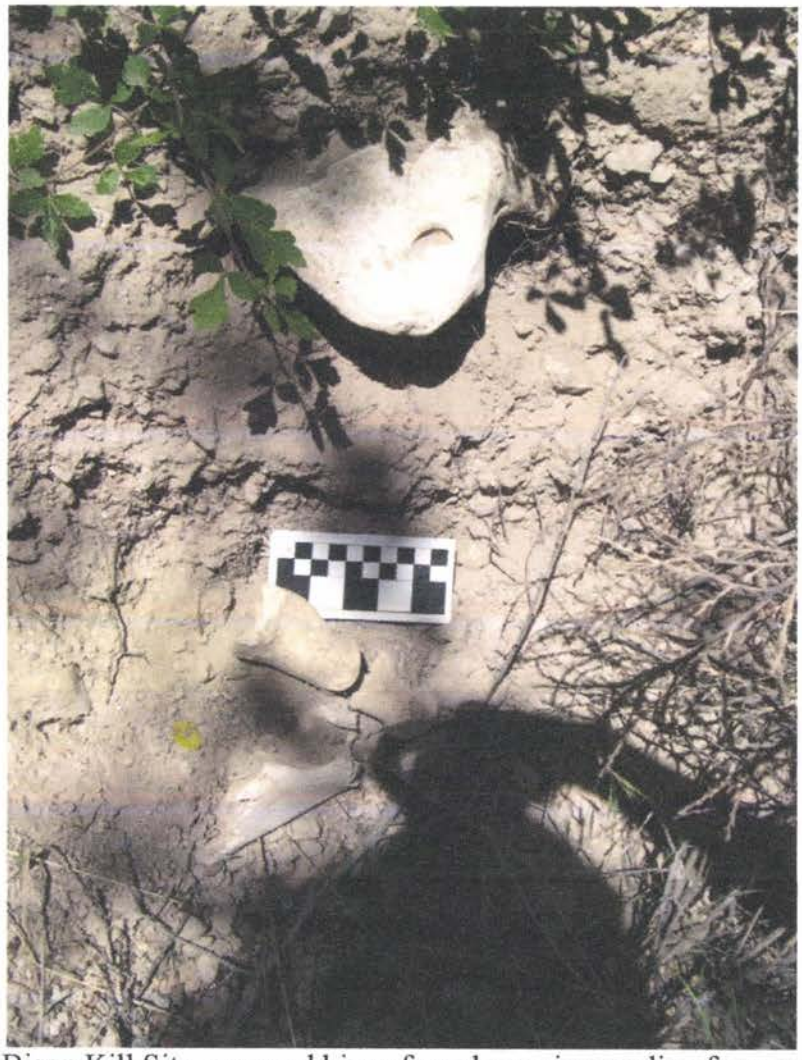
Rib fragment with cutmarks from unidentified large ungulate

APPENDIX F.2: BISON KILL SITE PHOTOS

Bison Kill Site, overview facing east

Bison Kill Site, exposed crania

APPENDIX F.2: BISON KILL SITE PHOTOS, CONTINUED.



Bison Kill Site, exposed bison faunal remains eroding from arroyo

APPENDIX F.3: CLAYBANKS PASTURE SITE PHOTOS

Claybanks Pasture Site overview, facing south

Testing at Claybanks, facing east

APPENDIX F.3: CLAYBANKS PASTURE SITE PHOTOS, CONTINUED.

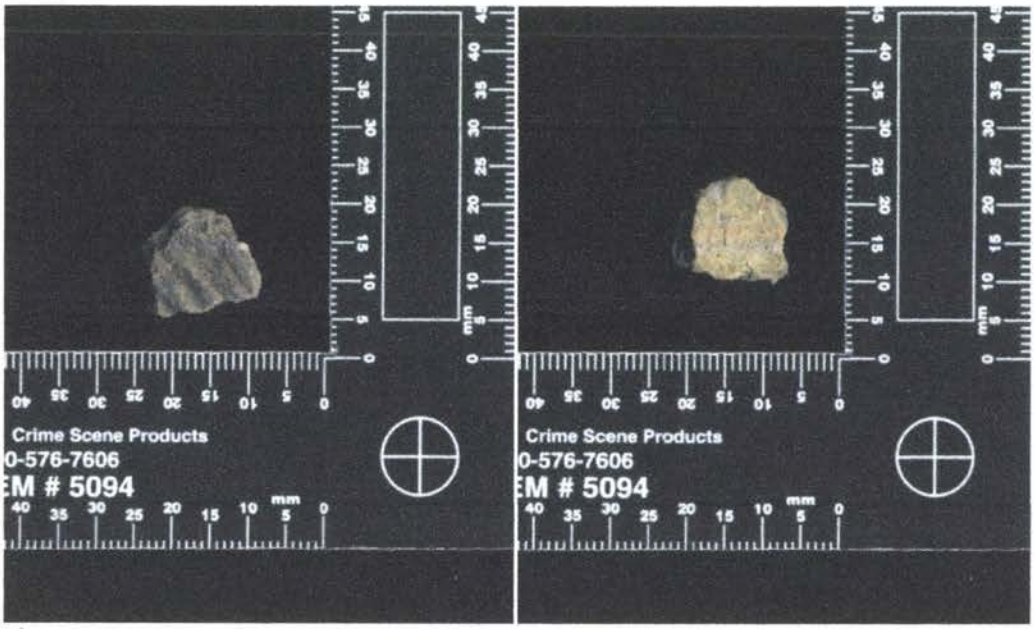
Claybanks Pasture Site, artifact collection
From left to right, top row, Artifact Accession Numbers: 51, 50, 49, 48, 47, 46, 45
From left to right, middle row, Artifact Accession Numbers: 44, 43, 42, 41, 40, 39, 38, 37
From left to right, bottom row, Artifact Accession Numbers: 35, 34, 33, 32, 31, 30, 29
Data are in Appendix G.1, Table 6.3, Artifact Data.

APPENIX F.4: FLATTOP BUTTE SITE PHOTOS

Flattop Butte Site overview, facing north

Flattop Butte Site, artifact collection
From left to right, top row, Artifact Accession Numbers: 64, 64, 63, 62, 61
From left to right, bottom row, Artifact Accession Numbers: 60, 59, 58, 57, 56, 55, 54, 53, & 52
Data are in Appendix G.1, Table 6.3, Artifact Data.

APPENIX F.4: FLATTOP BUTTE SITE PHOTOS, CONTINUED.



Flattop Butte, cord marked ceramic sherd, exterior view, and interior view

APPENDIX F.5: INDIAN OVERLOOK SITE PHOTOS

Indian Overlook Site overview, facing southeasterly

Indian Overlook, stone circle feature facing west

Indian Overlook, artifact collection of ceramics, exterior side
From left to right, top row, Artifact Accession Numbers: 4, 5, 6, 7, 8, 9, 10, 11, 12
From left to right, bottom row, Artifact Accession Numbers: 13, 14, 15, 16, 17, 18, 19, 20,& 21
Data are in Appendix G.1, Table 6.3, Artifact Data.

Indian Overlook, artifact collection of ceramics, interior side
From left to right, top row, Artifact Accession Numbers: 4, 5, 6, 7, 8, 9, 10, 11, 12
From left to right, bottom row, Artifact Accession Numbers: 13, 14, 15, 16, 17, 18, 19, 20,& 21
Data are in Appendix G.1, Table 6.3, Artifact Data.

APPENDIX F.5: INDIAN OVERLOOK SITE PHOTOS, CONTINUED.

Indian Overlook, artifact collection
From top to left Artifact Accession Numbers: 67, 66.
Data are in Appendix G.1, Table 6.3, Artifact Data.

APPENDIX F.6: ROCKY POINT SITES PHOTOS

Rocky Point Site, overview facing northeasterly

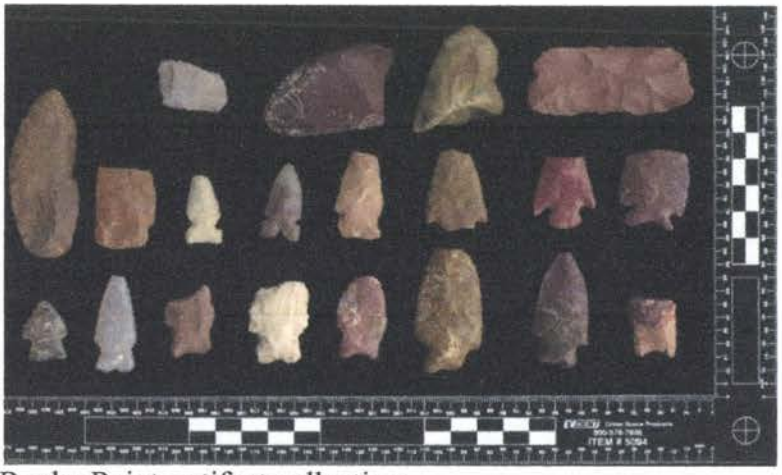
Rocky Point Site, overview facing north/northeasterly

APPENDIX F.6: ROCKY POINT SITES PHOTOS, CONTINUED.

Rocky Point, artifact collection of ceramics, external View
From left to right, Artifact Accession Numbers: 3, 2, 1
Data are in Appendix G.1, Table 6.3, Artifact Data.

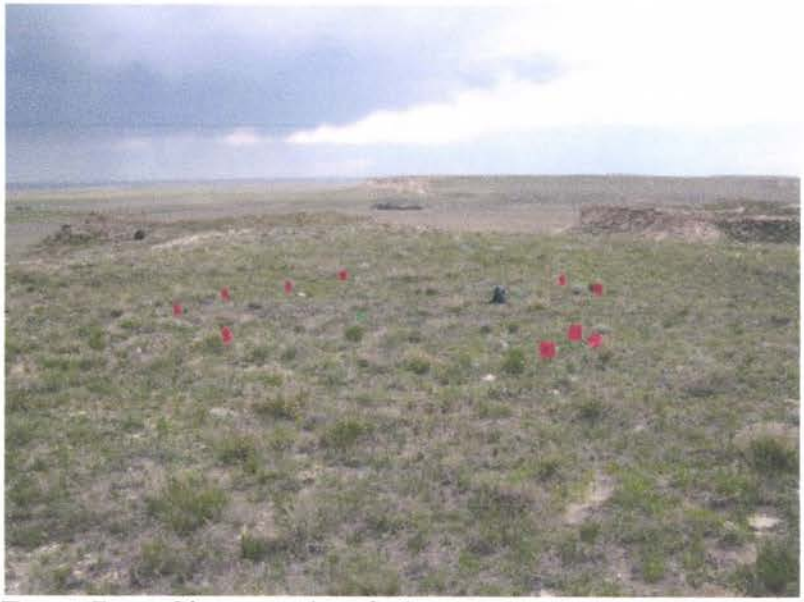
Rocky Point, artifact collection of ceramics, internal view
From left to right, Artifact Accession Numbers: 3, 2, 1
Data are in Appendix G.1, Table 6.3, Artifact Data.

APPENDIX F.6: ROCKY POINT SITES PHOTOS, CONTINUED.



Rocky Point, artifact collection
From left to right, top row, Artifact Accession Numbers: 87, 86, 85, 84
From left to right, middle row, Artifact Accession Numbers: 83, 82, 81, 80, 79, 78, 77, 76
From left to right, bottom row, Artifact Accession Numbers: 75, 64, 63, 72, 71, 70, 69, 68
Data are in Appendix G.1, Table 6.3, Artifact Data.

APPENDIX F.7: TOWER BUTTE SITE PHOTOS



Tower Butte Site, overview facing north.
*Note stone circle feature marked by red flags.

Tower Buttte Site Area, site overview of arroyo with Bison remains, facing south

APPENDIX F.7: TOWER BUTTE SITE PHOTOS, CONTINUED.

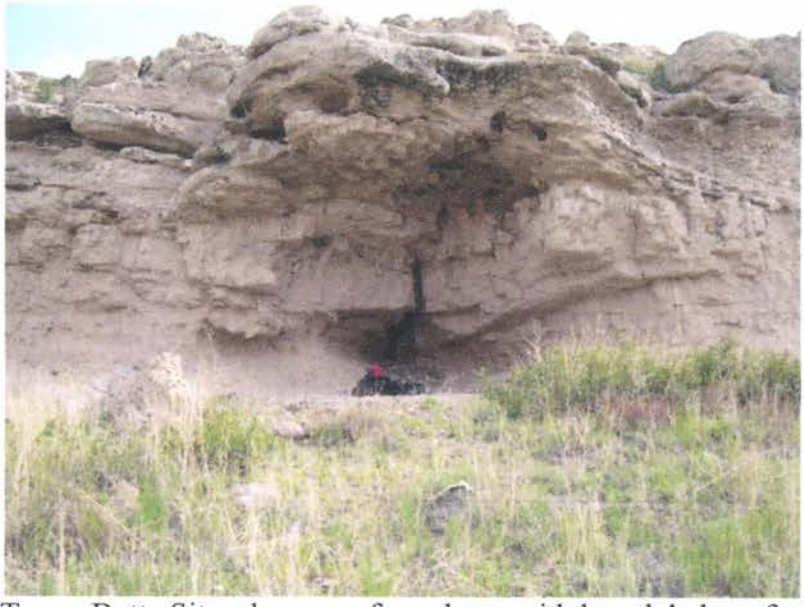
Tower Butte Site Area, site overview of arroyo facing north below the tree to the left

Tower Butte Site, close-up of historic dump artifacts

APPENDIX F.7: TOWER BUTTE SITE PHOTOS, CONTINUED.

Tower Butte Site, close up of Bison bison crania in arroyo

APPENDIX F.7: TOWER BUTTE SITE PHOTOS, CONTINUED.



Tower Butte Site, close-up of overhang with hearth below, facing southeast

Tower Butte, artifact collection
From left to right, top row, Artifact Accession Numbers: 96, 95, 94, 93
From left to right, bottom row, Artifact Accession Numbers: 92, 91, 90, 89, 88
Data are in Appendix G.1, Table 6.3, Artifact Data.

APPENDIX F.8: COLLECTED ARTIFACTS WITH AN UNKNOWN PROVENIENCE

Collected Artifacts with an Unknown Provenience, Final Stage Bifaces
From left to right, top row, Artifact Accession Numbers: 131, 130, 129, 128, 127, 126
From left to right, middle row, Artifact Accession Numbers: 125, 124,123,122,121,120
From left to right, bottom row, Artifact Accession Numbers: 119, 118, 117, 116, 115, 114
Data are in Appendix G.1, Table 6.3, Artifact Data.

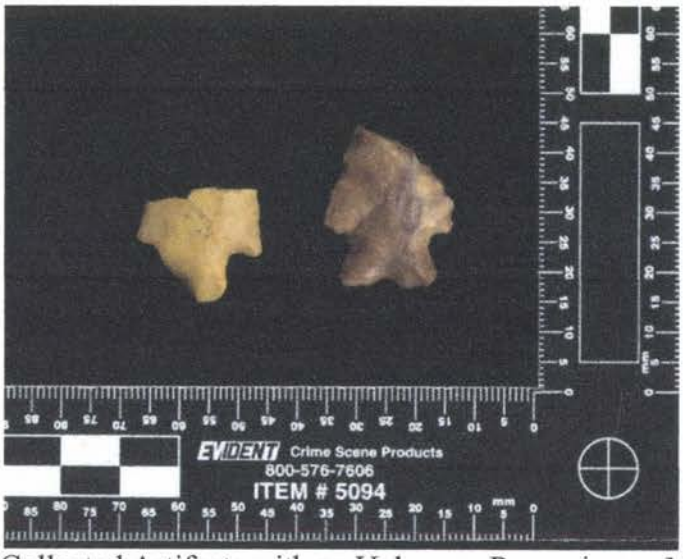
Collected Artifacts with an Unknown Provenience, Early Stage Bifaces
From left to right, top row, Artifact Accession Numbers: 148,147
From left to right, middle row, Artifact Accession Numbers: 146,145,144,143,142,141
From left to right, bottom row, Artifact Accession Numbers: 140, 139, 138, 137, 136, 135
Data are in Appendix G.1, Table 6.3, Artifact Data.

APPENDIX F.8: COLLECTED ARTIFACTS WITH AN UNKNOWN PROVENIENCE, CONTINUED.

Collected Artifacts with an Unknown Provenience, Angular debris and flake
From left to right Artifact Accession Numbers: 134, 133
Data are in Appendix G.1, Table 6.3, Artifact Data.

Collected Artifacts with an Unknown Provenience, Eccentric Points
From left to right top row Artifact Accession Numbers: 188, 187
Data are in Appendix G.1, Table 6.3, Artifact Data.

APPENDIX F.8: COLLECTED ARTIFACTS WITH AN UNKNOWN PROVENIENCE, CONTINUED.



Collected Artifacts with an Unknown Provenience, Middle Archaic Points
From left to right Artifact Accession Numbers: 99, 98
Data are in Appendix G.1, Table 6.3, Artifact Data.

Collected Artifacts with an Unknown Provenience, Late Archaic Points
From left to right, top row, Artifact Accession Numbers: 109, 108.
From left to right, middle row, Artifact Accession Numbers: 107, 106, 105, 104
From left to right, bottom row, Artifact Accession Numbers: 103, 102, 101, 100
Data are in Appendix G.1, Table 6.3, Artifact Data.

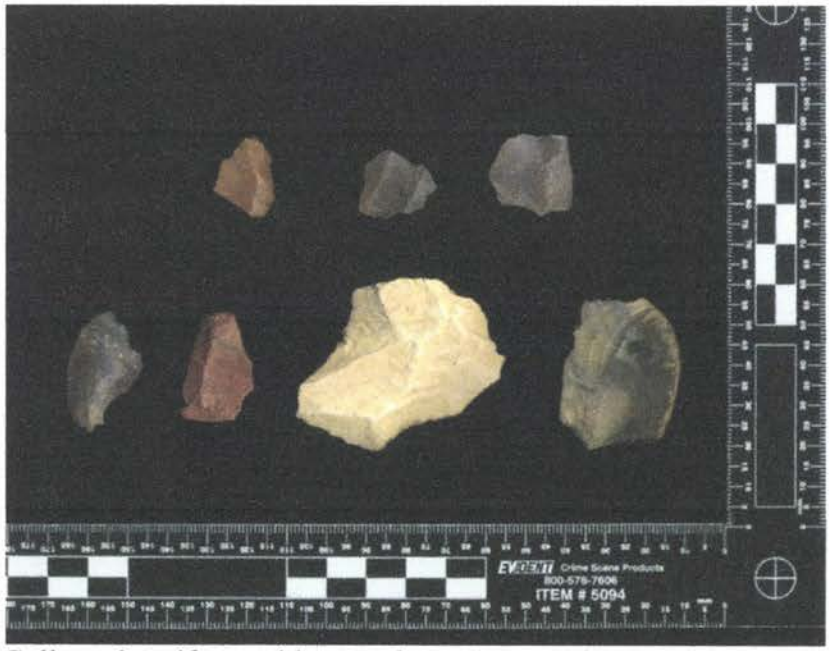
APPENDIX F.8: COLLECTED ARTIFACTS WITH AN UNKNOWN PROVENIENCE, CONTINUED.

Collected Artifacts with an Unknown Provenience, Late Prehistoric Points
From left to right Artifact Accession Numbers: 113,112,111,110
Data are in Appendix G.1, Table 6.3, Artifact Data.

Collected Artifacts with an Unknown Provenience, Utilized Flakes
From left to right Artifact Accession Numbers: 166, 165, 164, 163, 162
Data are in Appendix G.1, Table 6.3, Artifact Data.

APPENDIX F.8: COLLECTED ARTIFACTS WITH AN UNKNOWN PROVENIENCE CONTINUED.

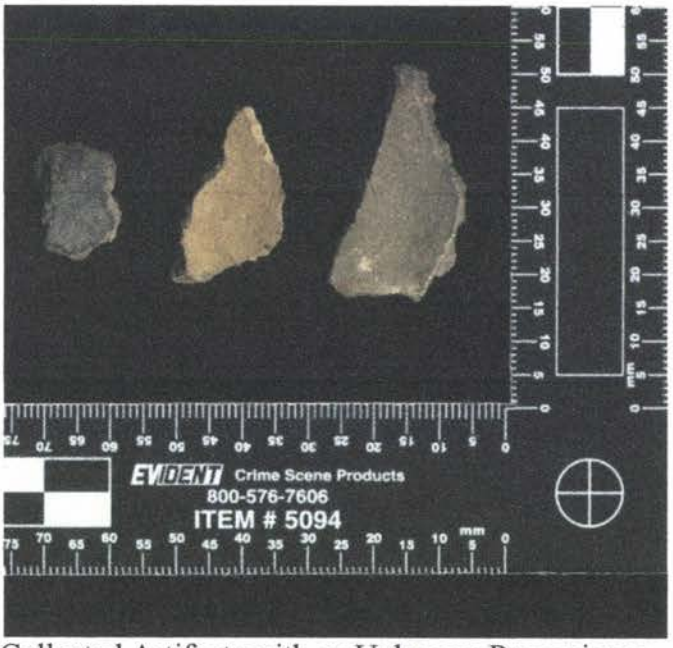
Collected Artifacts with an Unknown Provenience, Worked Flakes
From left to right, top row, Artifact Accession Numbers: 161, 160, 159, 158
From left to right, bottom row, Artifact Accession Numbers: 157, 156, 155, 154
Data are in Appendix G.1, Table 6.3, Artifact Data.



Collected Artifacts with an Unknown Provenience, Flakes
From left to right, top row, Artifact Accession Numbers: 179, 178, 177
From left to right, bottom row, Artifact Accession Numbers: 176, 175, 174, 173
Data are in Appendix G.1, Table 6.3, Artifact Data.

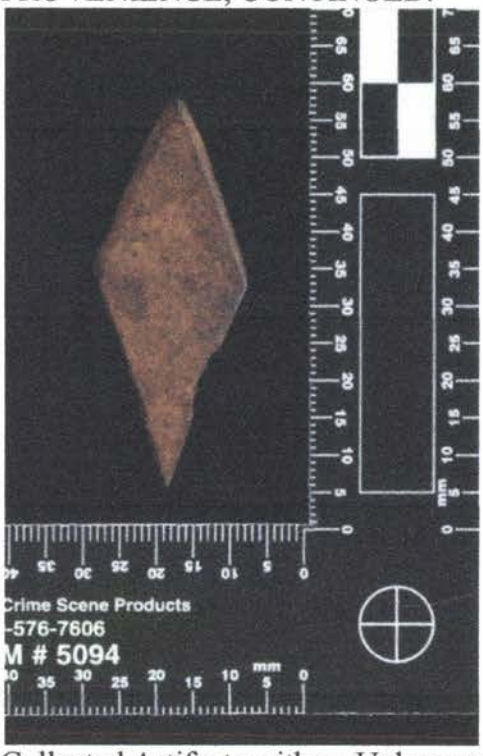
APPENDIX F.8: COLLECTED ARTIFACTS WITH AN UNKNOWN PROVENIENCE CONTINUED.

Collected Artifacts with an Unknown Provenience
Cord Marked Ceramics, Exterior View
From left to right Artifact Accession Numbers: 3, 2, 1
Data are in Appendix G.1, Table 6.3, Artifact Data.



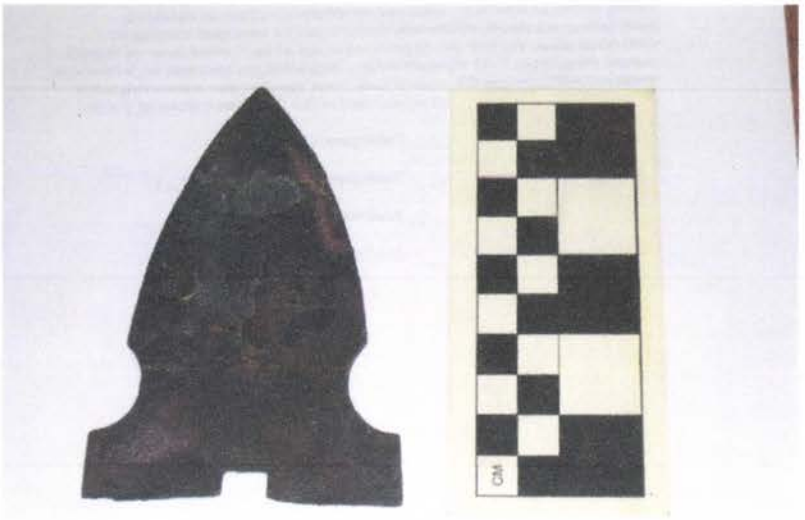
Collected Artifacts with an Unknown Provenience
Cord Marked Ceramics, Interior View
From left to right Artifact Accession Numbers: 3, 2, 1
Data are in Appendix G.1, Table 6.3, Artifact Data.

APPENDIX F.8: COLLECTED ARTIFACTS WITH AN UNKNOWN PROVENIENCE, CONTINUED.

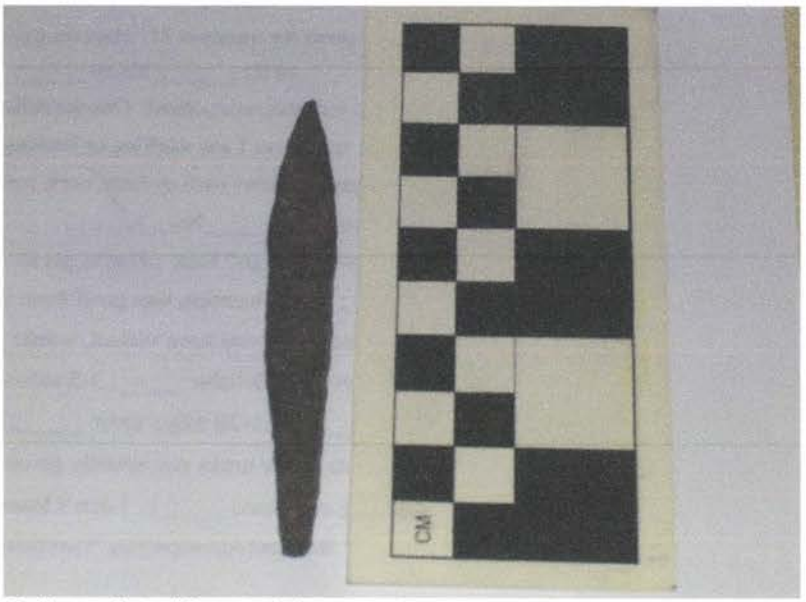


Collected Artifacts with an Unknown Provenience, Protohistoric Point
Artifact Accession Number: 92
Data are in Appendix G.1, Table 6.3, Artifact Data.

APPENDIX F.8: COLLECTED ARTIFACTS WITH AN UNKNOWN PROVENIENCE, CONTINUED.

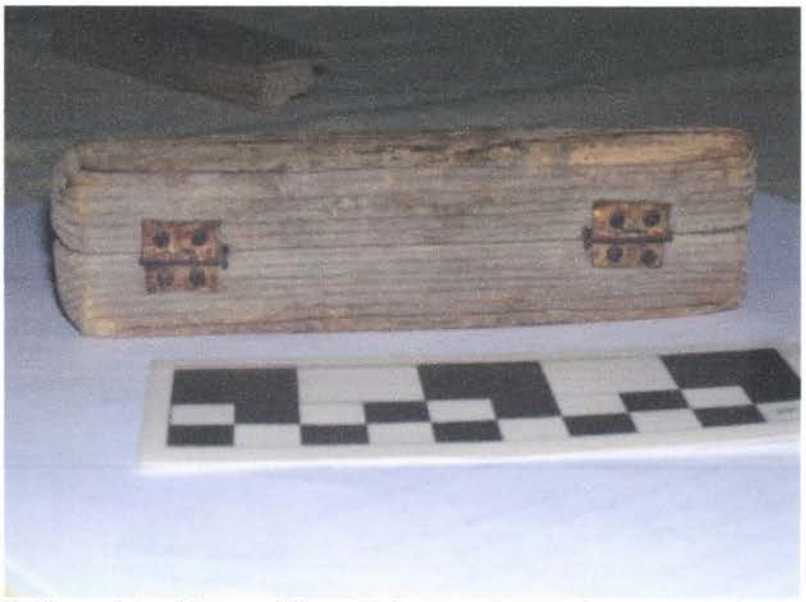


Collected Artifacts with an Unknown Provenience, Fake Metal Point
Artifact Accession Number: 189
Data are in Appendix G.1, Table 6.3, Artifact Data.



Collected Artifacts with an Unknown Provenience, Metal Tool
The artifact was found on an old horse trail by the landowner.
Artifact Accession Number: 190
Data are in Appendix G.1, Table 6.3, Artifact Data.

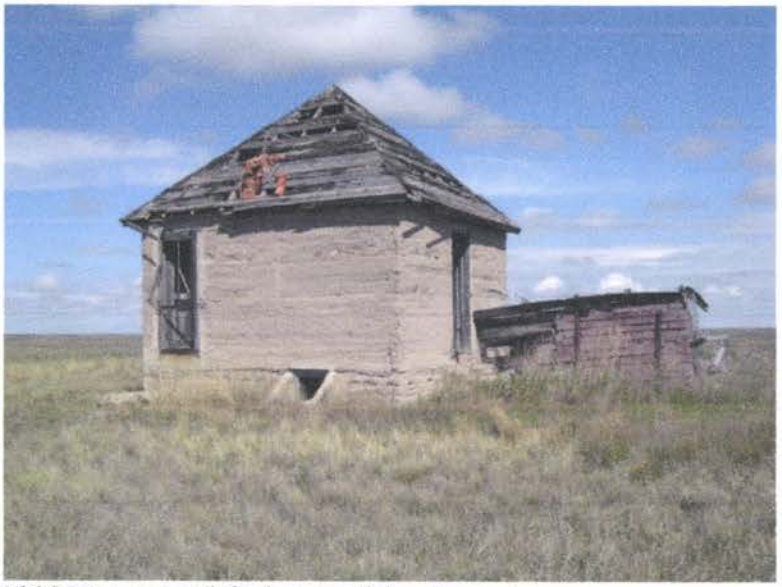
APPENDIX F.8: COLLECTED ARTIFACTS WITH AN UNKNOWN PROVENIENCE, CONTINUED.



Collected Artifacts with an Unknown Provenience, "Marine Band" Harmonica in Handmade Wooden Case

Close up of Harmonica

APPENDIX F.9: 1909 HOMESTEAD SITE PHOTOS



1909 Homestead facing north/northwest

1909 Homestead, well feature, facing northeasterly

APPENDIX F.9: 1909 HOMESTEAD SITE PHOTOS, CONTINUED

1909 Homestead, can concentration over old barn, facing northeast

1909 Homestead, glass concentration over collapsed potato cellar, facing northeast

APPENDIX F.9: 1909 HOMESTEAD SITE PHOTOS, CONTINUED

1909 Homestead, old stove in basement of standing structure

1909 Homestead, old farming equipment

APPENDIX F.10: 1920S HOMESTEAD SITE PHOTOS

1920s Homestead overview, facing southeast

1920s Homestead, sheep barn facing northwest

APPENDIX F.10: 1920S HOMESTEAD SITE PHOTOS, CONTINUED.

1920s Homestead, sheep barn facing west

1920s Homestead, boy's bunkhouse/old school house

APPENDIX F.10: 1920S HOMESTEAD SITE PHOTOS, CONTINUED.

1920s Homestead, Old "Grover House", facing west

1920s Homestead, Frank's house, facing northeast

APPENDIX F.10: 1920S HOMESTEAD SITE PHOTOS, CONTINUED.

1920s Homestead, Dirk Hunter's parent's house, facing north

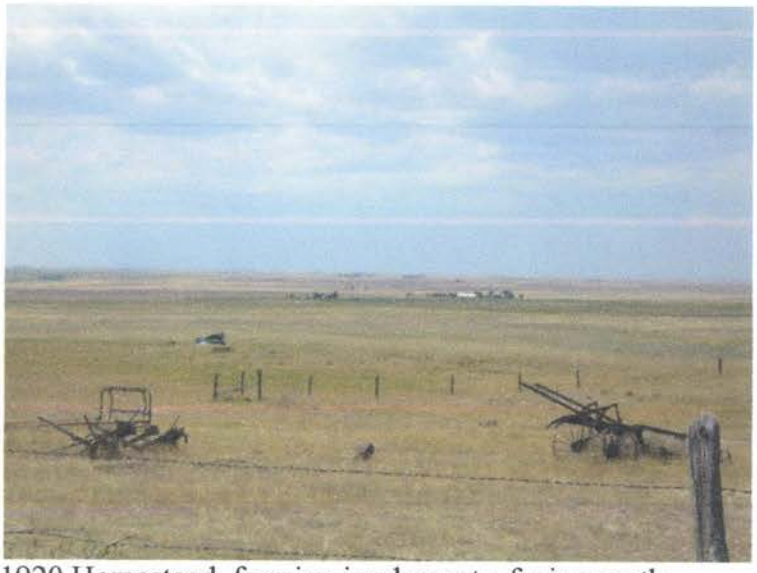
1920s Homestead, outhouse, facing west/northwest

APPENDIX F.10: 1920S HOMESTEAD SITE PHOTOS, CONTINUED.

1920s Homestead, collapsed chicken coop, facing north/northwest

1920s Homestead, collapsed chicken coop, facing east/northeast

APPENDIX F.10: 1920S HOMESTEAD SITE PHOTOS, CONTINUED.



1920 Homestead, farming implements, facing north

1920s Homestead, farming implements, facing northwest

APPENDIX F.10: 1920S HOMESTEAD SITE PHOTOS, CONTINUED.

1920s Homestead, collected toy gun

1920s Homestead, wooden frame saddle

APPENDIX F.10: 1920S HOMESTEAD SITE PHOTOS, CONTINUED.

1920s Homestead, kid's cowboy boot sole

1920s Homestead, small metal animal trap

APPENDIX F.11: HISTORIC ARTIFACTS FROM PRIVATE ARTIFACT COLLECTION

NECKLACE GIVEN TO DIRK HUNTER'S MOTHER AT CHEYENNE WILD WEST SHOW. MADE OF LONG BONE, TRADE BEADS AND COINS

Appendix G.1, Table 6.6, Artifact Data

Site Name	Artifact Acc. #	Class	Element	Portion	Material Type	Color 1,2,3	Opacity	SCR	CTX	HEAT	MLEN (mm)	MWID (mm)	MTHK (mm)	Axial length	Blade Length A	Blade Length B	Notch Depth A	Notch Depth B	Neck Width	Base Height	Base Width	Diagnistic info
Unknown	1	CMC	CMC	US	clay	BK,GR,WH	O	N/A	N/A	US	33.9	18.5	6.6	33.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Ceramic Period
Unknown	2	CMC	CMC	US	clay	TN,BK,GR	O	N/A	N/A	US	28.3	14.9	5	28.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Ceramic Period
Unknown	3	CMC	CMC	FR	clay	GR,BK,N/A	O	N/A	N/A	N	17.2	11.9	6.3	17.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Ceramic Period
Indian Overlook	4	CMC	CMC	FR	clay	BK,GR,TN	O	N/A	N/A	N	43.7	26.9	7.1	43.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Late Prehistoric
Indian Overlook	5	CMC	CMC	FR	clay	BK,GR,TN	O	N/A	N/A	N	28.6	17.2	6.7	28.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Late Prehistoric
Indian Overlook	6	CMC	CMC	FR	clay	BK,GR,TN	O	N/A	N/A	N	32.6	20.5	4.5	32.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Late Prehistoric
Indian Overlook	7	CMC	CMC	FR	clay	GR,TN,BK	O	N/A	N/A	N	17.1	13.8	5.4	17.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Late Prehistoric
Indian Overlook	8	CMC	CMC	FR	clay	TN,GR,BK	O	N/A	N/A	N	17.4	11.9	5	17.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Late Prehistoric
Indian Overlook	9	CMC	CMC	FR	clay	BK,GR,TN	O	N/A	N/A	N	10.1	10	4.7	10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Late Prehistoric
Indian Overlook	10	CMC	CMC	FR	clay	BK,GR,TN	O	N/A	N/A	N	10.8	10.5	4.4	10.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Late Prehistoric
Indian Overlook	11	CMC	CMC	FR	clay	GR,BK,TN	O	N/A	N/A	N	18.9	14.1	6.4	18.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Late Prehistoric
Indian Overlook	12	CMC	CMC	FR	clay	GR,BK,TN	O	N/A	N/A	N	18.8	12	6.3	18.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Late Prehistoric
Indian Overlook	13	CMC	CMC	FR	clay	TN,GR,BK	O	N/A	N/A	N	13.1	10.6	5	13.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Late Prehistoric
Indian Overlook	14	CMC	CMC	FR	clay	GR,TN,BK	O	N/A	N/A	N	38.7	33.1	8	38.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Late Prehistoric
Indian Overlook	15	CMC	CMC	FR	clay	PK,GR,TN	O	N/A	N/A	N	28.4	19.4	9.2	28.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Late Prehistoric
Indian Overlook	16	CMC	CMC	FR	clay	PK,GR,TN	O	N/A	N/A	N	26.4	16.6	8.1	26.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Late Prehistoric
Indian Overlook	17	CMC	CMC	FR	clay	GR,TN,BK	O	N/A	N/A	N	23	19.8	7	23	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Late Prehistoric
Indian Overlook	18	CMC	CMC	FR	clay	BK,GR,TN	O	N/A	N/A	N	11.2	10.6	4.4	11.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Late Prehistoric
Indian Overlook	19	CMC	CMC	FR	clay	PK,TN,GR	O	N/A	N/A	N	15.2	11.6	5.7	15.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Late Prehistoric
Flattop	N/A	CS	PP	DSH	JA	PK,CL,PR	O	5	0	N/A	21.6	14.5	4.1	21.6	15.2	16.1	2.1	4.2	6.6	5.3	13.2	Late Prehistoric/Late Archaic
Indian Overlook	20	CMC	CMC	FR	clay	BK,GR,WH	O	N/A	N/A	N	8.9	4.5	5.7	8.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Late Prehistoric
Indian Overlook	21	CMC	CMC	FR	clay	BK,GR,TN	O	N/A	N/A	N	34.8	26.7	5.1	34.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Late Prehistoric
Rocky Point	22	CMC	CMC	FR	clay	GR,TN,N/A	O	N/A	N/A	US	21.5	15.7	4.8	21.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Ceramic Period
Rocky Point	23	CMC	CMC	FR	clay	GR,TN,BR	O	N/A	N/A	US	28.2	22.4	5.9	28.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Ceramic Period
Rocky Point	24	CMC	CMC	FR	clay	GR,TN,BR	O	N/A	N/A	US	41.3	35.6	7.1	41.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Ceramic Period
Baugh Pasture	26	CS	BF5	PR	H	CM,TN,BK	O	5	0	N	14.8	11.8	3.8	14.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	nondiagnostic

Appendix G.1, Table 6.6, Artifact Data, Continued

Site Name	Artifact Acc. #	Class	Element	Portion	Material Type	Color 1,2,3	Opacity	SCR	CTX	HEAT	MLEN (mm)	MWID (mm)	MTHK (mm)	Axial length	Blade Length A	Blade Length B	Notch Depth A	Notch Depth B	Neck Width	Base Height	Base Width	Diagnistic info
Baugh Pasture	27	CS	UF	CO	QTZ	TN,CM,N/A	O	5	0	N	32.7	15.8	4.8	32.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	nondiagnostic
Baugh Pasture	28	CS	BF2	US	CH	WH,GR,TN	O	5	0	N	32.2	20.3	7.1	32.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	nondiagnostic
Claybanks	29	CS	PP	CO	H	OR,BK,N/A	O	5	0	N/A	50.9	19	5.8	50.9	35.9	34	N/A	N/A	N/A	N/A	15.5	Paleoindian, Hell- Gap
Claybanks	30	CS	PP	DSH	CH	PK,TN,GR	O	5	0	N/A	38.4	20.2	4.8	38.4	28.9	28.7	2.2	4.4	13	7.9	13.4	Mid. Archaic, McKean
Claybanks	31	CS	PP	DSH	CL	CL,TN,GR	S	5	0	N/A	37.8	18.9	4.9	37.8	29.3	28.6	3.5	3.8	13.3	7.6	14.6	Mid. Archaic, McKean
Claybanks	32	CS	PP	CO	CL	WH,PK,PR	O	5	0	N/A	45.2	28.4	6.9	45.2	16.5	19.2	6	8.1	12.6	9	12.5	Late Archaic, Avonlea
Claybanks	33	CS	PP	DSH	CL	WH,GR,N/A	O	5	0	N/A	30	17.5	4.7	29.6	22.6	26.6	2.7	3.5	11.7	4	15.5	Late Archaic, Avonlea
Claybanks	34	CS	PP	DSH	CH	TN,GR,MR	O	5	0	N/A	52.1	26.4	6.1	52.1	46.7	43.4	7.1	7.1	9.8	6.3	16.8	Late Archaic, Avonlea
Claybanks	35	CS	PP	CO	CL	WH,PK,OR	S	5	0	N/A	30	16.2	3.5	30	25.2	25.9	4.2	3.7	7.7	4.5	13.9	Late Archaic, Avonlea
Claybanks	36	CS	PP	CO	H	OR,BK,N/A	O	5	0	N/A	34.3	19	5.3	34.3	27.5	26.6	2.9	3	13.4	5.7	15	Late Archaic
Claybanks	37	CS	PP	ME	JA	MR,N/A,N/A	O	5	0	N/A	20.1	24.8	4.4	20.1	N/A	N/A	5.9	6.3	11.3	N/A	N/A	Late Archaic
Claybanks	38	CS	PP	DSH	CH	TN,GR,BK	O	5	0	N/A	38.3	22.8	5.7	38.3	25.9	27.1	4.1	1.3	17.4	12.7	18.2	Late Archaic
Claybanks	39	CS	PP	DSH	CL	PK,OR,BK	S	5	0	N/A	31.1	17.6	4.6	31.1	18.4	24.2	3.6	6.3	10.4	5.9	12.2	Late Archaic
Claybanks	40	CS	PP	DSH	H	BR,CM,BK	O	5	0	N/A	37.8	25.4	6.8	37.8	27	28.9	4.4	3.3	13.7	11	11.3	Late Archaic
Claybanks	41	CS	PP	DSH	QTZ	WH,N/A,N/A	O	5	0	N/A	30.5	27.6	8.5	30.5	N/A	N/A	4.9	5.8	15.5	11.6	27.6	Late Archaic
Claybanks	42	CS	PP	CO	CL	LV,TN,CL	T	5	0	N/A	24.6	13.3	4.2	23.6	19	19.8	2.9	3.2	6.1	4.7	6.4	Late Prehistoric
Claybanks	43	CS	PP	CO	CL	PCH,PK,CL	S	5	0	N/A	29.3	17.5	4.5	29.3	22.9	23.7	5.5	5.3	7.6	6.3	10.4	Late Prehistoric
Claybanks	44	CS	PP	CO	CL	WH,PR,PK	O	5	0	N/A	24.2	17.5	3.8	24.2	15.6	16.9	2.6	2.2	10.2	6.7	17.5	Late Prehistoric
Claybanks	45	CS	PP	DSH	JA	PR,RD,N/A	O	5	0	N/A	22	194.5	22	22	11.4	12.5	5	3.9	17.3	2.8	9.3	Late Prehistoric
Claybanks	46	CS	PP	DSH	CL	PR,CL,BK	S	5	0	N/A	27.9	11.2	3.7	26.1	8.5	17.9	N/A	2.6	7.9	6.5	9.9	Late Prehistoric
Claybanks	47	CS	BF5	PR	CL	WH,MR,GR	S	5	0	N/A	48.8	24.2	4.8	41.7	45.8	37.8	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Claybanks	48	CS	BF5	PSH	CH	TN,N/A,N/A	O	5	0	N/A	35.8	19.9	5.8	35.8	16.6	14.1	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Claybanks	49	CS	BF5	ME	CH	PK,MR,GR	O	5	0	N/A	43.7	33.8	7.7	28.8	22	27.5	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Claybanks	50	CS	BF5	ME	PWD	GD,BR,BK	O	5	0	N/A	27.9	20.4	5.4	20.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Claybanks	51	CS	BF2	END	CH	PK,GR,N/A	O	5	0	N/A	33	27.5	8.9	29.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Flattop	52	CS	PP	CO	CL	TN,CL,N/A	S	5	0	N/A	28.9	11.2	4.2	28.9	19.1	19.6	2.7	2.6	9.7	7	10.4	Mid. Archaic, McKean
Flattop	53	CS	PP	DSH	CL	WH,BK,N/A	S	5	0	N/A	23.2	17.8	3.9	23.2	14.9	16.7	4.5	3.8	10	7.2	11.4	Mid. Archaic, McKean
Flattop	54	CS	PP	CO	CH	PK,WH,N/A	O	5	0	N/A	40.8	23.8	5.2	40.8	36.2	35.7	5.2	6.2	13.5	6.4	17	Late Archaic, Avonlea
Flattop	55	CS	PP	PSH	CL	WH,BK,PK	S	5	0	N/A	24.6	19.8	5.4	24.6	22.8	20.1	4.5	4.5	7.7	4.1	10.3	Late Archaic, McKean
Flattop	56	CS	PP	CO	H	CM,TN,BK	O	5	0	N/A	18.8	14.5	3.4	18.8	16.6	15.7	1	1.3	11.9	4.6	14.8	Late Pre-historic, Avonlea
Flattop	57	CS	PP	CO	CH	TN,BK,BR	O	5	0	N/A	20.4	14.6	3	20.4	13.6	14.2	1.9	2.5	10.5	5.5	14.7	Late Pre-historic, Avonlea
Flattop	58	CS	PP	DSH	JA	RD,BK,N/A	O	5	0	N/A	15.4	11.7	2.6	15.4	11.9	13.9	3.2	2.6	6.5	3.7	10.1	Late Archaic, Avonlea
Flattop	59	CS	PP	DSH	CL	PK,CL,N/A	S	5	0	N/A	17.2	14.6	4.5	17.2	11.6	13	2.3	2.8	10.1	6.5	14.1	Late Pre-historic, Avonlea
Flattop	60	CS	PP	CO	CH	GR,TN,N/A	O	5	0	N/A	23.6	11.9	2.7	23.6	18.9	19	4.1	3.1	5.4	4.4	9.7	Late Prehistoric
Flattop	61	CS	BF5	CO	CL	CL,GR,N/A	S	5	0	N/A	42.7	21.8	6.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric

Appendix G.1, Table 6.6, Artifact Data, Continued

Site Name	Artifact Acc. #	Class	Element	Portion	Material Type	Color 1,2,3	Opacity	SCR	CTX	HEAT	MLEN (mm)	MWID (mm)	MTHK (mm)	Axial length	Blade Length A	Blade Length B	Notch Depth A	Notch Depth B	Neck Width	Base Height	Base Width	Diagnistic info
Flattop	62	CS	BF5	CO	CL	CL,GR,N/A	S	5	0	N/A	41.6	22.8	5.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Flattop	63	CS	BF5	US	CL	GR,PR,WH	O	5	0	N/A	2.3	1.8	0.33	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Flattop	64	CS	UF	CO	CL	PK,TN,GR	O	5	0	N/A	3	1.9	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Flattop	65	CS	UF	CO	QTZ	RD,PK,N/A	O	5	0	N/A	6.5	3	1.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Indian Overlook	66	CS	BF5	DS	CL	TN,WH,CL	S	5	0	N	26	20.1	5.8	26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Paleoindian
Indian Overlook	67	CS	BF4	PR	QTZ	RD,PK,BK	O	5	0	N	18.2	16.2	3.4	18.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Rocky Point	68	CS	PP	DS	CH	PK,BK,TN	O	5	0	N/A	20.4	17.1	6.6	20.4	N/A	N/A	N/A	N/A	17.1	2.5	15.6	Probable Paleo Point
Rocky Point	69	CS	PP	CO	JA	PR,RD,GR	O	5	0	N/A	42.9	19.5	5.2	42.9	32.5	35.5	4.7	4.5	14	9.8	15.1	Mid. Archaic, McKean
Rocky Point	70	CS	PP	DSH	CH	TN,OR,BK	O	5	0	N/A	46.2	26.1	6.6	46.2	34.8	34.1	5.8	5.5	16.1	7.4	16.1	Late Archaic, McKean
Rocky Point	71	CS	PP	CO	CH	RD,MR,WH	O	5	0	N/A	31.6	19	5.3	30.1	17.2	16	1.6	2.9	15.1	10.2	15.1	Mid. Archaic, McKean
Rocky Point	72	CS	PP	DSH	CH	WH,GR,N/A	O	5	0	N/A	31	22.3	6	28	14.9	13.4	2.4	2.5	15.1	12.1	16.7	Mid. Archaic, McKean
Rocky Point	73	CS	PP	DSH	CH	RD,MR,WH	O	5	0	N/A	21.5	18.8	4.9	21.5	12.7	8.4	2.9	2.6	15.1	9.3	15.6	Mid. Archaic, McKean
Rocky Point	74	CS	PP	DSH	CL	CL,PK,N/A	S	5	0	N/A	36.4	16.2	4.7	35.2	23.5	24.1	1.7	1.2	11.8	9	14.8	Mid. Archaic, McKean
Rocky Point	75	CS	PP	CO	CL	CL,PK,BK	T	5	0	N/A	23	16.8	4.6	23	12.7	14.1	2.7	3.6	11.5	7.1	13.4	Mid. Archaic
Rocky Point	76	CS	PP	DSH	JA	PK,BK,N/A	O	5	0	N/A	27.6	25.6	4.2	27.6	23.6	19.3	5.3	4.7	14.8	5.6	19.1	Late Archaic
Rocky Point	77	CS	PP	DSH	JA	PK,RD,WH	S	5	0	N/A	28.2	23.8	5.4	28.2	23.5	20.8	5.1	6.2	10.9	5.9	12.1	Mid. Archaic
Rocky Point	78	CS	PP	ME	CH	BR,BK,N/A	O	5	0	N/A	31.2	23.9	5.1	31.2	28.6	26.1	4.6	3.4	14.2	N/A	N/A	Late Archaic
Rocky Point	79	CS	PP	DSH	QTZ	PK,WH,N/A	O	5	0	N/A	33	18.1	5.5	33	18.9	23.4	2.8	3.4	14.8	4.6	15.1	Late Archaic
Rocky Point	80	CS	PP	CO	CL	PK,WH,N/A	S	5	0	N/A	26.2	14.9	4.1	26.2	20.7	20.9	1	2	10.8	5.7	14.9	Late Prehistoric, Avonlea
Rocky Point	81	CS	PP	DSH	QTZ	WH,GR,N/A	O	5	0	N/A	25.6	14.3	4	25.6	16.9	15.2	3.3	2	10.4	5.8	13.9	Late Prehisoric
Rocky Point	82	CS	BF5	DS	CL	OR,N/A,N/A	S	5	0	N/A	31.4	21.5	5.3	31.4	21.5	29.3	3.4	N/A	20.4	6.6	20.9	Unknown Prehistoric
Rocky Point	83	CS	BF5	CO	QTZ	BR,N/A,N/A	O	5	0	N/A	65.3	28.1	8.1	65.3	37.5	32.6	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Rocky Point	84	CS	BF5	CO	CH	PK,BK,N/A	O	5	0	N/A	61	28	9.9	61	48	46.2	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Rocky Point	85	CS	BF2	PSH	CH	BR,GR,N/A	O	5	0	N/A	45.4	32.9	7.7	36.4	28.9	33.7	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Rocky Point	86	CS	UF	US	CH	MR,PR,N/A	O	5	0	N/A	57.8	37.6	7.6	41.2	43.9	30.8	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Rocky Point	87	CS	FKW	CO	CL	CL,PR,PK	S	5	0	N/A	26.4	18.2	3.4	26.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Tower Butte	88	CS	PP	CO	CH	WH,GR,N/A	O	5	0	N/A	47.9	21.8	4.8	47.9	32.9	33.4	2.1	3.2	14.3	11.4	15.3	Mid. Archaic PP, McKean
Tower Butte	89	CS	PP	DS	CL	CL,BK,N/A	S	5	0	N/A	19.9	18.1	5.8	17.6	N/A	N/A	8.3	2.3	13.4	8.1	14.7	Mid. Archaic PP, McKean
Tower Butte	90	CS	PP	DSH	CH	GR,BK,WH	O	5	0	N/A	41.8	17.5	6.3	41.8	26.1	30.3	1.3	3.7	11.2	6.6	12.6	Late Archaic PP
Tower Butte	91	CS	PP	DSH	CH	WH,N/A,N/A	O	5	0	N/A	32.1	15.8	4.2	32.1	23.2	21.8	2	1.9	11.2	6.2	14.7	Early Archaic PP
Tower Butte	92	HS	PP	CO	MTL	RB,GR,N/A	O	N/A	N/A	N/A	52.1	21.4	1.6	52.1	26.8	27.2	N/A	N/A	13.8	17.5	1.3	Protohistoric period
Tower Butte	93	CS	BF5	PSH	CH	GR,WH,BK	O	5	0	N/A	48.4	37.6	7.5	48.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Tower Butte	94	CS	BF5	PSH	CL	PK,BK,GR	O	5	0	N/A	46.6	40.8	5.4	46.6	47.9	46.1	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Tower Butte	95	CS	BF2	PSH	QTZ	GR,TN,N/A	O	5	0	N/A	46.3	27.5	8.3	46.3	44	41	N/A	N/A	1.3	N/A	N/A	Unknown Prehistoric
Tower Butte	96	CS	BF2	PSH	QTZ	OR,TN,BK	O	5	0	N/A	52.6	17.9	5.8	52.6	52.1	50.1	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric

Appendix G.1, Table 6.6, Artifact Data, Continued

Site Name	Artifact Acc. #	Class	Element	Portion	Material Type	Color 1,2,3	Opacity	SCR	CTX	HEAT	MLEN (mm)	MWID (mm)	MTHK (mm)	Axial length	Blade Length A	Blade Length B	Notch Depth A	Notch Depth B	Neck Width	Base Height	Base Width	Diagnistic info
IF	97	CS	PP	CO	CL	CL,WH,N/A	S	N/A	N/A	N/A	36.8	16.3	5.5	36.8	17	18.1	2.7	3.2	10	8.8	15	Late Archaic
Unknown	98	CS	PP	DSH	CH	RD,TN,N/A	O	5	0	N	27.5	21.8	5.3	23.6	N/A	N/A	3.9	3.8	13.5	7	16.7	Mid. Archaic
Unknown	99	CS	BF5	ME	CH	TN,N/A,N/A	O	5	0	N	20.8	20.3	4.8	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Mid. Archaic
Unknown	100	CS	PP	CO	OB	BK,CL,GR	S	5	0	N	52.2	31.3	4.8	52.2	47.8	49.1	6.3	7.5	16.77	5.8	25.2	Late Archaic
Unknown	101	CS	PP	CO	JA	RD,GR,N/A	O	5	0	N	39.3	22.2	6.1	39.3	16.7	18.8	7.1	6.8	9.5	6.2	13	Late Archaic
Unknown	102	CS	PP	CO	CH	PK,GR,TN	O	5	0	N	38.9	26.1	7	38.9	30.4	32.5	7.5	6.9	10.7	7.3	13.9	Late Archaic
Unknown	103	CS	PP	PSH	CL	PK,WH,N/A	S	5	0	N	31.2	21.5	4.6	31.2	11.3	10.5	3.8	3.7	12	N/A	N/A	Late Archiac, Avonlea
Unknown	104	CS	PP	PSH	CL	PK,PR,WH	O	5	0	N	23.6	20.8	3.5	23.5	13.3	14.5	3.9	5	12.9	4.2	N/A	Late Archaic, Avonlea
Unknown	105	CS	PP	DS	CL	PK,GR,PR	S	5	0	N	13.4	16.2	3.9	16.2	N/A	N/A	0.6	2.3	16.6	2	19.8	Late Archaic, Avonlea
Unknown	106	CS	PP	DSH	JA	MR,BK,N/A	O	5	0	N	33.9	25.8	5.5	31.6	24	15	4	3.8	14.3	6.5	17.7	Late Archiac
Unknown	107	CS	PP	DSH	CL	PK,CL,PC	S	5	0	N	38.4	29	6.1	33	20	26	6.9	6.9	15.6	9.2	18.5	Late Archaic
Unknown	108	CS	PP	DSH	QTZ	OR,BK,N/A	O	5	0	N	21.5	16	4.9	20.8	N/A	N/A	3.9	3.9	9.2	6.5	12	Late Archiac
Unknown	109	CS	PP	DSH	CL	WH,PK,GR	O	5	0	N	24	20	4.4	24	N/A	N/A	2	2.8	15.8	5.8	15.2	Late Archaic
Unknown	110	CS	PP	PSH	CH	GR,BK,N/A	O	5	0	N	30.3	16.7	4.8	30.3	21.9	18.1	6.6	4.6	6.3	N/A	N/A	Late Prehistoric
Unknown	111	CS	PP	DSH	JA	RD,PK,N/A	O	5	0	N	21.8	13.8	4.2	21.8	12.1	11.8	3.6	4.1	8.6	5.9	13.6	Late Prehistoric
Unknown	112	CS	BF5	ME	CL	PC,PK,PR	S	N/A	N/A	N	23.4	18.9	3.6	18.9	N/A	N/A	3.2	4.2	11.2	N/A	N/A	Late prehistoric
Unknown	113	CS	PP	DS	CH	WH,GR,OR	O	5	0	N	15.6	16.6	3.7	16.6	N/A	N/A	2.7	1.3	8	4.5	8.1	Late Prehistoric
Unknown	114	CS	BF5	PR	QTZ	PK,GR,N/A	O	5	0	N	33.6	22.2	7.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unspecified
Unknown	115	CS	BF5	PR	CH	TN,OR,N/A	O	5	0	N	26.1	23.9	7.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unspecified
Unknown	116	CS	BF5	US	CL	PR,BK,PK	S	5	0	N	38.5	26.7	4.1	38.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	117	CS	BF5	PR	CL	CL,PK,PR	S	5	0	N	19.4	19.4	3.8	19.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	118	CS	BF5	PR	QTZ	GR,TN,N/A	O	5	0	N	22.7	13.2	5.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	119	CS	BF5	PR	QTZ	TN,GL,N/A	O	5	0	N	22.4	21.9	6	22.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	120	CS	BF5	PR	H	OR,BK,N/A	O	5	0	N	17.9	10.4	2.3	17.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	121	CS	BF5	US	QTZ	TN,GR,N/A	O	5	0	N	21.7	19.9	3.6	21.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	122	CS	BF5	CO	QTZ	OR,BR,TN	O	5	0	N	46.8	26.5	8	46.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	123	CS	BF5	CO	CH	PK,TN,N/A	O	5	0	N	37.1	26.1	7.6	36.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	124	CS	BF5	CO	CL	PK,TN,CL	S	5	0	N	34.4	25.4	7.6	34.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	125	CS	PP	ME	JA	BK,MR,BR	O	5	0	N	29.7	23.1	4.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Late Archaic
Unknown	126	CS	PP	ME	H	OR,CM,BK	O	5	0	N	31.4	22.9	6.8	31.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Late Archaic
Unknown	127	CS	BF5	ME	QTZ	RD,MR,N/A	O	5	0	N	41.7	27.1	7.6	35.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	128	CS	BF5	ME	CH	PK,BK,GR	O	5	0	N	24.1	17.7	4.6	24.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	130	CS	BF5	ME	H	OR,BK,TN	O	5	0	N	33	13.8	7.1	33	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	131	CS	BF5	US	QTZ	TN,RD,PR	O	5	0	N	40	26.3	8.3	40	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	132	CS	BF5	DS	CH	TN,GR,OR	O	5	0	N	28.5	14.3	4.8	28.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric

Appendix G.1, Table 6.6, Artifact Data, Continued

Site Name	Artifact Acc. #	Class	Element	Portion	Material Type	Color 1,2,3	Opacity	SCR	CTX	HEAT	MLEN (mm)	MWID (mm)	MTHK (mm)	Axial length	Blade Length A	Blade Length B	Notch Depth A	Notch Depth B	Neck Width	Base Height	Base Width	Diagnistic info
Unknown	133	CS	BF4	US	QTZ	MR,RD,BK	O	4	0	N	26.5	19.3	7.2	26.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	134	CS	BF4 ANG	CO	QTZ	TN,N/A,N/A	O	4	0	N	45	32.7	8.2	41.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	135	CS	BF2	CO	CL	TN,PK,WH	S	5	0	N	38.6	36.4	11	38.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	136	CS	BF2	CO	CL	TN,PK,N/A	S	5	0	N	34.8	26.4	10	34.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	137	CS	BF2	US	CL	CL,PK,GR	S	5	0	N	45.7	28.2	10.1	43.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	138	CS	BF2	CO	QTZ	PK,N/A,N/A	O	5	0	N	71.1	46	14.4	71.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	139	CS	BF2	CO	CH	RD,PK,N/A	O	5	0	N	67.4	41	15.1	67.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	140	CS	BF2	CO	QTZ	TN,OR,N/A	O	4	0	N	47.8	30.4	9.2	47.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	141	CS	BF2	CO	CH	WH,PC,TN	O	5	4	N	60.3	40.6	14.8	60.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	142	CS	BF2	CO	QTZ	TN,CM,N/A	O	3	3	N	55.5	22.6	12.3	55.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	143	CS	BF2	CO	CH	PK,TN,OR	O	5	0	N	50.6	27.9	9.1	50.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	144	CS	BF2	PR	CH	TN,RD,BK	O	5	0	N	33.6	33.6	7.5	30.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	145	CS	BF2	PR	QTZ	TN,OR,N/A	O	5	0	N	38.8	31.9	35.4	38.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	146	CS	BF2	PR	QTZ	RD,MR,N/A	O	5	0	N	37.9	27.2	11.8	37.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	147	CS	BF2	US	QTZ	PK,N/A,N/A	O	5	0	N	27.3	19.5	5.4	27.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	148	CS	BF2	PR	CL	WH,BK,GR	S	5	1	N	40.3	27.8	8.4	35.8.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	149	CS	AWL	CO	CL	PK,CL,N/A	S	5	0	N	37.7	23	6.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	150	CS	AWL	US	QTZ	MR,RD,BK	O	5	0	N	27.1	10.6	5.7	27.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	151	CS	AWL	US	H	CM,TN,BK	O	5	0	N	24.2	11.6	3.5	24.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	153	CS	AWL	DSH	CH	PK,RD,BR	O	5	0	N	30.1	17.9	4.3	30.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	154	CS	FKW	US	H	OR,TN,BK	O	5	0	N	29.7	17.2	6.1	29.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	155	CS	FKW	CO	CH	BR,BK,MR	O	5	0	N	26.6	13.2	3.7	26.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	156	CS	FKW	ME	CL	TN,BK,GR	S	5	0	N	21.3	19.1	4.4	21.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	157	CS	FKW	ME	CH	PR,TN,N/A	O	3	0	N	22.4	21.9	6	22.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	158	CS	FKW	DSH	CL	TN,WH,OR	S	5	0	N	26.5	19.5	4.8	26.5	N/A	N/A	N/A	N/A	15.5	6.7	15.1	Unknown Prehistoric
Unknown	159	CS	FKW	CO	CH	TN,RD,WH	O	4	0	N	35	25.9	6.6	35	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	160	CS	FKW	CO	H	OR,BK,N/A	O	5	3	N	37.5	24.7	6.7	33.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	161	CS	FKW	CO	CL	OR,PK,PC	S	5	0	N	21.9	19	2.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	162	CS	FKW	CO	CH	PK,OR,TN	O	5	0	N	32.8	25.8	5.7	32.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	163	CS	FKU	PR	CH	TN,PK,WH	O	4	1	N	43.6	29.3	6.5	43.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	164	CS	FKU	CO	H	OR,RD,TN	O	3	0	N	51.3	25.1	6	49	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	165	CS	FKU	CO	CH	GR,WH,TN	O	5	0	N	45.6	25.2	6.4	41.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	166	CS	FKU	US	QTZ	PK,TN,GR	O	4	0	N	22.2	14.4	4.5	22.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric

Appendix G.1, Table 6.6, Artifact Data, Continued

Site Name	Artifact Acc. #	Class	Element	Portion	Material Type	Color 1,2,3	Opacity	SCR	CTX	HEAT	MLEN (mm)	MWID (mm)	MTHK (mm)	Axial length	Blade Length A	Blade Length B	Notch Depth A	Notch Depth B	Neck Width	Base Height	Base Width	Diagnistic Info
Unknown	167	CS	UF	CO	CH	BK,MR,N/A	O	5	0	N	62.7	39.3	15.2	62.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	168	CS	UF	CO	CH	MR,PR,BK	O	5	0	N	71.1	34.6	17.8	71.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	169	CS	UF	CO	CH	GR,TN,PC	O	5	0	N	37	22	6.7	35.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	170	CS	UF	CO	QTZ	OR,TN,N/A	O	3	1	N	43	23.9	7.6	43	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	171	CS	UF	US	QTZ	OR,PC,TN	O	5	0	N	23.2	24	6	23.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	172	CS	UF	CO	CH	GR,TN,BK	O	5	1	N	59.3	32.3	12.1	59.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	173	CS	FK	CO	CH	BK,TN,GR	O	2	2	N	39.3	29.4	11.4	39.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	174	CS	FK	CO	CH	TN,PC,GR	O	5	1	N	49.9	39.6	11.8	49.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	175	CS	FK	CO	QTZ	RD,BK,N/A	O	2	0	N	27.7	16.7	4	27.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	176	CS	FK	CO	CL	PR,PK,CL	S	2	4	N	30	18.4	7.4	30	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	177	CS	FK	CO	CL	PK,PR,CL	S	3	0	N	20.4	18.2	3.9	20.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	178	CS	FK	CO	CL	PK,CL,MR	T	3	0	N	25.2	12.1	3.4	25.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	179	CS	FK	CO	H	OR,BK,N/A	O	3	0	N	19.7	14.8	3.8	19.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	180	CS	CR	CO	OB	BK,N/A,N/A	S	4	1	N	49.6	33.3	16	49.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	181	CS	CR	CO	OB	BK,N/A,N/A	O	2	4	N	30.7	20.6	16.9	30.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	182	CS	CR	CO	OB	BK,N/A,N/A	S	3	3	N	25.3	23.9	19.6	25.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	183	CS	CR	CO	OB	BK,N/A,N/A	O	3	3	N	28.4	21.4	13.7	28.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	184	CS	CR	CO	OB	BK,N/A,N/A	O	2	4	N	40.7	36.1	17.1	40.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	185	CS	CR	CO	OB	BK,N/A,N/A	O	4	4	N	26.9	21.5	15.4	26.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	186	CS	CR	CO	OB	BK,N/A,N/A	O	3	2	N	34.6	18.9	7.2	34.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Unknown	187	CS	PP	CO	CH	GR,TN,N/A	O	5	0	N	89.2	38.9	9.7	89.2	16.7	14.9	8.2	6.5	17.4	11.4	28	Eccentric
Unknown	188	CS	PP	CO	CH	GR,OR,BK	O	5	0	N	92.2	51.6	8	92.2	46	52.1	7.2	6	23.6	8	23.6	Eccentric
Gooseneck Pasture	189	HS	PP	CO	MTL	BK,MR,GR	O	N/A	N/A	Y	104.9	73.7	1.8	104.9	58.8	57.8	12.2	12.5	49.1	17.1	73.4	Historic; Euro-American
Unknown	190	HS	GR	CO	MTL	RD,BR,BK	O	N/A	N/A	N	80.7	10.4	11.4	80.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Historic; Euro-American
Unknown	191	HS	US	CO	US	RD,TN,BR	O	N/A	N/A	N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Historic; Euro-American
Baugh Pasture	N/A	CS	FK	CO	H	CM,OR,GR	O	3	0	N	19.8	13.7	4.4	19.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Baugh Pasture	N/A	CS	FKU	CO	FL	PK,WH,GR	S	1	0	N	21.4	18.3	4.9	21.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Baugh Pasture	N/A	CS	FK	CO	CL	CL,WH,TN	S	1	0	N	14	11.2	3.9	14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Baugh Pasture	N/A	CS	FK	CO	FL	WH,GR,TN	S	1	0	N	14.1	12.3	3.1	14.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Baugh Pasture	N/A	CS	FK	CO	H	CM,OR,BK	O	3	0	N	18.3	12.3	2.3	18.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Baugh Pasture	N/A	CS	FK	CO	CL	CL,OR ,TN	S	1	2	N	19.6	16.8	4.5	19.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Baugh Pasture	N/A	CS	FK	CO	FL	BK,PR,N/A	S	1	1	N	26.8	13	3.9	26.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Baugh Pasture	N/A	CS	FK	CO	H	CM,BR,BK	O	3	0	N	11.7	9.2	1.3	11.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Baugh Pasture	N/A	CS	FK	CO	QTZ	PK,GR,WH	O	2	0	N	16.7	10.9	2.7	16.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric

Appendix G.1, Table 6.6, Artifact Data, Continued

Site Name	Artifact Acc. #	Class	Element	Portion	Material Type	Color 1,2,3	Opacity	SCR	CTX	HEAT	MLEN (mm)	MWID (mm)	MTHK (mm)	Axial length	Blade Length A	Blade Length B	Notch Depth A	Notch Depth B	Neck Width	Base Height	Base Width	Diagnistic info
Baugh Pasture	N/A	CS	BF2	US	H	OR,GR,TN	O	3	1	N	42.7	33.9	12.3	42.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Baugh Pasture	N/A	CS	FK	CO	QTZ	RD,WH,PK	O	1	2	N	39.7	28.8	8	39.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Baugh Pasture	N/A	CS	MANO	CO	QTZ	RD,BR,PR	O	N/A	N/A	N	10cm	7cm	7cm	10cm	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Baugh Pasture	N/A	CS	BF5	PR	CH	RD,PK,N/A	O	5	0	N	31.7	26.5	5.7	31.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Baugh Pasture	N/A	CS	ANG	CO	CL	GR,TN,CL	S	5	2	N	46.3	32.1	11.7	46.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Baugh Pasture	N/A	CS	ANG	CO	CL	CL,GR,TN	S	4	1	N	35.6	21.5	10.5	35.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Baugh Pasture	N/A	CS	FKW	CO	CH	PK,RD,N/A	O	2	0	N	21.2	20.6	5.6	21.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Baugh Pasture	N/A	CS	ANG	CO	CH	PK,RD,N/A	O	1	1	PL	12.7	12.7	4.4	12.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Baugh Pasture	N/A	CS	FK	CO	CL	GR,TN,PK	S	1	3	N	3.2	2	1.2	3.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Baugh Pasture	N/A	CS	FK	CO	QTZ	TN,N/A,N/A	O	3	0	N	2	1.75	0.3	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Baugh Pasture	N/A	CS	FKU	CO	CH	PK,TN,N/A	O	3	0	N	3.6	2	1.1	3.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Flattop	N/A	CS	FK	CO	QTZ	PR,WH,BK	O	2	3	US	7	3.8	1.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Flattop	N/A	CS	FK	CO	QTZ	TN,OR,RD	O	2	2	N/A	3.7	2.4	0.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Flattop	N/A	CS	FK	CO	CL	OR,CL,N/A	T	1	0	N/A	0.9	0.6	0.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Flattop	N/A	CS	FK	CO	CH	WH,GR,TN	O	1	3	N/A	4.5	3.5	0.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Flattop	N/A	CS	CR	CO	CH	WH,GR,N/A	O	4	1	N/A	6.6	3.7	3.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Flattop	N/A	CS	CR	CO	CH	WH,GR,N/A	O	5	2	N/A	6	4.4	3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Flattop	N/A	CS	CR	CO	CH	WH,GR,CL	O	5	1	N/A	23	12	7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Flattop	N/A	CS	FK	CO	CL	PK,CL,N/A	T	2	0	N/A	1	0.5	0.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Flattop	N/A	CS	FK	CO	QTZ	TN,OR,N/A	O	1	1	N/A	3.6	1.8	0.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Flattop	N/A	CS	FK	CO	CL	PK,WH,CL	T	2	1	N/A	1.3	1	0.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Flattop	N/A	CS	FK	CO	FL	MR,RD,N/A	O	3	0	N/A	1	0.8	0.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Flattop	N/A	CS	FK	CO	H	OR,BK,N/A	O	1	0	N/A	1.2	0.8	0.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Flattop	N/A	CS	FK	CO	CL	TN,WH,N/A	S	2	1	N/A	3	1.2	0.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Flattop	N/A	CS	FK	CO	H	OR,BK,N/A	O	2	0	N/A	2.1	2	0.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Flattop	N/A	CS	FK	CO	FL	MR,RD,BR	O	2	0	N/A	2.9	1.4	0.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Flattop	N/A	CS	FK	CO	CL	OR,CL,N/A	T	2	0	N/A	1.1	0.7	0.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Flattop	N/A	CS	FK	CO	CL	OR,WH,GR	S	3	0	N/A	2.5	2	0.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Flattop	N/A	CS	FK	CO	CL	CL,WH,N/A	T	2	0	N/A	1.3	0.6	0.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Flattop	N/A	CS	FK	CO	FL	PK,TN,N/A	O	3	0	N/A	1.4	0.9	0.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Flattop	N/A	CS	FK	CO	CH	RD,BK,PK	O	1	0	N/A	1.5	0.8	0.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Flattop	N/A	CS	FK	CO	CH	WH,GR,N/A	O	1	2	N/A	3.6	2.8	0.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Flattop	N/A	CS	FK	CO	QTZ	TN,CL,OR	O	2	0	N/A	1.9	1	0.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Flattop	N/A	CS	FK	CO	CH	WH,CL,N/A	O	1	2	N/A	4	3	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Flattop	N/A	CS	FK	CO	CH	WH,N/A,N/A	O	1	0	N/A	1.7	0.9	0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric

Appendix G.1, Table 6.6, Artifact Data, Continued

Site Name	Artifact Acc. #	Class	Element	Portion	Material Type	Color 1,2,3	Opacity	SCR	CTX	HEAT	MLEN (mm)	MWID (mm)	MTHK (mm)	Axial length	Blade Length A	Blade Length B	Notch Depth A	Notch Depth B	Neck Width	Base Height	Base Width	Diagnistic info
Indian Overlook	N/A	CS	FK	CO	CH	WH,GR,TN	O	1	3	N	39.7	13.9	10.3	39.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Indian Overlook	N/A	CS	FK	CO	CH	PK,PR,GR	O	2	1	N	40.3	29.5	8.5	40.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Indian Overlook	N/A	CS	FK	CO	CH	RD,PK,BK	O	2	0	N	24.3	19.9	8.4	24.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Indian Overlook	N/A	CS	FK	CO	CH	WH,GR,BK	O	2	4	TFR	16.5	14.8	9	16.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Indian Overlook	N/A	CS	FK	CO	H	OR,BK,TN	O	2	0	N	30.5	27	5.8	30.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Indian Overlook	N/A	CS	FK	CO	CL	PK,CL,WH	O	1	3	N	24.6	13.4	6.2	24.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Indian Overlook	N/A	CS	FK	CO	H	CM,BR,TN	O	4	0	N	21.8	21.6	2.7	21.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Indian Overlook	N/A	CS	FK	CO	H	CM,BK,TN	O	2	0	N	19	13	4.1	19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Indian Overlook	N/A	CS	FK	CO	H	CM,BK,BR	O	2	0	N	21.1	18.5	4.1	21.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Indian Overlook	N/A	CS	FK	CO	QTZ	TN,OR,BK	O	1	0	CZ	20.9	12	4.8	20.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Indian Overlook	N/A	CS	FK	CO	FL	RD,PR,BK	O	3	0	N	10	7	1.2	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Indian Overlook	N/A	CS	FK	CO	FL	RD,PK,N/A	S	2	0	N	10.4	7.6	1.5	10.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Rocky Point	N/A	CS	FK	CO	CH	BR,BK,TN	O	3	0	N/A	13.9	13.9	3.4	13.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Rocky Point	N/A	CS	FK	CO	QTZ	BR,BK,TN	O	1	1	N/A	22	10.5	2.7	22	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Rocky Point	N/A	CS	FK	CO	CH	TN,BK,GR	O	2	0	N/A	42.1	25.9	5.7	42.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Rocky Point	N/A	CS	FK	CO	CH	TN,GR,N/A	O	3	0	N/A	25.6	17.3	4.8	25.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Rocky Point	N/A	CS	FK	CO	QTZ	OR,RD,BK	O	1	2	US	35.8	34	11.4	35.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Rocky Point	N/A	CS	FK	CO	QTZ	TN,OR,BR	O	1	0	N/A	21	4	3.1	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Rocky Point	N/A	CS	FK	CO	QTZ	TN,OR,N/A	O	3	0	N/A	32.7	9.9	5.6	32.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Rocky Point	N/A	CS	FK	CO	QTZ	TN,OR,N/A	O	2	0	N/A	25	15.3	4.8	25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Rocky Point	N/A	CS	FK	CO	QTZ	TN,OR,N/A	O	2	0	N/A	18.5	10.9	2.7	18.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Rocky Point	N/A	CS	FK	CO	QTZ	TN,OR,N/A	O	3	0	N/A	16.8	13.5	2	16.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Rocky Point	N/A	CS	FK	CO	QTZ	TN,OR,N/A	O	4	0	N/A	11.1	10	1.6	11.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Rocky Point	N/A	CS	FK	CO	QTZ	TN,OR,BR	O	2	0	N/A	8.9	9	2.1	8.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Rocky Point	N/A	CS	FK	CO	QTZ	TN,OR,BR	O	3	0	N/A	15.6	10	2.5	15.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Rocky Point	N/A	CS	FKU	CO	QTZ	TN,OR,BR	O	4	0	N/A	19.7	18.9	2.8	19.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Rocky Point	N/A	CS	FK	CO	QTZ	TN,OR,BR	O	2	0	N/A	25.5	18.1	2.4	25.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Rocky Point	N/A	CS	FK	CO	CL	OR,CL,WH	S	3	0	N/A	22.6	12.8	2.5	22.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Rocky Point	N/A	CS	FK	CO	FL	RD,BR,N/A	O	1	1	N/A	17	11.3	4.6	17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Rocky Point	N/A	CS	FK	CO	QTZ	GR,RD,OR	O	2	1	US	27.5	18.9	5.9	27.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Rocky Point	N/A	CS	FK	CO	QTZ	GR,RD,TN	O	1	1	US	15	7.4	3.9	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Rocky Point	N/A	CS	FK	CO	CH	TN,OR,N/A	O	2	0	N/A	15.1	13	2.5	15.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Rocky Point	N/A	CS	FK	CO	CH	TN,OR,N/A	O	2	0	N/A	27	19	4.6	27	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Rocky Point	N/A	CS	FK	CO	CH	TN,OR,N/A	O	2	0	N/A	20.9	13.5	2.7	20.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Rocky Point	N/A	CS	FK	CO	QTZ	TN,WH,N/A	O	1	1	N/A	22.5	15.6	5.1	22.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric

Appendix G.1, Table 6.6, Artifact Data, Continued

Site Name	Artifact Acc. #	Class	Element	Portion	Material Type	Color 1,2,3	Opacity	SCR	CTX	HEAT	MLEN (mm)	MWID (mm)	MTHK (mm)	Axial length	Blade Length A	Blade Length B	Notch Depth A	Notch Depth B	Neck Width	Base Height	Base Width	Diagnistic info
Rocky Point	N/A	CS	FK	CO	QTZ	RD,WH,N/A	O	2	0	US	27	16.1	4.7	27	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Rocky Point	N/A	CS	FK	CO	CL	TN,OR,CL	S	2	1	US	29.8	25.2	11.1	29.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Rocky Point	N/A	CS	FK	CO	QTZ	RD,WH,GR	O	3	0	N/A	31.7	21.6	5.7	31.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Rocky Point	N/A	CS	FK	CO	QTZ	RD,WH,GR	O	2	1	US	21	13.1	2.3	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Rocky Point	N/A	CS	FK	CO	CH	PK,TN,RD	O	2	0	N/A	31.5	23.4	5.5	31.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Rocky Point	N/A	CS	FK	CP	CL	PK,TN,BK	O	2	2	N/A	38.6	22.8	6.2	38.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Tower Butte	N/A	CS	FK	CO	FL	LV,WH,N/A	O	2	0	N/A	14	9.2	3.1	14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Tower Butte	N/A	CS	FK	CO	FL	LV,WH,N/A	O	1	0	N/A	25.6	13.4	4	25.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Tower Butte	N/A	CS	FK	CO	FL	WH,CL,N/A	O	2	0	N/A	37.2	21.1	11.7	37.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Tower Butte	N/A	CS	FK	CO	FL	PK,RD,N/A	O	1	1	N/A	17.1	15.7	3.7	17.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Tower Butte	N/A	CS	FCR	CO	CH	TN,RD,N/A	O	4	1	N/A	48.9	24.7	22.5	48.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Tower Butte	N/A	CS	FK	CO	CL	WH,CL,LV	S	1	4	N/A	26	16.1	7.6	26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Tower Butte	N/A	CS	FK	CO	CL	WH,CL,LV	S	3	2	N/A	43	31.3	17.1	43	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Tower Butte	N/A	CS	FK	CO	H	OR,BK,TN	O	3	0	N/A	12.1	10	2.5	12.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Tower Butte	N/A	CS	FK	CO	QTZ	PK,TN,BK	O	1	1	N/A	34.9	30.2	8.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Tower Butte	N/A	CS	FK	CO	FL	RD,PR,N/A	O	4	1	N/A	16.9	16.7	4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Tower Butte	N/A	CS	FK	CO	FL	CL,PK,BK	O	2	0	N/A	9.1	8.4	2.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Tower Butte	N/A	CS	FK	CO	CH	TN,GR,BK	O	2	0	N/A	23.1	23.2	4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Tower Butte	N/A	CS	FK	CO	FL	PK,CL,LV	O	4	0	N/A	16.7	16.8	3.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Tower Butte	N/A	CS	FK	CO	FL	PK,BK,N/A	O	1	0	N/A	8.5	7.5	2.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Tower Butte	N/A	CS	FK	CO	CL	WH,N/A,N/A	S	1	1	N/A	13.6	7.9	5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Tower Butte	N/A	CS	FK	CO	CL	CL,BK,TN	S	2	1	N/A	30.7	21.5	8.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Tower Butte	N/A	CS	FK	CO	CL	CL,BK,TN	S	2	0	N/A	31.8	27.2	7.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Tower Butte	N/A	CS	FK	CO	CH	TN,BR,CM	O	3	1	N/A	30.7	21	8.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Tower Butte	N/A	CS	FK	CO	CL	WH,CL,TN	S	2	2	N/A	23.9	16.8	3.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Tower Butte	N/A	CS	FK	CO	CH	PK,CL,GR	O	2	0	N/A	14.1	6	1.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Tower Butte	N/A	CS	FK	CO	QTZ	TN,OR,N/A	O	2	0	N/A	23.5	23.1	4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Tower Butte	N/A	CS	FK	CO	QTZ	TN,OR,N/A	O	2	0	N/A	19.8	9.2	2.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Tower Butte	N/A	CS	FK	CO	QTZ	PK,TN,N/A	O	1	0	N/A	10.9	8.8	1.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Tower Butte	N/A	CS	FK	CO	CH	RD,OR,PK	O	1	0	N/A	14.7	9.4	3.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Tower Butte	N/A	CS	FK	CO	CH	TN,CM,BK	O	3	0	N/A	22.4	12.7	3.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Tower Butte	N/A	CS	FK	CO	CL	CL,GR,BK	S	3	1	N/A	29.9	17.4	11.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric
Tower Butte	N/A	CS	FK	CO	QTZ	TN,BR,BK	O	3	2	N/A	38.9	37.7	11.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	nondiagnostic
Unknown	N/A	CS	MANO	CO	QTZ	PK,WH,N/A	O	N/A	N/A	N	117.5	86.4	57	117.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	nondiagnostic
Unknown	N/A	CS	MANO	CO	QTZ	GR,N/A,N/A	O	N/A	N/A	N	82.4	66.6	31.3	82.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Ceramic Period

Appendix G.1, Table 6.6, Artifact Data, Continued

Site Name	Artifact Acc. #	Class	Element	Portion	Material Type	Color 1,2,3	Opacity	SCR	CTX	HEAT	MLEN (mm)	MWID (mm)	MTHK (mm)	Axial length	Blade Length A	Blade Length B	Notch Depth A	Notch Depth B	Neck Width	Base Height	Base Width	Diagnistic info
Flattop	N/A	CMC	CMC	US	clay	GR,BK,N/A	O	N/A	N/A	US	1.5	0.8	0.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown Prehistoric

APPENDIX G.2, Table 6.7, Stone Circle Data

Site	Diameter N-S (m)	Diameter E-W (m)	Quadrant 1	Quadrant 2	Quadrant 3	Quadrant 4	Total # of Stones	Shape	Completeness
Baugh	1.4	1.3	3	1	2	2	8	circular	incomplete
Baugh	3.6	3.7	7	2	3	5	17	circular	complete
Baugh	3.3	3.3	3	3	2	2	10	circular	complete
Baugh	3.2	3.6	1	1	1	2	5	irregular	complete
Baugh	3.3	3.6	2	3	1	1	7	irregular	complete
Baugh	4.1	3.7	3	3	8	1	15	circular	complete
Baugh	3.6	4.1	3	3	4	4	14	circular	complete
Baugh	3.3	3.9	4	2	6	5	17	circular	complete
Baugh	3.8	3.2	3	0	4	3	10	circular	complete
Baugh	2.4	3.2	1	1	2	1	5	irregular	incomplete
Baugh	2.3	2.5	1	1	2	1	5	irregular	incomplete
Baugh	5	3.9	3	3	4	2	12	circular	complete
Baugh	3.2	3	1	3	1	0	5	irregular	complete
Baugh	3.8	3.6	1	3	3	2	9	circular	complete
Baugh	5.1	4.9	5	5	5	5	20	circular	complete
Baugh	4.7	4.5	6	7	3	3	19	circular	complete
Baugh	3.3	3.2	0	3	4	0	7	irregular	incomplete
Baugh	1.3	1	3	2	1	2	8	circular	complete
Baugh	4.7	4.6	6	5	5	5	21	circular	complete
Baugh	2	1.5	2	2	2	2	8	circular	complete
Baugh	4.5	4.3	4	8	9	5	26	circular	complete
Baugh	5	4.8	1	2	5	6	14	circular	complete
Baugh	3.8	3.7	3	2	1	3	9	irregular	incomplete
Baugh	4	3.4	1	2	5	1	9	irregular	incomplete
Baugh	3.8	4.1	3	4	4	3	14	irregular	incomplete
Baugh	3.8	3.6	8	10	4	1	23	circular	incomplete
Baugh	5.6	4.3	7	4	3	4	18	circular	complete
Baugh	4.2	4.1	8	9	3	4	24	circular	incomplete
Indian Overlook	4.06	4.83	1	2	1	1	5	irregular	complete
Indian Overlook	4.5	4.6	0	0	1	1	2	irregular	Incomplete
Indian Overlook	5.64	5.59	1	1	1	1	4	irregular	complete
Indian Overlook	5.66	5.36	1	2	2	2	7	irregular	Incomplete
Indian Overlook	4.49	3.30	2	1	1	1	5	irregular	Incomplete
Indian Overlook	5.84	5.33	9	5	6	4	24	circular	complete
Indian Overlook	5.28	4.82	5	6	7	6	24	circular	complete
Indian Overlook	2.6	3.14	15	25	25	20	85	circular	complete
Rocky Point	2.7	3.6	2	1	1	1	5	irregular	Incomplete
Rocky Point	3.7	4.6	1	2	1	1	5	circular	Incomplete
Tower Butte	3.5	3.6	1	2	1	2	6	circular	Incomplete

APPENDIX G.2, Table 6.7, Stone Circle Data, Continued

Site	Diameter N-S (m)	Diameter E-W (m)	Quadrant 1	Quadrant 2	Quadrant 3	Quadrant 4	Total # of Stones	Shape	Completeness
Tower Butte	3.3	3.0	0	3	2	0	5	irregular	Incomplete
Tower Butte	3.9	3.5	2	3	0	3	8	irregular	Incomplete
Tower Butte	4.35	4.4	1	1	1	2	5	irregular	Incomplete
Tower Butte	4.8	4.6	3	2	4	1	10	circular	complete
Tower Butte	4	4	2	4	1	1	8	circular	complete
Tower Butte	1.16	1.28	4	2	1	1	8	circular	incomplete
Tower Butte	3.6	3.96	0	0	3	4	7	circular	incomplete
Tower Butte	3.4	5	0	3	3	2	8	circular	complete
Tower Butte	3.05	3.6	1	4	2	1	8	circular	incomplete
Tower Butte	3.01	3.1	0	0	3	2	5	irregular	incomplete
Tower Butte	2.9	3.1	4	1	3	3	11	circular	complete
Tower Butte	4	3.7	3	3	1	2	9	irregular	incomplete
Tower Butte	4.1	4.05	4	2	1	3	10	circular	complete
Tower Butte	4.8	4.6	3	6	1	2	12	circular	complete
Tower Butte	1.87	2.22	2	1	1	3	7	circular	complete
Tower Butte	1.6	1.96	1	2	1	2	6	circular	incomplete
Tower Butte	3.9	3.6	2	4	1	4	11	circular	complete
Tower Butte	2.82	3.42	1	2	1	1	5	circular	incomplete
Tower Butte	3.6	3.7	3	2	5	6	16	circular	complete
Tower Butte	5	5	5	3	3	2	13	circular	complete
Tower Butte	5	4.5	4	0	3	0	7	irregular	incomplete
Tower Butte	3.66	3.35	4	0	4	0	8	circular	incomplete
Tower Butte	4.6	3.66	6	1	2	0	9	circular	incomplete
Tower Butte	3.2	3.2	3	0	2	2	7	circular	incomplete
Tower Butte	4.27	4	0	1	4	2	7	circular	incomplete
Tower Butte	3.27	3.6	0	2	3	3	8	circular	incomplete
Tower Butte	4.1	4	7	2	4	4	17	circular	incomplete
Tower Butte	3.8	3.5	2	2	2	2	8	circular	incomplete
Tower Butte	2.3	2.2	3	2	2	3	10	circular	complete
Tower Butte	3.63	4.4	3	2	6	3	14	circular	complete
Tower Butte	1.9	2.5	0	4	4	0	8	circular	incomplete
Tower Butte	3.8	4.4	1	2	2	2	7	circular	incomplete
Tower Butte	4.96	3.69	4	0	2	4	10	irregular	incomplete
Tower Butte	2.35	2.6	3	2	2	2	9	circular	complete
Tower Butte	3.9	2.9	5	6	3	3	17	circular	incomplete
Tower Butte	3.7	4.7	6	5	3	5	19	circular	complete
Tower Butte	3.8	3.66	2	3	2	2	9	circular	incomplete
Tower Butte	4.1	3.5	1	2	2	4	9	circular	incomplete
Tower Butte	5	4.4	1	2	3	2	8	circular	incomplete
Tower Butte	3.2	3.7	2	2	1	2	7	circular	complete
Tower Butte	5	4	2	5	4	3	14	circular	complete
Tower Butte	3.9	4.2	3	3	3	5	14	irregular	complete
Tower Butte	5.1	4.2	6	2	5	2	15	irregular	complete
Tower Butte	4	3	2	3	2	2	9	irregular	incomplete
Tower Butte	5.5	5.6	3	5	11	10	29	circular	complete

APPENDIX G.2, Table 6.7, Stone Circle Data, Continued

Site	Diameter N-S (m)	Diameter E-W (m)	Quadrant 1	Quadrant 2	Quadrant 3	Quadrant 4	Total # of Stones	Shape	Completeness
Tower Butte	1.7	1.3	2	6	5	0	13	circular	complete
Tower Butte	3.9	4	4	3	8	4	19	circular	complete
Tower Butte	4.9	5	2	2	0	3	7	circular	incomplete