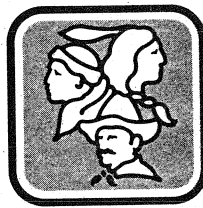
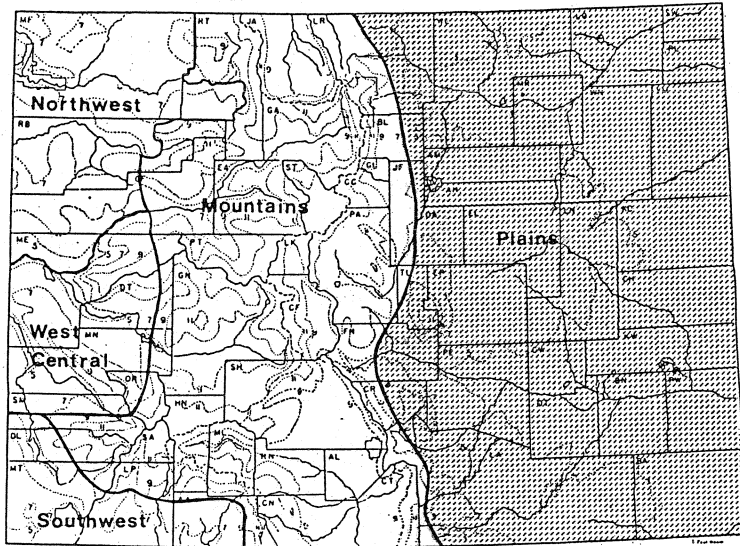


COLORADO PLAINS PREHISTORIC CONTEXT

by

Jeffrey L. Eighmy



COLORADO
HISTORICAL
SOCIETY

2004

COLORADO PLAINS PREHISTORIC CONTEXT
FOR MANAGEMENT OF
PREHISTORIC RESOURCES OF THE COLORADO PLAINS

by

Jeffrey L. Eighmy

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PREFACE

The Office of Archaeology and Historic Preservation of the Colorado Historical Society has produced this set of reports summarizing and evaluating the known prehistory in the State of Colorado.

These reports present the varied cultural histories of the five distinctive physiographic regions in the State: the Plains, the Mountains, the Northwest, the West Central, and the Southwest regions, and these reports span each region's known cultural history from the earliest prehistoric period up to the historic Native American populations.

Each volume presents an introduction to a region, its geographical and environmental setting, as well as a definition of the report organization, site types, and cultural terms. The focus of each region's report is the major cultural groups which includes their cultural history, lifeways, and cultural processes. The nature of the archaeological evidence in each region is also carefully evaluated.

The overall purpose of these reports is to provide a background for the current archaeological knowledge in Colorado, and to give research direction towards the protection and preservation of archaeological resources in Colorado. These reports can provide guidance for state and federally mandated cultural resource management, as well as direction for pure research.

The development of these reports is a direct outcome of the "RP-3" (Resource Protection Planning Process) effort led by OAHP archaeologist Judi Halasi, to whom we are indebted for her two years of hard work. The Colorado Council of Professional Archaeologists, Paul Nickens, President, also strongly supported this project and shared with each author the results of CCPA's Regional Research Design efforts of 1979-1981. This in turn had roots in both State Archaeologist Bruce Rippeteau's 1977 Statewide Prehistoric Overview and Colorado State University archaeologist Elizabeth Morris's 1978 Plains Conference Symposium on Colorado Archaeology.

We hope that these volumes will stimulate an awareness of, and appreciation for, the fragile archaeological resources of Colorado, and for the tedious and difficult science required to investigate, evaluate, and interpret the evidences of our past Coloradans and their worlds.



Barbara Sudler
President
State Historic Preservation Officer

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A CONTEXT WITHIN WHICH THE COLORADO PRESERVATION OFFICE CAN MANAGE THE PREHISTORIC RESOURCES OF THE COLORADO PLAINS

1. Introduction: Objectives

The intent of the Plains Regional Context is to provide a general but systematic outline of Plains archaeology in Colorado. This outline has been modified after study by a review committee and does not provide an analysis of all available or possible "regional frameworks." The approach taken is a conservative and general overview for two reasons. First, any such statement is bound to generate disagreement and a general conservative statement should be the least objectionable. Second and more important, a conservative approach is the best context for managing the Plains resources. If the CPO were to use context written by a few and ignored by others and based on only a particular view of Plains prehistory, then the resources would likely be ill served. Therefore, the question "What do we know?" has guided the writing of this statement. If it appears that we know very little, this may reflect reality. For the purpose of providing the State of Colorado a planning and management document for archaeological resources, it does not seem wise to overestimate our knowledge of Plains prehistory.

2. Construction of the Regional Framework

2.1. Location of the Plains Region (see attached maps)

The region included in the Colorado Plains is bounded on the north, east, and south by the state line. The western boundaries of the Plains region have always been vaguely defined. As outlined on the accompanying map the western boundary is defined as the Colorado Foothills. This vague definition does not reflect the importance of the region. This western boundary, being the edge of two great provinces (Plains and Mountains), has always been extremely important

in Plains prehistory. Despite the usual impression of homogeneity, the Colorado Plains consists of a bewildering variety of local environmental settings, and an adequate management of the archaeological resources must take this variety into account. Already, with the scant information available it is clear that at least three major subareas have had significant differential influence on Colorado prehistoric development (Figure 1). The South Platte River drainage and the Arkansas River drainage make up a fundamental north-south division within the Colorado Plains area (the Northeast and Southeast Subareas). The Colorado Foothills and the Park Plateau make up third and fourth significant subareas. The high central portion of the region drained by the Republican and Smoky Hill Rivers is a possible fifth area (Wedel 1979), but for purposes of this statement will be included in the Northeast subarea.

2.2. Identification of Cultural Units and Systematics

The number of prehistoric components (even a rough idea) on the Plains is currently unknown, although the number must be large. Over 5,581 known sites were on file with the CPO in 1981 (Table 1), and these represent only a fraction of the sites on the Plains. Some idea of the incomplete nature of the record can be gained from comparing the number of sites recorded for a given area with the number recorded after recent surveys (Table 2). Background research for four major Plains surveys indicated the density of 'already' recorded sites in the surveyed areas was about one per seven square miles (.146 sites/sq. mile). This figure apparently is representative of eastern Colorado generally where an average of one site is recorded for every 7.9 sq. miles (circa 44,175 sq. miles and 5,581 recorded sites). After the surveys, an average 4.13 sites were recorded for every sq. mile--an increase of over 28 times. If the same increase applies for the entire area, at least 182,442 sites can be expected. Many of these sites will, of course, be multicomponent.

Figure 1. Location of the Colorado Plains Region and the Northeast, Southeast, Foothills and Park Plateau Subareas.

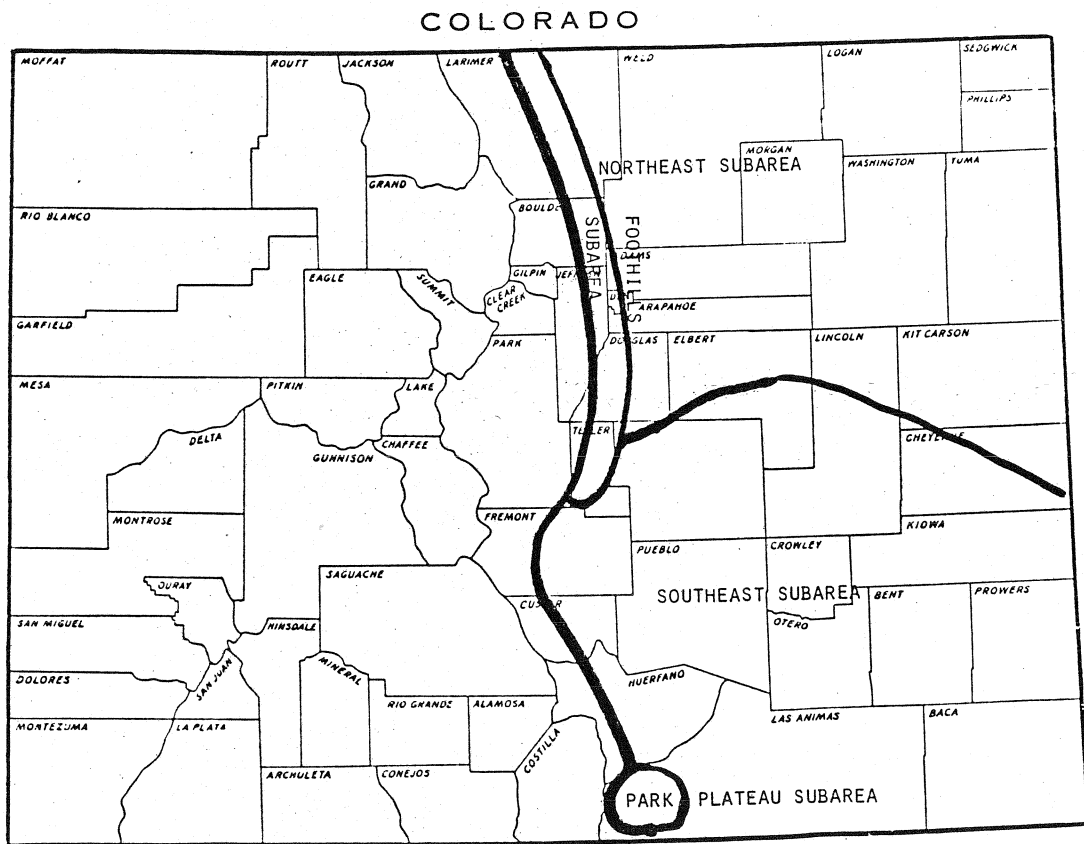


TABLE 1 Archaeological Sites in Counties of Eastern Colorado on file with the CPO, Spring 1980 (based on Butler 1980).

County	Number of Site	Number of Excavations
Adams	53	1
Arapahoe	100	3
Baca	38	1
Bent	128	
Boulder	239	8
Cheyenne	43	2
Crowley	11	
Custer	1	1
Denver	14	
Douglas	428	12
Elbert	127	
El Paso	79	
Fremont	387	
Huerfano	162	
Jefferson	158	27
Kiowa	25	
Kit Carson	19	
Larimer	416	7
Las Animas	1763	16
Lincoln	38	
Logan	32	7
Morgan	341	2
Otero	93	
Park	87	
Phillips		
Prowers	34	
Pueblo	277	2
Sedgewick	10	
Teller	11	
Washington	17	1
Weld	376	20
Yuma	39	2
Total	5581	113

TABLE 2. Increase in the number of sites recorded after modern surveys (excluding isolated finds).

Survey/Project	Number recorded sites prior to survey	Recorded sites/sq mile	Number of new sites recorded after survey	Recorded sites/sq mile
Campbell (1976)	50 in 2,000 sq mi	.025	1137 in 232.9 sq mi	4.88
Eddy (1982)	20 in 40 sq mi	.5	111 in 24.2 sq mi	4.59
Alexander (1982)	2 in 214 sq mi	.009	98 in 59.8 sq mi	1.64
Morris et al (1975)	3 in 57.4 sq mi	.052	311 in 57.4 sq mi	5.42
	Mean =	.142	Mean =	4.13

Nearly a 300% increase in number of sites recorded

Eddy (1982) finds 111 prehistoric sites in a 6,277 ha. area (24.2 sq. miles) around John Martin Reservoir, Arkansas River, Bent County. Based primarily on surface indications, 10% of the prehistoric sites for which specific components could be assigned were multicomponent. Also, of the 20 sites excavated by Campbell (1976) on the Chaquagua Plateau, 10% were multicomponent. Of the 44 sites with diagnostic artifacts discovered on the Ft. Carson Military Reservation (38,291 acre survey) at least 14 sites (32%) were identified as multicomponent (14% of all sites recorded) (Alexander 1982). If 10% of the 182,442 minimum Plains sites are also multicomponent (2.5 components/ multicomponent site?), then well over 220,000 components can be expected in the Colorado Plains area.

2.2.1. Systematics

The single likely organizing scheme for all Colorado prehistoric cultural history used by the CPO will be in terms of a stage-period structure. With this structure the 220,000 plus components on the Plains should eventually be organized into periods within broad stages.

Component. A site or level within a site representing a single occupation of the site (Willey and Phillips 1958:22).

Period. A unit of time in a given region usually demarcated by identifiable changes in the archaeological record.

Stage. As used by the CPO a stage is a large block of time usually, though not necessarily, characterized by a dominant pattern of economic existence.

2.2.2 Location of Cultural Units on Maps (See Figure 3, 5 through 9).

2.2.3 Outline of Units

Obviously, the successful definition of components, periods and stages depends on adequate temporal control, but only a few of the recorded sites and components have good independent dating. Butler (1981) lists only 159 radiocarbon and archaeomagnetic dates for sites from Eastern Colorado (see Table 3).

TABLE 3. Frequency of Radiocarbon dates by 500 year increments (after Butler 1981).

Time Period	Number of dates
A.D. 1400 to present	7
1000 to 1500	28
500 to 1000	35
1 A.D. to 500 A.D.	17
500 B.C. to 1 A.D.	13
1000 to 500	5
1500 to 1000	10
2000 to 1500	6
2500 to 2000	1
3000 to 2500	8
3500 to 3000	4
4000 to 3500	8
4500 to 4000	3
5000 to 4500	0
5500 to 5000	1
6000 to 5500	2
6500 to 6000	0
7000 to 6500	2
7500 to 7000	1
8000 to 7500	2
8500 to 8000	1
9000 to 8500	1
9500 to 9000	2
10000 to 9500	1
10500 to 10000	0
11000 to 10500	0
11500 to 11000	1

Figure 2. Proposed Periods within the Paleo-Indian Stage.

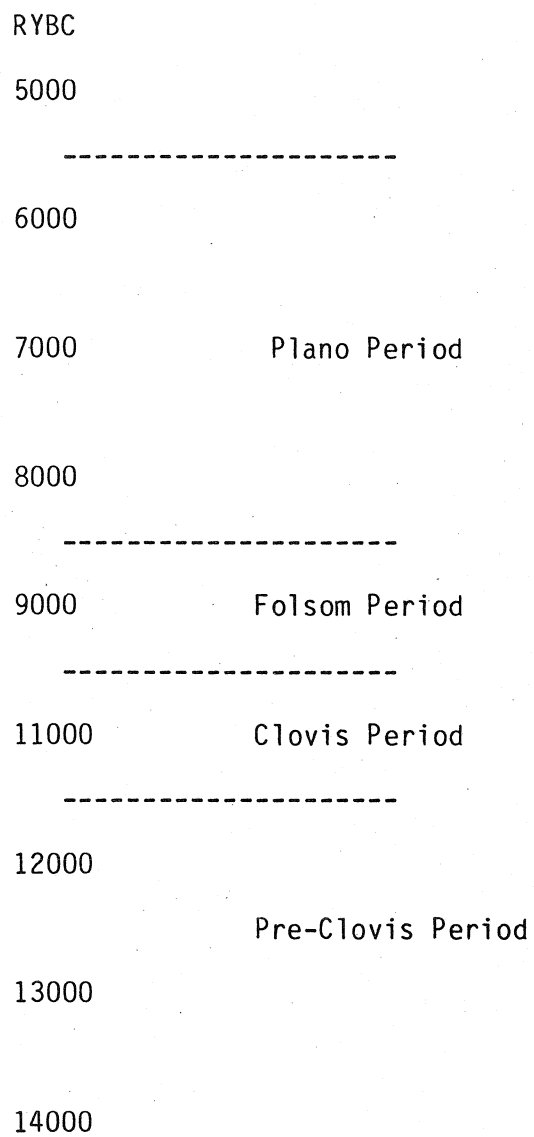
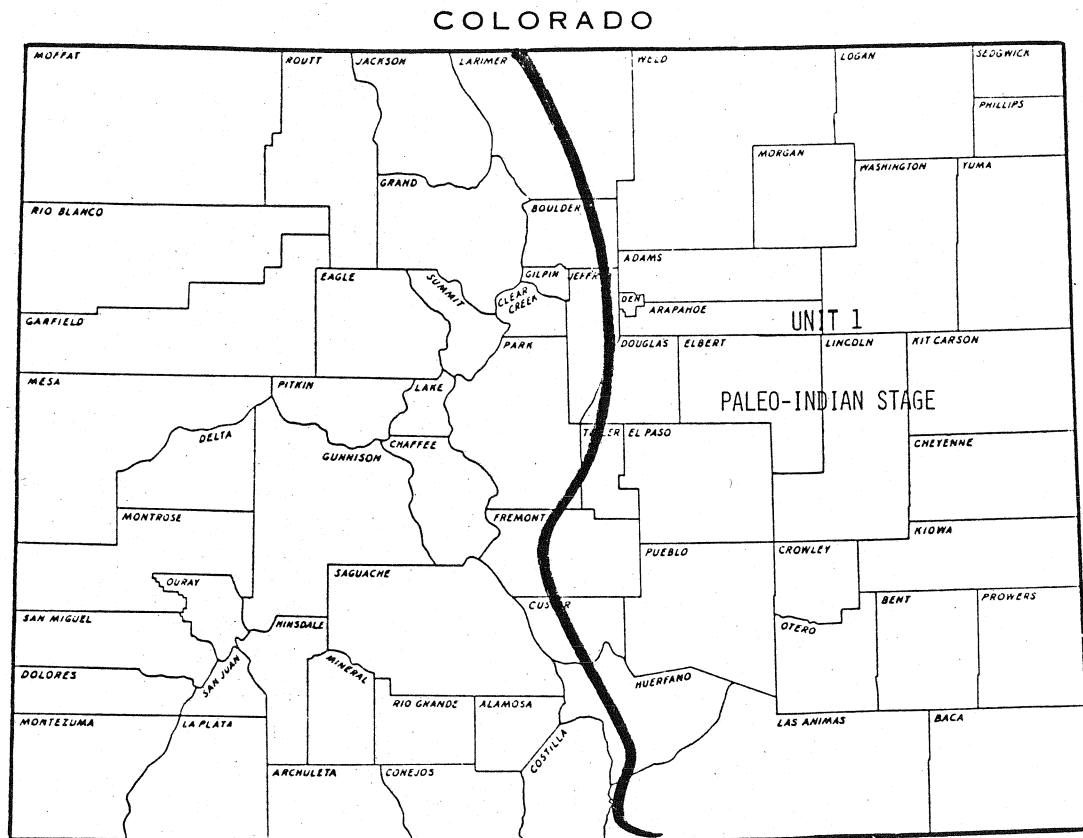


Figure 3. Location of Unit 1: Paleo-Indian Stage.



2.2.3.1 Paleo-Indian Stage

The oldest 14 dates range between 11900 RYBC and 5250 RYBC and have variously been assigned to Pre-Clovis Cultures, Clovis Cultures, Folsom Culture, Firstview Complex, Agate Basin Complex, Kersey Complex, and Scottsbluff Horizon within a general Paleo-Indian stage.

Paleo-Indian Stage. Hunters of now extinct magagauna, particularly the mammoth and ancient forms of bison from earliest occupation until 5,500 RYBC. Seasonal or opportunistic use of vegetal products, small game, and perhaps other comestibles that may have been available from time to time but of which little direct or indirect evidence has yet been recognized.

2.2.3.2 Unit 1. Paleo Indian Stage in Eastern Colorado

Except for the Paleo-Indian stage concept (usually dated between 1500 RYBC and 5500 RYBC) little agreement exists among archeologists about Paleo-Indian systematics. No one with the exception of the late Henry Irwin (1971) uses the phase concept. Four periods in the Paleo-Indian Stage can be defined for all subareas within the Colorado Plains (Figure 2 and 3).

Pre-Clovis Period (Pre 11500 RYBC) Archaeological characteristics include presence of apparent 'expediency bone tools,' flaked bone, bone broken for removal of marrow, a few stone artifacts--crude flakes and scrapers. The three known components are mammoth kill sites.

Clovis Period (11500-9500 RYBC) Archaeologically distinguished by the Clovis style projectile point. Also present are plano-convex scrapers, retouched flakes, pressure retouched flakes, and core choppers. Components are associated with extinct mammoth and horse.

Folsom Period (9500-8500 RYBC) Archaeologically distinguished by the Folsom style projectile point associated with campsites and bison kill sites. The Folsom Period Component at the Lindenmeier site contained unmodified flakes and blades, channel flakes, drills, punches, burins, utilized flakes, various scrapers, bifaces, choppers, pointers, ground stone, bone needles, bone awls and engraved bone.

Plano Period (8500-5500 RYBC) Many named projectile points are characteristic of this period---Plainview, Milnesand, Hell Gap, Scottsbluff, Eden, Kersey, Farview, and Agate Basin, but all are generally finely worked lanceolate points with parallel flaking and basal grinding. In Colorado, components of this period include campsites and bison kill sites. Noticeable in the assemblages is the occasional grinding slab and mano (Kreiger 1964); otherwise, lithic assemblages differ only slightly from earlier periods. Associated fauna usually include bison, antelope, deer as well as lesser mammals and rodents.

2.2.3.3 Archaic Stage

By 5500 RYBC sufficient change had occurred in the subsistence activity of Colorado Plains inhabitants that archaeological material is usually assigned to a new stage--the Archaic.

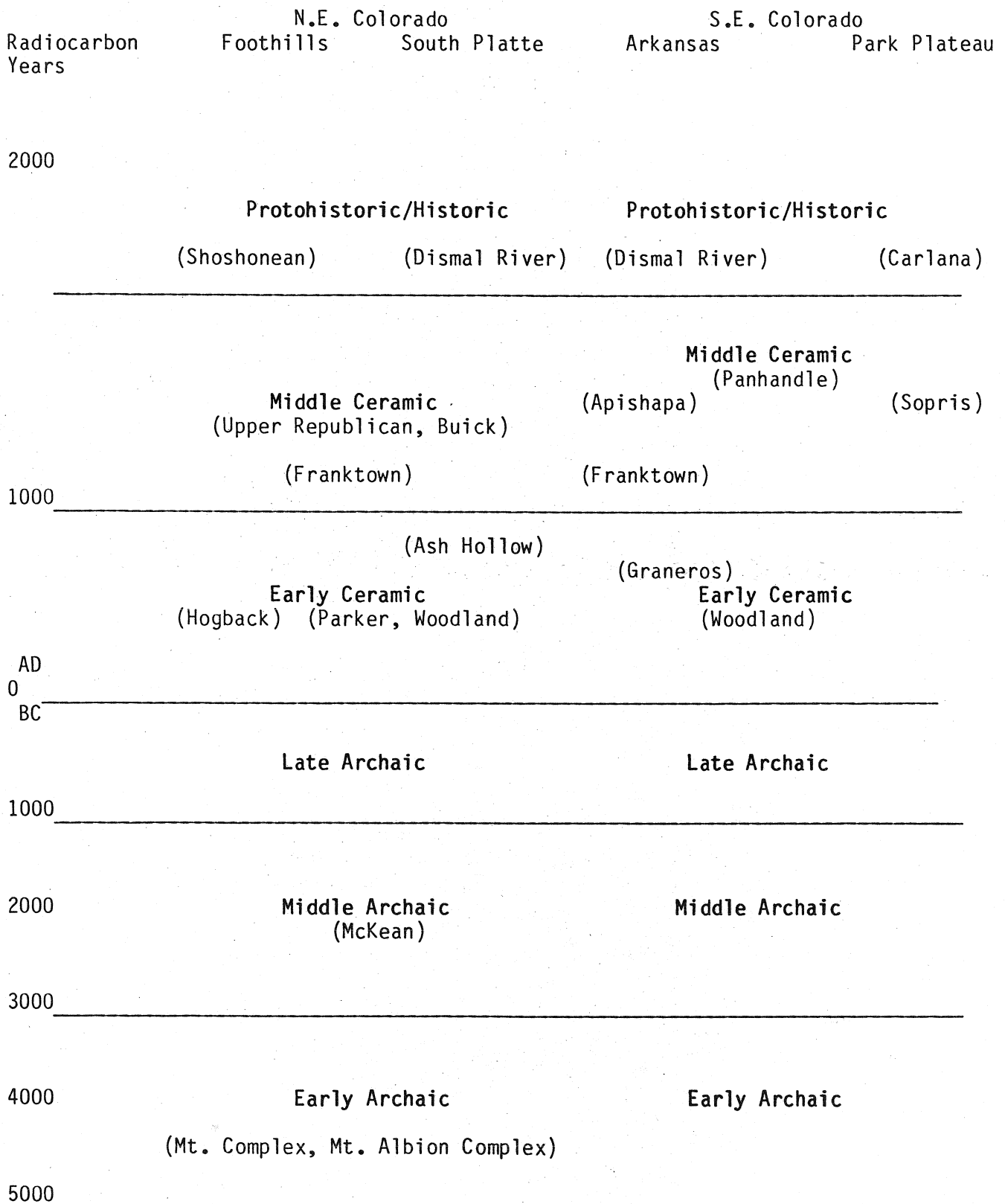
Archaic Stage. A period of time between 5500 RYBC and 1 to 500 RYAD during which the dominant subsistence economy relied on nomadism, gathered plant foods, small animals, as well as large mammals. Evidence for this subsistence strategy includes large numbers of grinding implements and a small number of kill sites relative to camp sites. This stage on the Plains is everywhere marked by the use of large stemmed or notched dart points.

2.2.3.4 Unit 2. Archaic Stage in Northeast Colorado

The assignment of components to larger integrative units within the Archaic Stage is extremely difficult at this time. The problem stems from the separate influence of Mulloy's (1958) scheme for the Northwest Plains based primarily on periods and the schemes used in the Central Plains which are more heavily influenced by the Midwest Taxonomic System (MTS). Additional confusion is added because the influence of the MTS on Central Plains archaeologists has waned in the past 20 years with a concomitant increase in the influence of Willey and Phillips' concepts (e.g. Lehmer and Caldwell 1966). Still, few Northwest Plains archaeologists have adopted Willey and Phillips' systematics either in a modified or unmodified form (Frison 1978). For simplicity, the stage is periodized: Early, Middle and Late (Figure 4). However, since significant differences are noticed between the Southeast Colorado (Arkansas drainage, Cimarron drainage and Park Plateau) and Northeast Colorado (South Platte drainage, Republican drainage and Foothills), the two areas should be treated separately.

Unlike the previous Paleo-Indian Stage, local chronologies within the Plains in the post 5500 RYBC era exhibit identifiable differences from one to

Figure 4. Post Paleo-Indian Periods of the Colorado Plains. Parentheses indicate commonly-referred-to taxonomic units. Boldface indicates periods/stages used in this report



another. For northeastern Colorado (Figure 5) and for the Southeast (Figure 6) three periods assignable to an Archaic Stage can be proposed with some noticeable local differences within these two broad subareas.

Early Period (5500-3000 RYBC). In the South Platte River drainage an apparent hiatus in prehistoric occupation exists between the end of the Plano Period and 3000 RYBC. This time coincides with the postulated Altithermal and supposed depopulation of the Plains. Contemporary with the probable Altithermal Period of increased aridity and reduced population on the Plains to the East and an increase in the Mountain and Front Range population to the west, in the Foothills the period is characterized by a Mountain Corner Notched dart point. In the Foothills, Early Archaic sites are open camp sites and rock shelters. In addition to varieties of unifacial and bifacial stone tools, numerous grinding implements are evident.

Middle Period (3000-1000 RYBC). This period of the Archaic Stage in the Foothills is again distinguishable on the basis of projectile points--in particular the presence of McKean, Duncan and large side-notched Mallory points. Again both camp sites and shelters were used. A variety of unifacial and bifacial stone tools and numerous grinding implements are evident. Although similar material is widespread in the Foothills and Northwest Plains, the period is poorly defined in the South Platte from only a few excavated sites. The distinguishing characteristics are the McKean-Duncan-Hanna dart points. The lithic tools reflect a generalized hunting (knives, scraper, etc.) and gathering (grinding stones) economy.

Late Period (1000-1 BC). In the Foothills projectile point styles again distinguish this period with a high proportion of corner notched dart points being the outstanding characteristic. Again both camp sites and rock shelters were used. A variety of bifacial stone tools and numerous grinding implements are evident.

2.2.3.5 Unit 3. Archaic Stage in Southeast Colorado

Early Period (5500-3000 RYBC). As in northeastern Colorado, extreme southeastern Colorado apparently experienced some reduction in prehistoric occupation during the Altithermal until possibly as late as 3000 RYBC. Some question about the nature of this hiatus remains, however. Eddy (1982:40) leaves its existence as a serious research question and Lutz and Hunt (1979:181) date nearly a quarter of all Archaic sites in their survey of a portion of the Park Plateau prior to 2800 RYBC.

Middle Period (3000-1000 RYBC). On the Chaquaqua Plateau, diagnostic dart points include Abasolo, Trinity, Pandale, and Travis. Along with a typical hunting lithic tool kit are found numerous manos, mortars and grinding tools. Most sites along the Arkansas and Cimarron are open encampments in areas with a great variety of vegetation. Sites between the Purgatoire and Apishapa Rivers on the Park Plateau have points which resemble those defined by Campbell as usually assigned to 'Middle Archaic' in addition to an occasional McKean point.

Figure 5. Location of Unit 2: Archaic Stage-Northeast Subarea

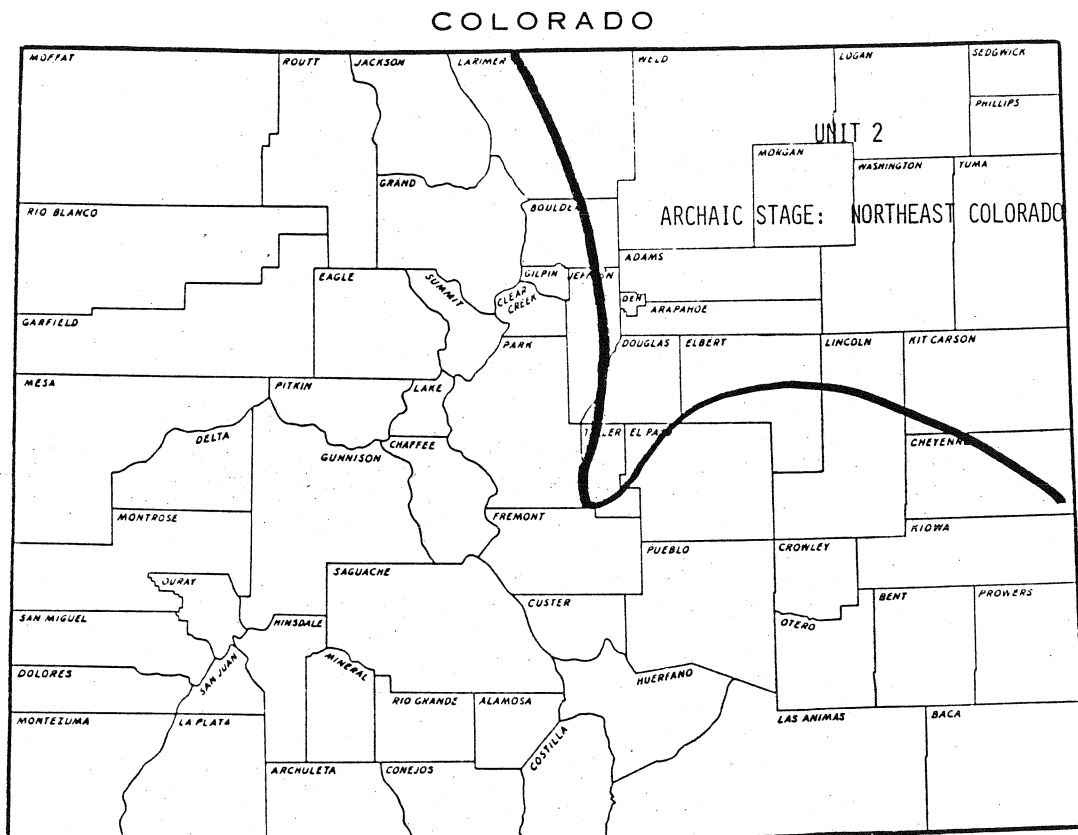
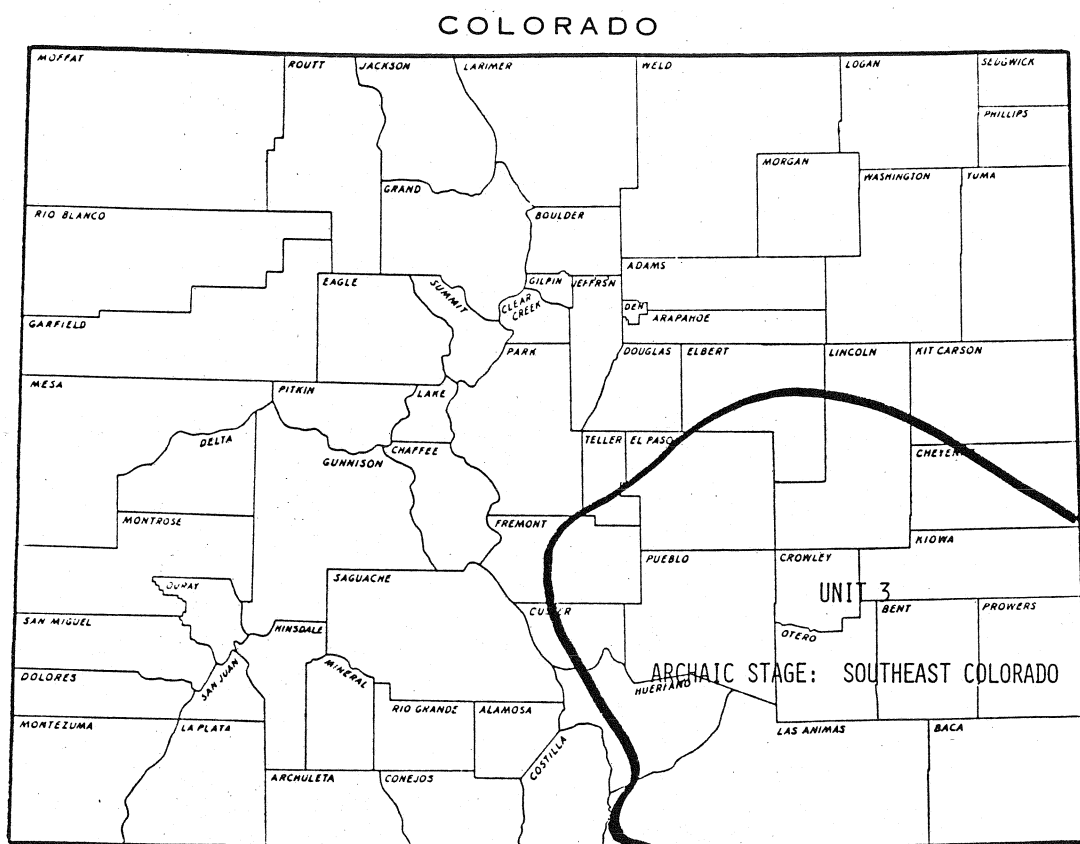


Figure 6. Location of Unit 3: Archaic Stage-Southeast Subarea



Late Period (1000RYBC-1 RYAD). On the Chaquaqua Plateau in the Purgatoire/Apishapa area and in the Flank Field area diagnostic dart points resemble Yarborough, Ellis, Edgewood, Palmillas, Shumla, and Marcos styles. Sites range from small lithic scatters to large open camps to rockshelters. On the Chaquaqua Plateau ample faunal evidence of generalized large and small mammal and rodent hunting exists. The abundant ground stone implements along with site location data imply extensive foraging activity oriented more towards canyons than in 'Early Archaic' time in the Chaquaqua locality. In the Purgatoire/Apishapa area sites continue to be found in a variety of environmental zones.

2.2.3.6 Ceramic Stage

Normally, in the sequence of North American cultural development, archaic hunters and gatherers are eventually replaced by settled villagers depending on horticulture, living in permanent houses and using pottery. This stage is known as the Formative. Eastern Colorado prehistory after the time of Christ presents problems with respect to this 'normal' sequence. Here, elements traditionally associated with this stage (particularly pottery and houses) are often discovered in the context of a continuing hunting and gathering subsistence. Nowhere, with the possible exception of the Park Plateau, has a well established village life comparable to that of the San Juan Anasazi been demonstrated for eastern Colorado. However, in order to distinguish the addition of these ceramic and architectural elements at this time in the Plains region, a ceramic stage is proposed.

Ceramic Stage- Between 1 RYAD and 1550 RYAD ceramic and/or the remains of habitation structures mark a transitional stage of development between simple hunting and gathering on the one hand and fully formative culture on the other. In some areas initial attempts at settled villages are evident, while in other areas the population remained nomadic hunters and gatherers contemporary and interacting with agricultural populations.

2.2.3.7 Unit 4. Ceramic Stage in Northeast Colorado.

Two major periods within the ceramic stage have been identified in Northeast Colorado (Figure 7).

Early Ceramic Period (1-1000 RYAD). Along the Foothills this period is more easily distinguishable than are the preceding Archaic Periods. Archaeologically, the period is identifiable by the presence of cordmarked pottery and small corner-notched points. These points seem to reflect the important introduction of the bow and arrow. A small stone enclosure was found at the Lindsay Ranch Site, but it is interpreted as a hunting post. Dent corn and popcorn have been recovered from the Woodland component at LoDaisKa, but this, like the cordmarked pottery, is believed to represent influence (trade or seasonal movement) from further east. Additional indications of the interaction of or with eastern people in the Foothills during this period are found in the Hazeltine Heights Burial Site. Both camp sites and rockshelters were inhabited. The Early Ceramic Period material in this area is often discussed in terms of Hogback, Parker and Franktown Focii and /or Phases or Woodland tradition.

Along the South Platte drainage early ceramic material is usually referred to as the Parker Focus/Phase. Material assignable to this period includes cordmarked pottery formed into tall, straight walled, conoidal shaped vessels. Projectile points (dart points early and arrow points late) are usually corner-notched with straight to subconvex bases. Sites include both rock shelters and open sites. Scott and Birkedal (1972) define a mortuary complex (flexed, pit burials with some grave goods) largely assignable to this period in the Northeast subarea and probably related to the widespread woodland mortuary horizon. This mortuary complex implies interaction of Colorado Plains groups with more sedentary groups further east.

Middle Ceramic Period (1000-1550 RYAD). After 1000 RYAD new ceramics and triangular points appear along the South Platte and Foothills within Northeast Colorado. Typologically, the smoothed-over cordmarked sherds from globular vessels with collared rims can be related closely to the Upper Republican phases of Kansas and Nebraska or Intermountain Ceramics. In Kansas and Nebraska this material is found at sedentary horticultural villages, but in Northeast Colorado all sites are rockshelters or open camps. Hunting and gathering-not horticulture-seems to be the dominant activity. Although Wood assigned several components to an 'Upper Republican' time period, only a few had an adequate sample of Upper Republican materials. Diagnostic points appear to be small, triangular unnotched or side-notched points.

2.2.3.8 Unit 5. Ceramic Stage in Southeast Colorado.

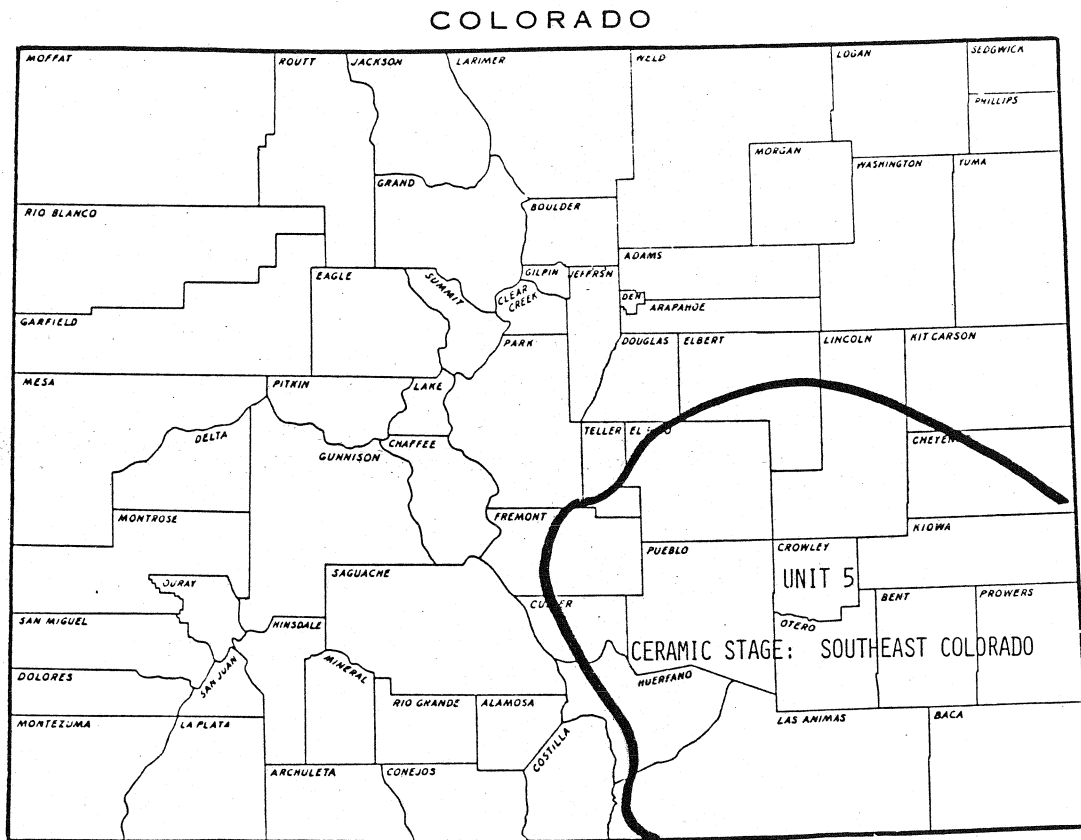
Compared to the South Platte, a great amount of archaeological research has been conducted in the Arkansas River drainage and Park Plateau. The most significant of this work is Campbell's (1976) research on the Chaquaqua Plateau. In post Paleo-Indian times, Campbell recognizes not only a hunting and gathering stage but also a horticultural (Formative) stage. Willey and Phillips (1958:168) label the village cultures of the Eastern Plains (i.e. Upper Republican) as 'marginal' Formative; so, the even more ephemeral Arkansas manifestations must only barely qualify as 'established' sedentary communities--let alone 'well established' communities. Still, the subtle but distinct change evident along the upper Arkansas and especially the Park Plateau after 1 RYAD deserved the emphasis which assignment to a separate ceramic stage achieves (Figure 8).

As a result of the larger amount of archaeological work accomplished in the Southeast subarea more detailed taxonomic systems have been discussed for the subarea. Several researchers (e.g. Ireland 1971; Bair 1977) in the Park Plateau area have seen fit to distinguish this area in the post 1000 RYAD period from the remaining Southeast.

Two phases assignable to the Ceramic Stage can be proposed for the Southeast Colorado proper.

Early Ceramic Period (1-1000 RYAD). The early part of the Early Ceramic Period must be seen as somewhat transitional from the Archaic Stages. Campbell's investigations assigned sites with cordmarked, conoidal shaped pottery to this time period, but many of the dart points characteristic of the Late Archaic are still present. Eddy (1982:42) remarks on the similarity of Early Ceramic Period cordmarked pottery from the Chaquaqua Plateau with Woodland Pottery further North and West. Significant also is the first appearance of Scallorn style arrow points in the Chaquaqua Plateau and in the Park Plateau. There is an increase in ground stone artifacts and an inferred increase in dependence upon plant foods; Campbell (1976:54) believes maize agriculture is introduced at this time. Also diagnostic in the Chaquaqua Plateau are dry-laid slab foundation structures. Most are single rooms and are shallow basins. In the Park Plateau at least one such structure was evident on the surface and is probably assignable to this period.

Figure 8. Location of Unit 5. Ceramic Stage in Southeast Colorado.



After 500 RYAD. Scallorn, Alba, Young, Fresno, and Huffacker arrow points characterize the period. There is a continual increase in the amount of ground stone over the previous period, and cordmarked, conoidal pottery is still in use. In the Chaquaqua Plateau settlements are larger (one site contains 11 rooms), there is some evidence of defensive barrier walls, and houses are circular with dry-laid slab foundations. Direct evidence of Harnosa de Ocho and Pima Papago maize has been found. Generalized hunting continues to be important. Site locations vary little from the previous period. Material from this period is often described as the Graneros Focus/Phase and the Parker Focus/Phase.

Middle Ceramic (1000-1550 RYAD). After 1000 RYAD and prior to possible drought conditions around 1300 RYAD, Southeast Colorado contains evidence of probable Formative Stage people along the Arkansas and Cimarron Rivers. Campbell, Eddy and others relate this material to an Apishapa Focus/Phase in a larger unit called the Panhandle Aspect which was originally identified in the Panhandles of Oklahoma and Texas. Projectile points characteristic of the phase are Washita and Reed. Five varieties of maize as well as beans were grown in the Chaquaqua locality. Floral and faunal remains suggest a continuation of some hunting and gathering. Architecture in the Chaquaqua Plateau and in the Carrizo area continues much as it did in the Middle Ceramic Period, but the site density has increased noticeably.

During this same period a distinct Formative Stage culture has been identified which has been labeled the Sopris Phase. Some structures are circular and of wattle and daub while others are multi-roomed rectangular adobe and stone structures. Ceramics in the Park Plateau contain a high frequency of Red Mesa Black-on-White and a distinct polished brown ware while Chaquaqua Plateau ceramics have narrow, shallow cordmarks on globular shaped vessels (Borger Cordmarked). Burials are flexed, in pits (Chaquaqua Plateau) or in bell-shaped cooking pits (Park Plateau).

2.2.3.9. Protohistoric/Historic Stage

From an archaeological point of view, the period between 1550 and 1750 RYAD is one when archaeological remains can begin to be tentatively identified with groups known from ethnographic and historic sources. Thus, the stage can be defined to include these cultural resources.

Protohistoric/Historic Stage. A late period (1551-1750 RYAD) during which the archaeological resources represent the remains of potentially identifiable groups. In eastern Colorado these groups were hunters and gatherers or part time horticulturalists who during this period took up horse nomadism as a dominant mode of subsistence.

2.2.3.10 Protohistoric/Historic Stage in Eastern Colorado.

For some time after 1000 RYAD the Foothills were possibly relatively depopulated (Windmiller & Eddy 1975:96; Alexander 1982:64), but after 1300 RYAD the occupation of the area seemed to increase again. Eddy and Windmiller found

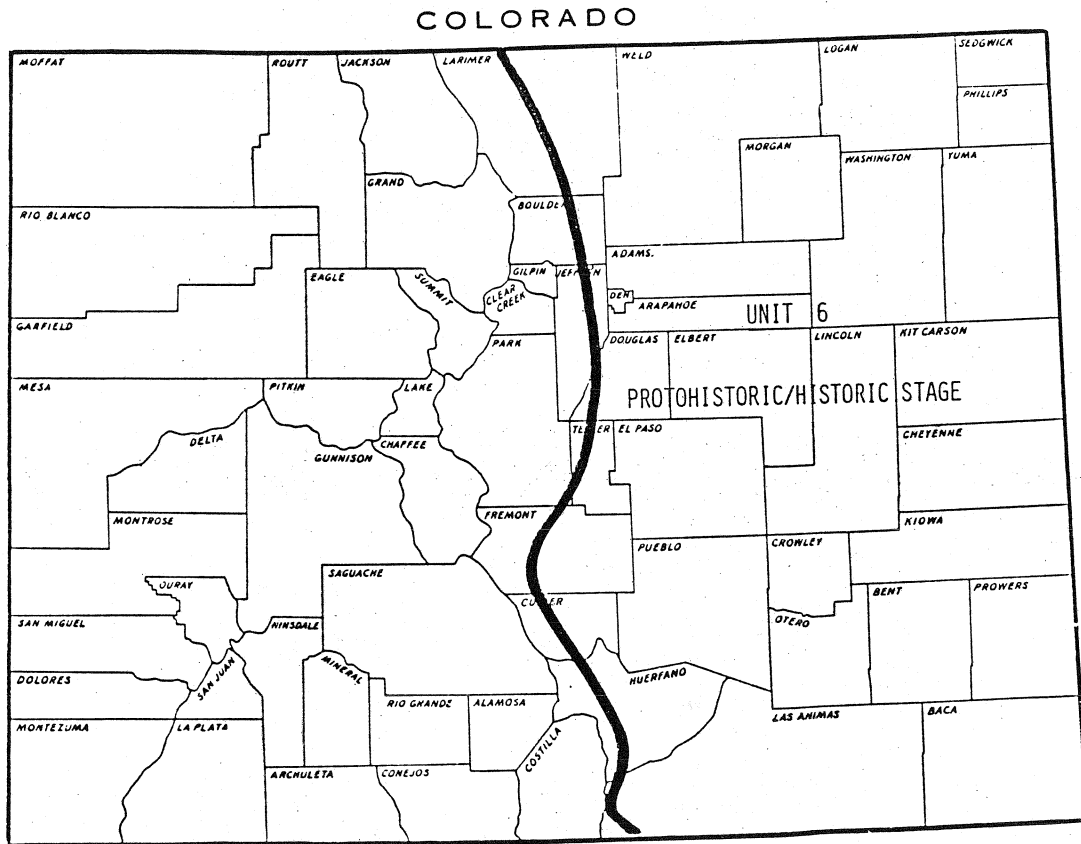
pottery in the Two Fork locality which they attribute to the Plains Apache, Dismal River Aspect, and Orr, Kvamme and Morris (1979) found 18th Century evidence which they attribute to Kiowa Apache. (see Figure 9).

The nature of post 1300 RYAD cultural developments in the South Platte area is unclear at present. Gunnerson (1960) has suggested that the Dismal River Aspect manifests itself in the area, but only Cedar Point Village near Limon (Wood 1975) and the Hatch Site (1967) of the excavated sites have been attributable to this period.

After 1300 RYAD the Southeast Colorado subarea apparently experienced a significant drought and the Formative developments of some 1300 years came to an abrupt end. Sometime after 1400 RYAD the area was apparently occupied by groups of Protohistoric Athabascans. The Athabascans were growing corn, beans and pumpkins and trading extensively with the Pueblo groups of northern New Mexico when contacted by Spanish explorers. Archaeologically, in the Park Plateau this Apache occupation is termed the Carlana Focus. It appears to have little or no connection with the previous Sopris Focus.

Diagnostic projectile points of this phase are first the Fresno, then Washita, Reed and Huffaker. Diagnostic pottery is a thin, dark, micaceous tempered ware. Houses of the Carlana are nearly absent, although Ireland (see Lutz and Hunt 1979:24) attributes tipi rings and circular posthole stains to this focus. Evidence for both hunting (lithic tools and faunal) and for gathering (floral) was evident.

Figure 9. Location of Unit 6. Protohistoric/Historic Stage.



2.2.4. Guidelines for the Definition of Sites.

The single most important guideline in site definition is to have explicit descriptions. A good example of following this guideline is Alexander (1982:67-69). Even though other archaeologists will use other site definitions, it is crucial that each archaeologist working in the Plains describe the criteria he is actually using. Assuming sites are being described from surface indications with no remote sensing or testing, as a minimum site definition should include the following considerations:

1. size
2. artifact types found
3. artifact density by type
4. features, activity areas
5. associations
6. setting
7. depth
8. cultural components

Where site types vary continuously, the 'cut off' points should be explicitly described. Beyond these guidelines it is tempting to try and establish a set of uniform site types, but a review of the literature shows that even while following the above guidelines, two archaeological projects will use different type definitions. The reason for this is that good CRM requires a problem oriented research strategy and since problems vary from one situation to the next, site definitions vary. For example, Eddy et. al. (1982) uses a completely inductive (although explicit) approach to defining site types in the John Martin Reservoir. Using a clustering of 22 tool and lithic debitage variables, they identify five special-activity and two base camp types. If Eddy et.al. had been limited to some arbitrary and over-simplified site classification, then their analysis would have been very limited.

At a very minimum, the following site types should be expected on the Plains (terminology largely from Alexander 1982):

1. quarry
2. rockshelters with rock art
3. rock art
4. occupied shelters
5. tool sharpening grooves and bedrock mortars
6. stone enclosures (single or multi-roomed)
rock rings ('tipi ring')
rectilinear walls/foundations in horizontal courses
curvilinear walls/foundations in horizontal courses
upright slab walls
7. cairns
8. stone alignments
9. open lithic scatters
10. open lithic-herd scatters
11. open lithic-ground stone scatters
12. open lithic-ground stone-herd scatters
13. burials
14. bone beds

Archaeologists on the plains will be expected to pay careful attention to the lithic scatter since it includes the vast majority of Plains sites.

On the Plains at least the following types of features are expected to be abundant:

1. hearths and ash pits
2. rock cairns
3. stone walls
4. stone enclosures
rock rings ('tipi ring')
rectilinear walls/foundations in horizontal courses
curvilinear walls/foundations in horizontal courses
upright slab walls
5. sharpening grooves and bedrock mortars
6. roasting pits
7. burials
8. activity areas
9. pit houses
single or multi roomed
with or without postholes or rock in constructions
10. adobe walls

- rectilinear or curvilinear
- single or multi-roomed
- with or without foundation stones
- 11. post hole alignments
- 12. pits

2.2.5. Guidelines for the Definition of Material Culture.

Previous work in the immediate area of the Plains has provided good examples of guidelines for describing the major lithic tool types found on the Plains:

- 1. debitage and cores
- 2. unifacially flaked
- 3. bifacially flaked
- 4. ground stone
- 5. pottery
- 6. worked bone

But, again, establishing guidelines for the definition of material culture types should be kept completely separate from actual definition of types. The important thing is not so much the types defined but the quality and explicitness of the definitions.

2.2.5.1. Debitage and Cores

In terms of debitage and cores, a consideration of the following is expected as a minimum. Good line drawings are important.

- 1. stage of flake removal (i.e. primary, secondary, etc.)
- 2. core description

In terms of unifacially flaked tools, a consideration of the following as a minimum is expected in a definition of any unifacial tool type (largely after Eddy 1982:60-69; Alexander 1982:130-131). Good line drawings are essential.

- 1. sample size
- 2. unintentional vs. intentional flaking
- 3. area of flaking
- 4. shape of flaked edge
- 5. edge angle
- 6. edge wear
- 7. rounding/polishing
- 8. step fracturing

9. crushing
10. retouch
11. striations
12. material

2.2.5.2. Bifacially Flaked Tools

In terms of bifacially flaked tools a consideration of the following variables for a minimum classification/description of bifacial tool types is expected. Good line drawings are essential.

Bifaces

1. sample size
2. shape
3. size range
4. material
5. edge wear
6. edge angle
7. step fracturing/use flakes
8. retouch
9. striations

Projectile points (See Ahler 1970 and Bell 1958)

1. sample size
2. size (shoulder, base, length, width, etc.)
3. shape
4. retouch/use flakes
5. striations
6. impact fractures
7. material
8. notch form

2.2.5.3. Ground Stone

In terms of ground stone consideration of the following variables for a minimum classification of ground stone tool types is expected (see Irwin-Williams and Irwin 1966). Good photographs are important.

Metates and grinding slabs

1. sample size
2. size range
3. material
4. contour

5. wear patterns
6. number of faces used

Manos

1. sample size
2. size range
3. material
4. wear patterns
5. contour
6. number of faces used

2.2.5.4. Ceramics

In terms of pottery a consideration of the following criteria in a minimum definition of any pottery type is expected (see Wood 1971). Good photographs are important.

1. sample size
2. paste
3. temper
4. surface finish
5. body shape
6. rim form
7. decoration

2.2.5.5. Bone

In terms of worked bone a consideration of the following as a minimum in a definition of a bone tool type is expected. Good photographs or line drawings are important.

1. sample size
2. shape
3. size
4. wear patterns
5. initial shaping
6. type of bone

3 Paleo-Indian Stage

3.1 Background to Paleo-Indian Stage Research in Colorado

Eastern Colorado has been a focal point for research into the Paleo-Indian Stage. Apparent high Paleo-Indian component density coupled with relatively little overburden has exposed several sites to extensive testing and excavation. Currently, it is unclear whether the high density is the result of a higher prehistoric population density on the High Plains or to the physical processes of site formation and transformation.

Interest in a possible 'Pleistocene' age occupation for the North American High Plains can be traced back to the earliest years of Colorado archaeology. Beginning in 1925, Harold J. Cook and Jesse D. Figgins of the Denver Museum of Natural History reported finding cultural material associated with Pleistocene fauna and deposits (Cook 1925, 1926; Figgins 1927). Only a few years later, Renaud (1931, 1932) recognized the antiquity and significance of the large number of lanceolate projectile points showing up in collections from eastern Colorado and began working on understanding their technological evolution (Renaud 1931, 1932).

By 1935, the Blackwater Draw Locality, the Dent Site and the Lindenmeier Site had been partially excavated and reported (Cook 1931, Figgins 1933, Roberts 1935). Data from these and other 'early' sites were beginning to suggest that contrary to Renaud's earlier ideas, the large fluted points (eventually called Clovis Fluted points) were associated with mammoth, and that the smaller fluted points (eventually called Folsom Fluted points) and parallel flaked lanceolate points must be somewhat younger (Figgins 1934, 1935, Sellards 1938). At about this time, Marie Wormington joined the staff of the Denver Museum of Natural History and reviewed available information on the Paleo-Indian occupation of Colorado and all North America (Wormington 1939, 1957).

Of particular note, Wormington (1948) took up the issue of "Yuma and Folsom" points. By 1948, it had become clear that the small finely retouched fluted points (Folsom) have a distribution more closely associated with the Plains than do the broadly distributed and earlier Clovis Fluted points. However, in the 1930s and 1940s Folsom points had often been lumped together by Renaud with other lanceolate forms called Yuma points (after the county in eastern Colorado from which they were first discovered) in a loose Folsom-Yuma Complex. Wormington argued the Yuma Concept combined various projectile point types, and she felt that the term should be dropped (Wormington 1957:103). Based on stratigraphic evidence and new radiocarbon dates, many of the parallel flaked points could be demonstrated to be younger than both fluted forms.

Although the term Yuma has been dropped from the literature, it has been replaced by a generally accepted concept--the 'Plano' (Jennings 1955). Interestingly Irwin (1967:308) had advocated the use of a concept similar to Renaud's Folsom-Yuma Complex, which would reunite Folsom and later Paleo-Indians into what he calls an Itama culture. The concept has not been widely adopted. With an increasing number of radiocarbon dates, age assignments can be given to a developing sequence which has changed little in the past 15 years:

Plano	8000 - 5500 RYBC
Folsom	9000 - 8000 RYBC
Clovis	10500 - 9000 RYBC

The first well-defined occupation of eastern Colorado had begun in the middle of the eleventh millenium BC.

Speculation continues, of course, as to whether Clovis derived from earlier North American cultures or arrived from Asia at the end of the last major glaciation. Even though no diagnostic lithic tools earlier than Clovis have been found on the eastern plains of Colorado or surrounding areas (with

the possible exception of the Sandia Point; Hibben 1941), enough material has been discovered from this earlier era to suggest a Pre-Clovis occupation of eastern Colorado.

Evidence of an earlier stage began coming from Eastern Colorado in 1931 when Cook (1931) described some of the mammoth bones exposed in blowouts of Yuma County as possibly being worked when the bones were still green. Recently, Dennis Stanford and others recognizing the significance of Cook's observation have established to most people's satisfaction through stratigraphic excavation the possibility that worked bone from sites in Eastern Colorado represent the remains of a Pre-Clovis occupation. In addition, Renaud (1938, 1940) proposed a non-projectile point assemblage (in three varieties) from southern Wyoming which compared technologically with Paleolithic cultures of Europe. Although discussed for a time as a potential Pre-Clovis occupation of the High Plains, Renaud's Paleolithic 'Black Forks Culture' has now been determined to be the result of quarry activity (Sharrock 1966; Saul 1969). Nevertheless, general agreement remains that a pre-10500 RYBC period should be added to the Paleo-Indian Stage.

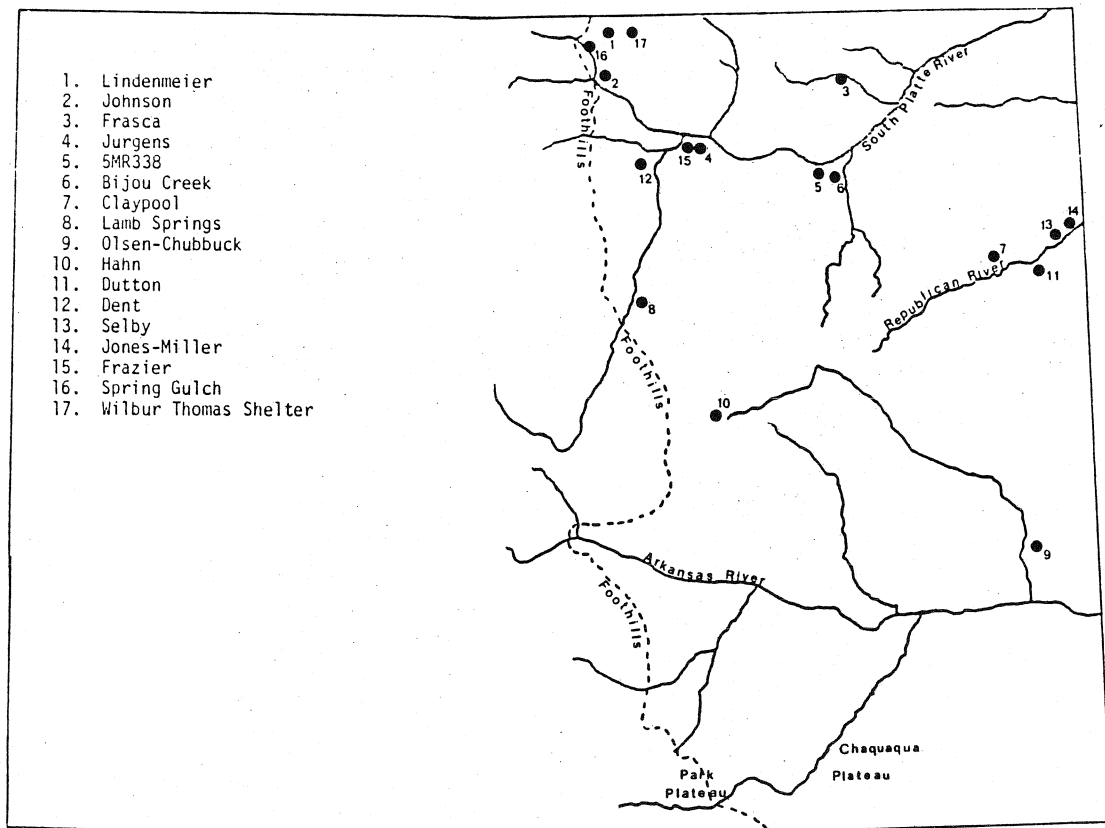
3.2 Pre-Clovis (pre-10500 RYBC)

Variously termed the Pre-Projectile Point Stage (Kreiger 1964), Pre-Llano (Humphreys and Stanford 1979), and Lower Lithic Stage (Willey and Phillips 1958) in North America, the period is known from several sites in Eastern Colorado (see Figure 10).

3.2.1 Material Culture and Lifeway Description

Two sites, the Selby Site and the Lamb Springs Site, in eastern Colorado have radiocarbon dates prior to 10500 RYBC. A third site, the Dutton Site, has an occupation layer which could be as old as 29000 RYBC stratigraphically below a radiocarbon dated Clovis layer.

Figure 10. General location of some of the Paleo-Indian Sites mentioned in text. For accurate site locations consult references cited in text.



The excavations at all three sites have been directed by Dennis Stanford for the Smithsonian (Stanford 1979; Stanford, Wedel and Scott 1981; Rancier, Haynes and Stanford 1982). Cultural activity at all three sites was associated with the remains of mammoths, horses, camels, bison, and various smaller mammals; however, these reports show the relevant levels of the Selby and Dutton Sites as lacustrine deposits and of the Lamb Springs Site as an old channel cut. Therefore, reconstruction of site function and activity areas was made particularly difficult. At the Selby and Dutton Sites, Stanford (1979) reported that the bone distribution of the Pre-Clovis level differed from that of the stratigraphically earlier Peorian Loess level in having mammoth bones and being clustered in basin shaped erosional features. In the Pre-Clovis level at Lamb Springs, Stanford, Wedel, and Scott (1981) reported the possibility that some of the mammoth bones were intentionally piled up and that nearby concentrations of bone flakes were the debris from making bone expediency tools. The old channel in which the remains of 23 mammoths were deposited in the Pre-Clovis level at Lamb Springs could have been used as a trap, but the channel could have also produced the 'cut marks' evident on some of the bone. However, unusual bone frequencies in the Pre-Clovis level at Lamb Springs suggest it was human selection that most likely produced the assemblage (Rancier, Haynes, and Stanford 1982:15).

Of particular note from the Selby, Dutton, and the Lamb Springs Site was the lack of diagnostic stone tools. Only one flake from the Pre-Clovis level of the Lamb Springs Site was believed to be culturally modified (Rancier, Haynes, and Stanford 1982:13), and no lithic artifacts could unequivocally be attributed to the Pre-Clovis levels at the Selby and Dutton Sites (Stanford 1979:113-115). The artifact assemblages were, therefore, dominated by purported bone tools. These tools exhibit spiral fractures and flake scars which are not commonly produced by natural forces. The collection from the Selby and

Dutton sites contained approximately 16 pieces broken in patterned ways. For example, four bison and horse tibiae at the Dutton Site were broken from the distal ends with the proximal ends of the spiral fractures ending on the posterior surface. The ends of all bone choppers exhibited step fractures and polish. Several bone flakes which were struck from prepared cores were also recovered from these two sites. Some of these flakes show evidence of use. In the first season at Lamb Springs, researchers discovered broken bones identified as flakes and cores but without polishing or secondary flaking.

Clearly, if these bits of evidence are the result of human activity, then they represent the remains of hunting, butchering and marrow extraction activity. The process of hunting large Pleistocene megafauna likely represents the results of group activity although birds, canines, peccary, deer, antelope and smaller mammals might have been as conveniently hunted by solitary individuals. Little else can be said to distinguish the demography and social organization of these Pre-Clovis inhabitants from that of other Paleo-Indians of eastern Colorado. Population densities here as well as in the rest of North America were probably at their lowest level. By analogy with present day hunters, small mobile domestic units loosely cooperating with kinsmen in band level organization would be expected.

Although the use of bone tools similar to those found at the Dutton, Selby and Lamb Springs sites is known for the High Plains in later periods (Stanford 1974, Frison 1974, Johnson 1978), technologically, there is no known precedent for a non-lithic complex in North America or Asia at or prior to this time (West 1981). This strongly suggests that the bone tools represent only a portion of a larger technological complex until now unrecognized in eastern Colorado (Jelinek 1971; MacNeish 1971).

3.2.2 Process

No clear evidence exists as to the origins of the Pre-Clovis hunters, whether they derived from even earlier inhabitants of North America or arrived from Asia prior to the glacial maximum at about 20000 RYBC. According to Wendorf (1975:278), the late Pleistocene between 16000 and 10000 RYBC on the Southern Plains was generally (except for the Monahan interval) a period of maximum cold and moisture with a forest/woodland environment. The relatively high density of Pre-Clovis sites from eastern Colorado may be explained by data Agenbroad (in press) presents which suggests that between 20000 and 8000 RYBC the Plains had the highest mammoth (imperator, columbi, and primigenius) population density in the Americas outside Alaska. The importance of mammoth to these early hunters is suggested by the fact that 14 of the 34 dated mammoth finds (after 15000 RYBC) in the Americas reflect human predation.

3.3 Clovis Period (10500 - 9000 RYBC)

Two sites in eastern Colorado have unmistakable evidence of human occupation between 10500 and 9000 RYBC: the Dutton Site (9760 RYBC) and the Dent Site (9,250 RYBC). Additional surface finds are common. For example, Renaud (1931,1932) describes Clovis Fluted Points from Northeast Colorado, and Campbell (1969:360) reports Clovis Fluted Points from Southeast Colorado. Clovis finds are reported from Morgan County (Bijou Creek Site and 5MR338) and from east of Colorado Springs (Hahn Site)(Greiser 1980:149-151). The diagnostic artifact of the period, the Clovis Fluted Point, is usually between three and six inches long, basally ground, basally concave and apparently used as the tip of a throwing or thrusting spear (See Wormington 1957:263). It should be noted that unfluted or basally thinned points (similar to Plainview Points) otherwise similar to Clovis have been found associated with Clovis points at Domebo (Leonardy 1966) and at Blackwater Draw (Hester 1972). Little information

beyond the finding of a diagnostic Clovis point is currently available from the Dutton Site, and the Dent Site contained only the remains of mammoth and Clovis Fluted Points. However, several sites on the High Plains in surrounding areas can be used to help interpret this important period of Colorado prehistory.

3.3.1 Material Culture and Lifeway Description

At the Dutton Site a level dated as early as possibly 9760 RYBC contained a Clovis Fluted projectile point associated with horse remains, a chert core-chopper, two plano-convex scrapers, a retouched flake and pressure retouched flakes (Stanford 1979:115-116). The artifacts were found in a basin-shaped erosional feature at the edge of a Pleistocene pond. At the Dent Site (Haynes 1966:44) evidence of 11 immature female Columbian Mammoths was uncovered concentrated at the mouth of a small gully where a small stream joined the South Platte and associated with three Clovis Fluted projectile points and several large intrusive boulders. These two sites then, like most Paleo-Indian kill sites were situated near a water source.

The technique of fluting, no matter what its exact function(s), appears to have been a New World development. The Clovis stoneworking technology is one where most tools are made from flakes struck from prepared cores. Besides points, scrapers and knives, the Clovis assemblage at Blackwater Locality No. 1 (Hester 1972:92) contained core struck blades, possible burins and a grinding stone. Of note also are bone needles, punches, fleshers and hammers because the bone technology might relate Clovis to the Pre-Clovis period bone technology and/or the Old World bone working traditions (Hester 1966).

According to Hester (1975:251), the mainstay of Clovis economy was hunting (characteristically mammoth but also including small mammals, reptiles and rodents). Butchering of mammoths at the known sites was sometimes only partial, other times nearly complete. On the Llano Estacado, camp sites as well as kill sites are known for Clovis hunters. These camp sites were always situated near

water with a good view of the approach to water sources. Lithic sources used for artifacts were often found far from the camp and kill sites. Based on an analysis of stone types used in tool manufacture at the Blackwater Draw Locality, Hester and Grady (1977:92-94) estimated that Paleo-Indian Stage Indians (i.e. in the Clovis Period as well as in later periods) ranged over areas in excess of 25,447 square miles. From any one campsite the groups probably ranged over 80 square miles. Hester and Grady estimated band size averaged about 25 members. Greiser (1980:146, 239), in support of her thesis that kill sites on the Central High Plains are over-represented in excavated Clovis sites, finds evidence that five of seven recorded (but not necessarily excavated) Clovis sites were actually camp sites.

3.3.2 Process

Not only were the Plains the center of mammoth distribution (outside Alaska) during the Late Pleistocene, Agenbroad's (in press) study of reported mammoth remains strongly suggests that the southern Plains was one area where the mammoth were first killed to extinction. The last mammoth remains on the southern High Plains are dated at about +10000 RYBC while in the rest of the North American continent mammoth remains are found as late as +9000 RYBC. The mammoth extinction may relate in some way to the decline in Clovis finds at the end of the period and/or to the disappearance of the Clovis tradition in the Paleo-Indian Stage around 9500 RYBC. These data are consistent with a model which views the Clovis technology and specialized mammoth hunting as evolving in North America, and they contradict Martin's (1973) well known theory of Clovis invasion at 9500 RYBC and a purported north to south extinction of the mammoth throughout North and South America. Wendorf's (1975) detailed work on the Llano Estacado, New Mexico, and Benedict's (1973) work in the Colorado mountains suggest that the disappearance of Clovis hunters and the eventual disappearance of mammoths from the southern Plains were correlated with a brief

drying and warming trend (a marked decline in tree pollen and increase in sage and chenopods) within a general late glacial period.

3.4 Folsom Period (9000-8000 RYBC)

Only one dated site from eastern Colorado falls within this period, the Lindenmeier Site (9250 and 8830 RYBC), although various Folsom surface finds are known throughout the Plains. Campbell (1969) reported two sites on the Chaquaqua Plateau, Renaud (1932) and Figgins (1935) reported Folsom Fluted Points from collections in northeast Colorado (also see Agogino and Parrish 1971). Wormington (1957:39-40) mentioned Folsom sites in northern Colorado near Greeley and Fort Collins (also see Galloway and Agogino 1961), and Greiser (1980:163) pointed out that Folsom/Midland material has been collected from the Hahn Site, Bijou Creek and 5MR338. The diagnostic point of the period, the Folsom Fluted Point, was under three inches in length, finely retouched, basally concave and basally ground; however, thin unfluted points very similar to the Folsom Fluted Point in overall form (also similar to and sometimes called Midland Points) made up 20% of the finished points at Lindenmeier (Wilmsen and Roberts 1978:112). Although the Folsom Fluted Point (including associated unfluted varieties) is generally accepted as the diagnostic point of this 1000 year period, it should be noted that Irwin (1968) and Irwin-Williams et. al. (1973) found an unfluted point otherwise very similar to Clovis forms stratigraphically below the Folsom level at Hell Gap Site in Wyoming. Irwin-Williams et. al. dated this layer between 9000-8800 RYBC, and it leaves open the possibility that some of the larger unfluted points (Plainview-like) from eastern Colorado (particularly southeastern Colorado; see Knudson 1970) represent this early occupation. Irwin (1971:50) felt that distributional studies show that Folsom Fluted Points were more closely associated with the High Plains than was the widespread Clovis Fluted Point.

3.4.1 Material Culture and Lifeway Description

Despite the fact that a large number of Folsom points have been found in eastern Colorado, a detailed view of Folsom Period life comes almost exclusively from excavation at the Lindenmeier Site (Roberts 1935; Wilmsen and Roberts 1978). Here, in a well-watered valley Folsom hunters camped between 9200 and 8800 RYBC. Pollen evidence suggested the valley was a rich meadowland at that time, and faunal evidence suggested people were taking pronghorn antelope, camel, bison (Bison antiquus), deer, wolf, coyote, fox, jackrabbit, hare and box turtle.

A great variety of lithic tools were associated with Folsom points in the lower level (Folsom) at Lindenmeier. Channel flakes, knives, flake knives, graters, spokeshaves, end scrapers, side scrapers, cores, utilized flakes and flakes were found there (Wilmsen and Roberts 1978). A similar diversity of tools was found at another Folsom camp, the Elida Site, in east central New Mexico (Hester 1962). Stone drills, burin-like pieces, cores, choppers, abrading stones, pigments and pigment grinding stones along with bone awls, pointed ribs, beads, needles and engraved pieces made up the remaining bone and stone assemblage from Lindenmeier. These tools reflect what might be expected from a typical hunting and gathering economy. Bison (Bison antiquus) was apparently the single most important species present in the faunal assemblage.

Sources for the jasper artifacts occur more than 150 km (96 miles) from Lindenmeier (Wilmsen and Roberts 1978:114) and obsidian for some of the artifacts comes from sources as far away as Yellowstone Park, Wyoming, and from central New Mexico.

The only features recorded for Lindenmeier were hearths and ash lenses; however, in the Midland level at the Hell Gap site (Irwin 1969:32) which might relate to this period, two superimposed sets of circular (5-6 feet diameter)

postmold patterns suggested possible habitation structures. At Lindenmeier the distribution of bones and stone tools suggested stratigraphic as well as spatial segregation of the recovered material (Wilmsen and Roberts 1978:58, 136-146). Wilmsen (1974) attributes some of the spatial segregation to separate prehistoric activity areas. A high frequency of small edge angles on utilized flakes and tools and a larger number of bone needles in one part of the site might reflect skin working activity. A high frequency of large edge angles and broken bone in other areas might reflect wood and bone cutting and shaping. In addition, Wilmsen (1974:chp 6) identified stylistic variation within the Folsom Fluted Points and found Style I and Style II distributed in different parts of the site. Combining this distributional observation with the fact that the obsidian used to make some of the Style I points came from New Mexico while that for some of Style II points came from Yellowstone, suggested to Wilmsen possibly a reflection of different groups (bands) who used Lindenmeier over the years.

On the Llano Estacado (Hester 1975:248-254) Folsom sites include camp sites, kill sites, and isolated finds. In general, Llano Estacado Paleo-Indian camp sites tended to occur on ridges, dunes or hills which overlook a stream channel or pond. Kill sites tended to occur at the edge of a pond or stream channel. Kills were accomplished through either stampeding or stalking. The number of unbutchered animals was variable but seems to be related to the number of animals killed.

Group size and composition estimates are very tentative and remain essentially unchanged from the previous Clovis Period (see Section 3.3.1).

3.4.2 Process

Questions remain as to the relationship between fluted and unfluted points. At Hell Gap, (unfluted) Midland Points were found stratigraphically above the Folsom level but still dating within the 9000 - 8000 RYBC period

being used here. Irwin (1971:52) felt the two occupations were separate and that, despite the concurrence of the two forms at Lindenmeier, the Midland level represented a sequential development after Folsom. Others feel (e.g. Judge 1970) that the two forms were probably produced by the same groups and cannot be easily separated chronologically. Irwin (1971) would also tend to see the people making the Folsom/Midland Points as unrelated to the earlier Clovis populations.

In either case an important observation is the absence of mammoth in the associated faunal assemblage at Lindenmeier and other Folsom components. This shift in subsistence is correlated with the extinction of the mammoth and with the end of the last major glaciation (Benedict 1973, Wendland 1978).

Population increase over the previous Clovis Period is, for the Llano Estacado at least, indicated by an increase in the number of components (Hester 1975:256). If the periods used in this report are applicable for the Llano Estacado, then an estimated population increase would be roughly 40%.

3.5 Plano Period (8000 - 5500 RYBC)

Several sites in eastern Colorado have been radiocarbon dated within this period. The Olsen-Chubbuck Site (Wheat 1972), the Jones-Miller Site (Stanford 1974, 1978), Frazier Site (Wheat 1979), and the Jurgens Site (Wheat 1979) have been radiocarbon dated between 8200 and 7000 RYBC while the Frasca Site (Fulgham and Stanford 1982) and a component of the Lamb Springs Site (Stanford, Wedel and Scott 1981) have been dated between 7000 and 6000 RYBC.

Typologically, the Claypool Site (Dick and Mountain 1960) can be placed as a Cody Complex site within this period and apparently, the Keenesburg camp site (Weld County) contains an Agate Basin occupation (Greiser 1980:173). At least 22 other general Paleo-Indian finds have been documented throughout the

Plains of Colorado (e.g. Campbell 1969; Scott and Gillio 1973; Colorado Department of Highways 1980; Hillier 1979; Angulski 1982; Hamilton 1976; Gooding and Hand 1977; Halasi 1978; Brechtel 1979; Hunt 1982; Weir and Hunt 1982).

3.5.1 Material Culture and Lifeways

All of the Plano Period sites in eastern Colorado so far excavated and reported include evidence of bison kills and/or butchering, and only one, the Jurgens Site, has any extensive and well-reported evidence for a camp site.

One of the bison kills, the Olsen-Chubbuck, dated between 8200 and 7000 RYBC, was the result of a drive into an arroyo, and the Jones-Miller kill might have been the result of an impoundment. Preliminary study of the Jones-Miller Site suggested the site contained the remains of nearly 300 bison, apparently the remains of several different nursery herd kills (fall, winter, and spring) (Stanford 1978:90-92). The Olsen-Chubbuck Site had the remains of a single spring kill of approximately 190 animals, and at the Jurgens Site the partial and fragmentary remains of at least 35 bison were found in one area and 31 others in another area (Wheat 1979:27-30, 58); however, the site is not actually the locus of a bison kill nor are bison the only animals present.

The Jurgens Site excavation was composed of three separate areas. Based on type and percent of bones present and the large variety of stone tools, the first area apparently represented the remains of a long-term camp. Here, besides fragments of bison bone the remains of 20 separate species were recovered. In the second area the remains of only small portions of two bison and five pronghorns suggested short-term camping.

The third area at the Jurgens Site was apparently a secondary butchering area for a nearby bison kill. Bison skeleton parts tended to be disarticulated (72%) and those pieces present tended to be those easily transported (e.g. only 28% of the pelvis units and only 15% of the rear leg units were present).

In contrast to Jurgens Area 3, bison remains (Bison occidentalis) at the Olsen-Chubbuck site reflected the entire butchering process. Only 74% of the bison killed were butchered, the remainder being too deeply buried in the channel. Sixteen percent of the butchered animals were partially butchered. Based on ethnographic analogy and the stratification of butchered bone, Wheat (1967:103-107) reconstructed the butchering sequence. Butchering began with the front legs, then hump meat, ribs, internal organs, pelvic girdle, hind legs and finally neck and tongue were processed in order.

The Bison antiquus at Jones-Miller (Stanford 1978:90) were completely disarticulated, but in some cases the same bones were apparently thrown into piles. Many of these butchering piles have either the remains of the right or left side of the animals.

Besides the bone beds, the sites of this early part of the Plano Period exhibit little structure. Except for the different types of site functions indicated, no features were reported for the Jurgens Site. Seven bone piles were evident at the Olsen-Chubbuck site. At the Jones-Miller site there were three fire pits close to, but not directly associated with, the bone bed and at the same site another large hearth and quantities of red and yellow ochre were next to the bone layer. An additional feature at the Jones-Miller Site suggested possible ceremonial activity. A shallow post mold associated with a small projectile point and Canid remains were located in the center of the bone bed and associated with a large hearth containing red and yellow ochre (Stanford 1974:37).

Lithic tools at these sites included typical hunting and meat processing tools--scrapers, bifaces, and utilized flakes but primarily projectile points. Greiser (1977) has shown that almost all broken points/knives of sufficient size at the Jurgens Site were reused in the butchering process. Grinding tools

at the Jurgens Site indicate probable gathering activity (Wheat 1979:129-131). Non-local stone material remained popular with these Paleo-Indians (e.g. Stanford 1978:92; Wheat 1972:126; Wheat 1979:127). Bone butchering tools, including metapodial, tibiae and femur choppers, along with humerus scrapers and modified ribs, were common at some of the sites (Wheat 1979:138; Stanford 1978:93).

Diagnostic artifacts from these sites consisted almost exclusively of projectile points. Typologically, the least controversial was the Jones-Miller Site where almost all the points fall within the Hell Gap type. Points from the Frazier Site, apparently, (Wheat 1979:152-153) were the Agate Basin type. Wheat has described the points from the Olsen-Chubbuck Site as the Firstview Complex which was composed mostly of Firstview and San Jon Points (Wheat 1972:140-157) and those from the Jurgens Site as a stemless (but basally ground) Kersey Point (1979:72); however, others feel (e.g. Fulgham and Stanford 1982:8-9) that Kersey and (apparently) Firstview Points should still be considered part of the Cody Complex (i.e. Eden-Scottsbluff).

This difference of opinion over projectile point types can mean more than simple typological hair splitting. Originally, Wheat (1967) had classified points from Olsen-Chubbuck as part of the Cody series, but later when he (1972:147-157) assigned most of them to the new Firstview type, he affiliated the type with a more southerly distribution (i.e. southern Plains) and slightly earlier time period than he did the Cody Complex. At the Jurgens site Wheat identified the (Kersey) points as basically stemless, continuing in a similar line of reason as that used to interpret the Olsen Chubbuck Site. Wheat (1979:152) affiliated the Plano occupation at the Jurgens Site with the stemless tradition of point making. According to this view the stemless tradition was roughly contemporary with the Alberta-Scottsbluff-Eden (Cody Complex) stemmed points on the northern and North-Central Plains. Fulgham and Stanford

(1982:9) suggested diachronic and synchronic variation may explain the difference in projectile points from Jurgens. They would prefer to see points classified as Eden, Scottsbluff, Kersey, Firstview remain at this time a single heterogenous complex. Wendorf (1975:274) suggested the development of widespread boreal forests after 8000 RYBC might have given rise to increased isolation and the diversity in projectile point types during the Plano Period.

At present, independent dating is too inaccurate to be definitive in working out these problems, and stratified Plano Period sites are unknown for eastern Colorado. Wheat (1979:152) does argue that the Agate Basin component at the Frazier Site was stratigraphically below his Kersey component at Jurgens. Wheat's stemless tradition of point manufacturing (Kersey-Firstview-Milnesand-San Jon) is currently dated throughout the early part of the Plano Period (Olsen-Chubbuck, 8200 RYBC and Jurgens, 7150 RYBC). The Frazier Site with its Agate Basin Points (7650 RYBC) and the Jones-Miller Site with its Hell Gap Points (8070 RYBC) cannot be easily be combined with these other excavated sites in a simple relative chronological order.

Cultural evidence in the next fifteen hundred years (7000 - 5500 RYBC) comes from only two radiocarbon dated sites in eastern Colorado (the Frasca Site and the Lamb Springs Site). Diagnostic tools from both these sites indicate a Cody Complex affiliation. Stanford, Wedel and Scott (1981:24) briefly reported finding bison bones with an Eden Point at the Lamb Springs Site. The bones possibly represent the remains of a summer kill in a bog trap. The remains of at least 56 bison (after site erosion) were butchered at the Frasca Site after an early winter kill (Fulgham and Stanford 1982). Butchering was not complete for all animals (6 animals were completely articulated and 83% of all bones were part of articulated units). Almost all tools at both Lamb Springs and Frasca were classed as projectile points.

Typologically, these two sites are easily lumped with the undated Claypool Site from which Eden Points, Scottsbluff Points and Cody Knives were found along with scrapers and bifaces in what might have been the remains of a Cody Complex camp.

Although currently unrepresented in published excavation reports from Eastern Colorado, hunter-gatherers using Lusk, Fredrick and Jimmy Allen Points styles may have been present during the last portion (6500-5500 RYBC) of the Plano Period based on evidence from surrounding areas (e.g. Irwin-Williams et al. 1973). Jimmy Allen Points were reported from surface finds at the Spring Gulch Site in the Northern Foothills Subarea (Kainer 1976:214).

3.5.2 Process

Based on Wheat (1979:52), Wendorf (1975:273), and Irwin (1971:47) it can be proposed that the first projectile point style to appear during the Plano Period in eastern Colorado is likely to have been the Agate Basin style, but it is only sparsely represented from the excavated sites. The Olsen-Chubbuck, Jurgens and Jones-Miller bison kills represent later cultural developments. Cody Complex styles appear to persist and dominate between 7000 to 6000 RYBC. Following similar ideas advanced by Wendorf (1975:274), Greiser (1980:301-303) hypothesizes that based on the deteriorating climatic conditions during early boreal times (i.e. circa 7700 RYBC) hunter-gatherers using the Agate Basin/Hell Gap style points could have retreated from the Central High Plains to surrounding areas where they picked up new techniques in lithic tool manufacture. The reinhabitation of the Central High Plains could explain the variety of projectile point styles and change evident in the later portion of the Plano Period. As conditions improved, the Central High Plains were invaded by the more northerly (Alberta) Cody Complex and by the descendants of the previous inhabitants.

On the Llano Estacado, Hester (1975:250-255) found no major changes in settlement or economy from the preceding Folsom Period, but the number of known

sites from the Period more than doubles for this area. In general, however, and from eastern Colorado in particular, it seems that the Plano Period saw the perfection of the mass bison kill (Wheat 1971:25). In the Central High Plains, Greiser reported (1980:146, 160, 167, 182-183) an increase from approximately 2.8 known sites/1000 years between 11050-8550 RYBC to 16 known sites/1000 years between 8550-6500 RYBC. Although the gathering of vegetal foods and hunting of small game surely played an important role in Plano Period subsistence in Eastern Colorado (see especially Greiser 1980:246-261), when compared with the Desert West, clearly big game hunting was of unusual importance on the High Plains (Wheat 1971:27; Greiser 1980:252).

3.6 Research Problems

Since the High Plains of Colorado contain a relatively high density of scarce Paleo-Indian Stage sites, the importance of this resource in answering questions about Paleo-Indian life can not be underemphasized. Colorado Plains archaeologists have already identified some of these questions. They have identified site function, demography and the transition to the Archaic as important research problems (Butler 1980). In addition to these broad areas of consideration, the work reviewed above (Sections 3.1 - 3.5) accentuates other important problems.

Some of the more obvious research problems suggested by this work are:

- 1) the taxonomic status of Paleo-Indian complexes such as the Cody, Kersey, and Firstview Complexes.
- 2) the ages, duration, and contemporaneity of Paleo-Indian taxa.
- 3) the relationship between environmental and cultural change especially during transitional periods like the end of the Plano.
- 4) the existence of late Plano complexes such as the Lusk, Fredrick, and Jimmy Allen which are known from surrounding areas.

- 5) seasonality of habitation and/or kill site occupation and the question of site function.
- 6) the taxonomic/temporal relationship between fluted and similar unfluted points.
- 7) lithic source identification, utilization, and distribution.
- 8) subsistence and extent of gathering in Paleo-Indian subsistence.
- 9) formation processes of Paleo-Indian sites, the rate of site destruction, and nature of site transformation. These problems seem particularly important from the management point of view.
- 10) the nature of any pre-Clovis occupation.

Many other research problems will naturally arise as more work is completed and as available data are more carefully considered.

3.7 Potentially Important Resources

All Paleo-Indian sites are very important resources. Almost all sites would potentially yield information useful in the study of some or all of the few research problems mentioned above. All sites would be of interest in settlement/distributional studies, large single component sites would be important in subsistence/lifeways reconstruction/integrative studies, and stratified sites would be useful in the study of cultural dynamics.

3.8 Needed Research

Any research not duplicating previous research would be a welcome addition to the prehistoric archaeology of eastern Colorado. To answer only the research questions mentioned above (Section 3.6), much research is needed. Specifically this stage needs:

- 1) chronometric dates to answer questions concerning all the research questions.
- 2) surveys to answer questions concerning demography, taxonomy/distribution, the late Plano, lithic sources, and Pre-Clovis.

- 3) stratigraphic excavations to answer questions about the archaic transition, taxonomy, seasonality, age and contemporaneity, environmental and cultural change, and the Pre-Clovis.
- 4) single component excavation to answer questions about the archaic transition, taxonomy, site function, age and contemporaneity, late Plano, seasonality, subsistence, and the Pre-Clovis.
- 5) environmental reconstruction to answer questions about site function, the archaic transition, environmental and cultural change, seasonality, and subsistence.
- 6) taxonomic studies to answer questions about site function, the archaic transition, taxonomy, age and contemporaneity, environmental and cultural change, and the Pre-Clovis.
- 7) studies of the archaeological context to answer questions about the formation and transformation of Paleo-Indian sites, quaternary stratigraphy, and to answer all other research questions.

4. Archaic Stage in Northeastern Colorado.

4.1 Background to the Northeastern Colorado Archaic.

Unlike the Paleo-Indian Stage, research into the prehistory of more recent periods did not really get under way until the 1960s. From his extensive survey work, Renaud (1947:Chapter 10) recognized a generalized "Western Camp Culture" over the High Plains area which he viewed as essentially hunting cultures, but based on a few scattered excavations, a more modern view of this occupation quickly developed along lines similar to those recognized for the rest of North America. By the 1960s archaeologists in eastern Colorado fully expected to find a post Paleo-Indian occupation dominated by a generalized hunting and gathering subsistence. In 1968, when Haug summarized the archaeology of eastern Colorado, he could report the discovery of an open camp by Scott (1963:40) containing deer and bear bones, hackberry seeds, manos, metates, projectile points, scrapers and bone tools which dated about 3830 RYBC. From stratigraphic as well as from typological comparisons with material Mulloy (1958) assigned to this time period, Haug could assign material recovered from the upper levels of the Lindenmeier, Lamb Springs, Johnson Sites as well as the lower levels from LoDaiska (Haynes and Agogino 1960:20-21, Wedel 1962, Galloway and Agogino 1961, Irwin and Irwin 1959) to this period of Archaic hunting and gathering. Central to the conceptualization of post Paleo-Indian developments was the idea of increased dependence on plant remains as seen in an increase in grinding stones and the relative decrease in the number of kill sites.

Also, in the 1950s the idea that a significant warming and drying episode occurred in North America first made its appearance in the developing view of Archaic subsistence and adaption (Antevs 1955). This period of deteriorating climatic conditions was thought to begin about 4000 BC and end about 2500 BC. Recent studies have altered the exact beginning and ending dates somewhat, but

the evidence for the "Altithermal" period continues to mount. The Altithermal and the changes it induced provide a convenient basis for breaking the Archaic Stage into three periods: Early, Middle, and Late with the Early Archaic more or less coinciding with the Altithermal.

4.2 Early Archaic (5500 - 3000 RYBC).

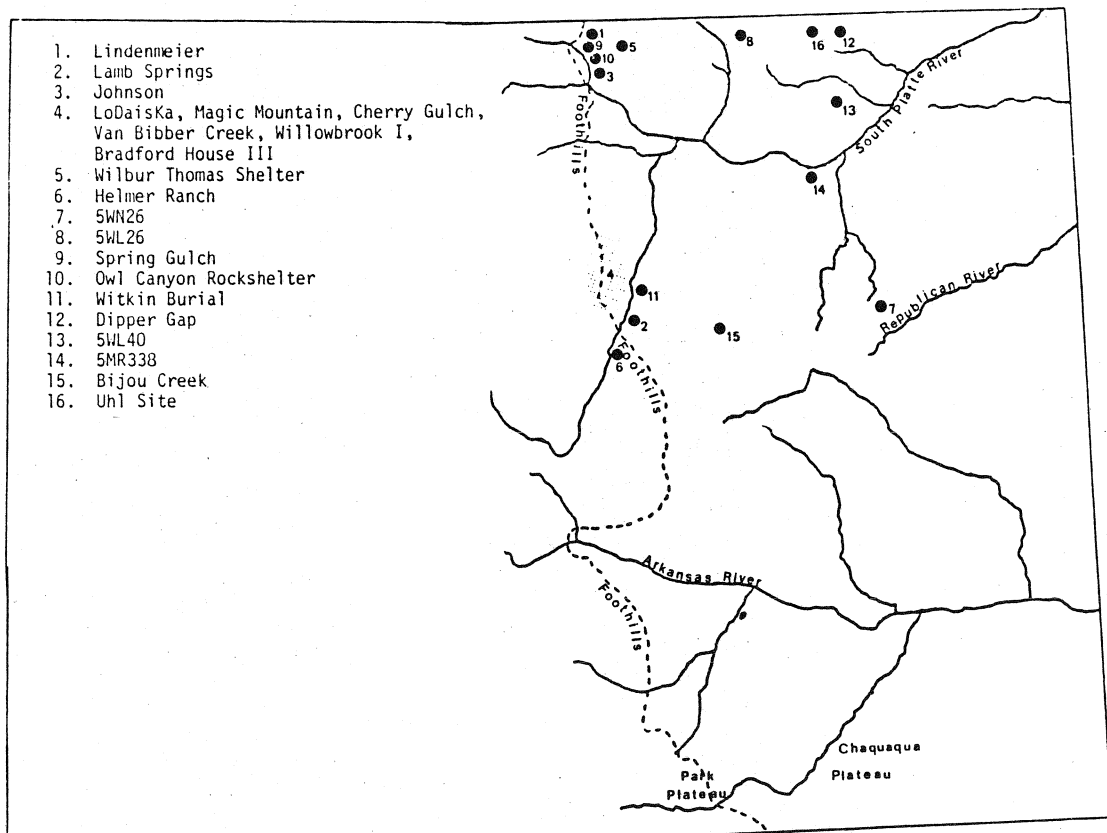
4.2.1 Material Culture and Lifeway Description.

4.2.1.1 Foothills.

In the Colorado Foothills north from Colorado Springs to the Wyoming border, several excavated sites have produced radiocarbon dates between 5500 and 3000 RYBC. At least three of the radiocarbon dates listed by Butler (1981) for this period come from the Foothills area. Important Early Archaic components have been excavated and reported for Magic Mountain (Irwin-Williams and Irwin 1966), Wilbur Thomas Shelter (Breternitz 1971), Helmer Ranch (Benedict and Olsen 1978:129), LoDaisKa (Irwin and Irwin 1961) and Cherry Gulch (Nelson 1981) (Figure 11). Documented surface finds are common (Windmiller and Eddy 1975; Morris, Kvamme, Ohr, Metcalf, Davidson, Kainer, and Burgess 1979; Lutz 1977; Grant 1978; Tate 1979; Burney et.al. 1978; Eddy et.al. 1981).

Sites of this period are represented almost exclusively by campsites, some open and some in rockshelters (Greiser 1980:210). At one of these open campsites, Cherry Gulch (Nelson 1981), a 3780 RYBC date was obtained in the lowest levels associated with manos, knives, scrapers, rock-filled hearths and side/corner notched points. Faunal remains from the lowest levels of the site were almost exclusively mule deer with some mountain sheep. At Helmer Ranch, another site dating to this period (Benedict and Olsen 1978:129-130; Scott 1963:48), an assemblage including shallow-basin metates, manos, scrapers and projectile points was found along with the remains of deer and grizzly bear. The most common points from both these dated components are triangular to

Figure 11. General location of some of the Northeast Colorado Archaic sites mentioned in text. For accurate site locations consult references cited in text.



ovate in form with convex to straight bases and wide, shallow side/corner notches.

At Magic Mountain, the only other site in the area dated to this period, Irwin-Williams and Irwin (1966) found points similar to those described above (types MM3 and MM4) as well as a variety of other, less common forms both above and below a zone dating at 2980 RYBC. In these zones (D,E, and F) Irwin-Williams and Irwin recovered tools made from prismatic flakes, scrapers, bifaces, ground stone and rock-filled hearths (1966:179). Irwin-Williams and Irwin (1966:178-190) labeled this material the Magic Mountain Complex and suggested it was a local mountain-oriented culture with possible loose affiliations with the Southwest. A reanalysis of the site report considers the lower zones, especially Zone F, as a mixture of more than one component (Benedict and Olsen 1978:128).

The idea of a mountain-oriented occupation of the Colorado Foothills continued to be developed. Shallow side notched points similar to those from Helmer Ranch, Cherry Gulch, and Zones D,E, and F from Magic Mountain were found at Wilbur Thomas Shelter where Grady (1971:85-87) defined a "Mountain Complex" and compared it favorably with the material from the lower zones at Magic Mountain. Here in an undated level above a level containing a Scottsbluff Point base, Luebbers (1971) reported rock-filled hearths, grinding stones, knives and scrapers in what was described as a mountain-oriented hunting and gathering culture (Grady 1971).

Recently, Benedict and Olsen (1978) have considered the material from the Foothill sites in the light of Rocky Mountain archaeology. In the mountains to the east of these sites, Benedict (see 1979:1-12) identified several complexes dating between 4050 (possibly as early as 5000) to 3550 RYBC. In one of these, the Mount Albion Complex (Benedict and Olsen 1978:118-138), Benedict saw several specific similarities with the Magic Mountain Complex, Cherry Gulch Helmer

Ranch, and Wilbur Thomas. As conceived by Benedict, the Mount Albion Complex represents the remains of Front Range hunter-gatherers who utilized the mountains in the fall and summer and primarily the Foothills in the winter and spring. Unlike the previous Paleo-Indian groups of eastern Colorado increased provincialism is attributed to this period based on the fact that the lithic materials used are almost always local with no exotic sources evident. Apparently, despite the provincialism, Benedict does not conceive of the social system responsible for the Mount Albion Complex as completely dominating the area. He recognizes Southwest influence at Magic Mountain, and he feels external traits are also represented at Cherry Creek (Benedict 1978:128, 136), and Kay (n.d.) while recognizing the similarity between the Mount Albion sites and many sites in the Foothills, is apparently not ready to replace the original Magic Mountain Complex concept with the Mount Albion Complex.

Site settlement data from several recent surveys is beginning to document the locational preferences expected from hunting and gathering peoples: availability of water and close proximity of two or more micro-environments (Windmiller and Eddy 1975:183; Alexander et al 1982:216-224; Tate 1979).

4.2.1.2 South Platte

Currently, there are no known radiocarbon dates for this period (5500 - 3000 RYBC) from the South Platte area (Butler 1981:25-26). Greiser (1980:212) characterized this period as the "least known period on the High Plains." She recognized only two poorly reported surface finds as related to this period: the Hutton-Pinkham Site with no diagnostics and Site 5WN26 (1980:219). Except for the mention of the Wyoming Hawkins Site (Frison 1978:192-201) with its side notched points, Morris (1982:221) did not describe any Early Archaic sites or components in the South Platte area. None of the numerous cultural resources management reports from the area report Early Archaic sites.

4.3 Middle Archaic (3000 - 1000 RYBC)

4.3.1 Material Culture and Lifeways Description

During the Middle Archaic, occupation of the Foothills continued with groups using projectile points known as the McKean Complex and a continuation of side notched styles. In contrast to the previous period, the South Platte area has several well-reported sites which are also attributed to a McKean Complex.

4.3.1.1 Foothills

Three major reported excavations date to this period: Complex C and D at LoDaisKa (Irwin and Irwin 1959, 1961), Spring Gulch (Kainer 1976) and Cherry Gulch (Nelson 1981). A small disturbed bison kill without diagnostic artifacts has been dated to the end of this period (Morris and Kainer 1975:9). Diagnostic projectile points included two major varieties of dart points, the McKean-Duncan-Hanna series (McKean Complex) (Complex C, LoDaisKa; levels IV and V, Spring Gulch; and Cherry Gulch) and a side/corner notched variety with similarities to the points attributed to the Mount Albion Complex (level IV and V, Spring Gulch; Complex D, LoDaisKa; and Cherry Gulch). At LoDaisKa there seems to have been some stratigraphic separation of the styles (Irwin and Irwin 1959:130-143) with the McKean points in Complex C being later. At Cherry Gulch (Nelson 1981:4) the McKean forms seemed to be somewhat spatially restricted but otherwise there was no clear stratigraphic separation. At Spring Gulch the two type-complexes along with an occasional Mallory Point occurred in "general" association (Kainer 1976:218, Figure 2).

Typologically, similar points were found in other sites/components and have been used to relate these components to the Middle Archaic Period. At Magic Mountain, Zones C and D were included in an Apex Complex (Irwin-Williams and Irwin 1966:190-193) which the authors felt was culturally distinct from contemporary Complex C and D at LoDaisKa. Benedict and Olsen (1978:129),

however, argue the two sites were not as distinctive as Irwin-Williams and Irwin implied. In terms of diagnostic points, it should be noted that the McKean like points (MM6 and MM17) appeared to be contemporary with a variety of side and corner notched forms (Irwin-Williams and Irwin 1966:226-227). At Wilbur Thomas Shelter, a component identified as Lower McKean contained no corner or side notched points. Side notched points in Level 3 at Willowbrook (Leach 1966:44) and the side notched points in Zone B and C at Van Bibber Creek (Nelson 1969:88-93) were typologically very similar, but radiocarbon dates appeared to relate the material to a period later than the Middle Archaic. McKean Complex Points (Duncan) were found with side and corner notched points from natural Stratum 4 at Owl Canyon Rockshelter (Burgess 1981:80).

The McKean and side/corner notched points found at Lamb Springs (Rancier, Haynes and Stanford 1982:7) appeared to be redeposited; so, the associated artifacts there do not aid in the reconstruction of Middle Archaic subsistence and lifeways. At Spring Gulch (Kainer 1976), numerous Middle Archaic hearths and possible living floors were found with utilized flakes, bifaces, scrapers, drills, spokeshaves, handstones, grinding stones, hammerstones, bone awls, and other bone tools. Large game (bison and mule deer) dominated the extremely fragmented faunal assemblage which also included jackrabbit, cottontail, bobcat, pocket gopher, vole, woodrat, hawk, turtle, and freshwater clams. Seeds of goosefoot were the only plant remains recognized. Stone and bone tools from Stratum 4 at Owl Canyon were similar in diversity and type to those from Spring Gulch. In this stratum a rock cluster (hearth?) was found along with the butchered bones of coyote, deer and other fragmented large and small mammal bones (Burgess 1981:80).

The "McKean" Level at Wilbur Thomas Shelter contained graters, scrapers, perforators, drills, knives, manos (Luebbers 1971:71-74). Tools other than projectile points in Zone C and D of Magic Mountain and LoDaisKa Complexes C

and D included bifaces, scrapers, drills and grinding implements. At Magic Mountain (Irwin-Williams and Irwin 1966:154), the Middle Archaic handstone surfaces tended to be convex with a medial ridge which, apparently, resulted from a back and forth motion. This typological form in manos has been used to distinguish Middle from Early Archaic manos in other collections from the Foothill area (Windmiller and Eddy 1975:305-308; Alexander et al 1982:136-138). Cists and rock lined hearths were reported from LoDaisKa, Complex D, and hearths were present in all levels at Magic Mountain (Irwin and Irwin 1959; Irwin-Williams and Irwin 1966). Mule deer dominated the faunal assemblage in Complex C and D at LoDaisKa and Cherry Gulch (Emslie 1971), but at LoDaisKa the mule deer occurred along with bison, amphibians, birds, rabbits, and prairie dog. Complex C at LoDaisKa contained the remains of acorns, sedges, wild plums, and chenopods. A large cobble stone feature at least 10 feet in one horizontal direction was uncovered at Cherry Gulch along with scattered rock-lined hearths (Nelson 1981:5). A primary, flexed burial, the Witkin Burial (Swedlund and Goodman 1966), from Arapahoe County has been excavated and dated to this Middle Archaic Period. Associated artifacts were undiagnostic bifaces and bone tools.

No major changes in site location preferences (preference for water availability and the proximity of two or more micro-environments) have been noted over the previous period (Windmiller and Eddy 1975:182-183; Alexander et al 1982:210-216; Tate 1979). (See Section 4.2.1.1).

The significance of the projectile point variety evident in this period is currently unresolved. The side/corner notched point tradition which began in the Early Archaic has been associated with a variously termed Altithermal Side Notched Tradition, Mount Albion Complex or a Mountain Complex (Frison, Wilson and Wilson 1976:33-34; Benedict and Olsen 1978; Grady 1971; Irwin-Williams and Irwin 1966). Benedict (1973) has attributed the McKean Complex to an

altithermal high altitude occupation represented by the Fourth of July Valley Site. It remains to be resolved whether the projectile point variety is due to different cultural groups with overlapping ranges as discrete mountain complexes seem to suggest, due to sequential changes as the stratigraphic evidence at LoDaisKa would support, or due to functional/stylistic differences within the same group as the mixing at Cherry Gulch, Spring Gulch and Magic Mountain would support.

4.3.1.2 South Platte

Along the South Platte the 3000 - 1000 RYBC period is represented by the radiocarbon dated Zone D of the Dipper Gap Site (Metcalf 1974:133-138). Dipper Gap is located about 30 miles northwest of Sterling, Colorado. Diagnostic projectile points at Dipper Gap include both the McKean-Duncan-Hanna styles and also what Metcalf identifies as points conforming to the styles of the Mountain Complex as defined by Grady (1971). A Hanna Point has been identified from Level 3 of Site 5WL40 (Wood 1967:581). Greiser (1980:232) assigned two sites (Bijou Creek and 5MR338) from Northeast Colorado with archaic components to this general time period. Two Middle Archaic components have been identified in a recent cultural resources management inventory in Weld County (Halasi and Huse 1978). A general 'Archaic' occupation (large unnotched dart points) underlying a Woodland (Early Ceramic Period) occupation is reported at Site 5WL48 in Weld County, and it might relate to the Middle Archaic (Lutz 174:44). Six general and sometimes tentatively identified archaic components have been identified which most likely relate to this or to the Late Archaic Period (Hunt 1981; Nowak 1975; Kranzush and Gordon 1978; Johnson 1982; Burns 1982; Abernathy 1982).

Zone D at the Dipper Gap Site excavation turned out to be the major occupation of the site (Metcalf 1974). In addition to the diagnostic points, the assemblage included bifaces, scrapers, perforators, choppers, hammerstones,

handstones, grinding stones, and various bone tools and artifacts. Within the zone, which contained 15 rocklined hearths, were found the fragmentary remains of bison, ground squirrels, marmot, Canid, deer, antelope, rodents, turtle, and duck (1974:125-127). No plant remains were reported. Based on the stratigraphic superposition of the hearths as well as the over 500 years of occupation suggested by the span in radiocarbon dates, a sequence of occupation by culturally similar groups was indicated (1974:134).

4.4 Late Archaic (1000 - 1 RYBC)

4.4.1 Material Culture and Lifeway Description

4.4.1.1 Foothills.

In the Foothills area radiocarbon dates place four excavated and reported components (Willowbrook I, Van Bibber Creek, Spring Gulch, and Bradford House III) within this time period (Leach 1966; Nelson 1969; Kainer 1976; Finnegan 1978; see also Butler 1981). At Spring Gulch (upper level IV and lower level III), diagnostic projectile points within the Late Archaic component at the site consisted of medium sized rather deeply corner notched dart points. However, at Van Bibber Creek (Zone B) and at Willowbrook I (Level 3) the wide, shallow side/corner notching (more characteristic of the Early and Middle Archaic) seemed to persist (assuming these are Late Archaic components as the radiocarbon dates indicate)(Nelson 1969; Leach 1966; Benedict and Olsen 1978:132). Irwin-Williams and Irwin (1966:204-206) would place the upper zone (Zone C) of the Apex Complex in this time period. A variety of points occurred in this zone including large side notched, basally indented McKean varieties (MM17) with medium size corner notched varieties (MM23) and medium size side notched varieties (MM20, 21). A similar mixture of corner notched points and McKean-like varieties occur in the "Upper McKean" level at Wilbur Thomas Shelter (Luebbbers 1971:71-74). Medium sized corner notched and stemmed points in the upper levels of Cherry Gulch might relate these levels to a Late

Archaic occupation. Occurring with these medium sized points are larger dart points with expanding stems (Nelson 1981:14-17). Bradford House III (Medina 1975; Finnegan 1978) is apparently another archaic component in the Colorado Foothills. This site contained a flexed burial in a circular pit. Over 30 other Late Archaic components have been reported in survey work along the Foothills (Morris et al. 1979; Lutz 1977; Grant 1978; Tate 1979; Burney et al. 1978, Windmiller and Eddy 1975).

Associated with the hearths in the Late Archaic components at Spring Gulch were bifaces, scrapers, drills, gravers, grinding stones, hammerstones and bone tools. Faunal remains included bison, mule deer, jackrabbit, bobcat, hawk, and various other rodents (Kainer 1976: 150, 199-200). At Willowbrook I (Leach 1966:43) hearths, bifaces, scrapers, drills, manos and metates, and bone tools were located in a Late Archaic context. At Van Bibber Creek numerous grinding stones were recovered with scrapers and bifaces. The assemblage in Zone C at Magic Mountain was characterized by scrapers, bifaces, manos with convex grinding surfaces and striations perpendicular to the long axes of the manos. Three burials came from Zone C, which were covered by rock cairns (Irwin-Williams and Irwin 1966:195-196).

4.4.1.2 South Platte.

In the final thousand years before Christ, the South Platte drainage continued to be occupied by generalized hunters and gatherers. Three radiocarbon dates from Zone E of the Uhl Site (Wood 1967:590) date the zone to the end of this period. Diagnostic of Zone E at Uhl was a medium sized, straight based, triangular projectile point with wide, shallow corner notches. A similar point style was reported by Metcalf from Zone C at Dipper Gap (Metcalf 1974:66-67). Late Archaic dates of 120 RYBC and 730 RYBC were determined from hearth charcoal at Happy Hollow Rock Shelter in Weld County, but the dates could not be associated with any of the excavated material from the shelter

(Steege 1967:21). Late Archaic components were mentioned in surveys of the South Platte by Bretchel et al. (1979) and Halasi and Huse (1978)(Also see Section 4.3.1.2).

The only associated features at the Dipper Gap Site was a rock-filled hearth (Metcalf 1974:133) and at the Uhl Site were found rock-filled hearths and a shallow pit (Wood 1967:82-83). Non-intrusive artifacts of Zone C at Dipper Gap included bifaces, scrapers, perforators and retouched flakes (Metcalf 1974:132). In Zone E at Uhl, typical hunting and gathering tools were found: scrapers, bifaces, drills, and choppers along with handstones and milling stones. A large variety of faunal material was represented: bison, pronghorn, fox, vole, rodents, jackrabbit, cottontail, birds, snakes, and fish. A marmot and ground squirrel were recovered from Zone C of Dipper Gap.

4.5 Process

A generally accepted concept among archaeologists who have dealt with Northeast Colorado material is that the Early Archaic occupation of the High Plains and Colorado Piedmont was influenced by Altithermal climatic conditions. (Morris 1982; Greiser 1980:300-304; see Kay (n.d.) for a somewhat different assessment of the impact of climatic changes at this time). Greiser (1980:280), in fact, would argue that the few archaeologically visible Early Archaic occupations of the South Platte area probably occurred during the relatively short 500 year interlude during the Late Atlantic III (5000 - 4000 RYBC) time period. The impact of these drier conditions might be inferred from the Magic Mountain Site where the Early Archaic correlates with the "Southwest" oriented Magic Mountain Complex. Although this direct Southwest influence is now generally deemphasized&a more localized mountain-oriented development seems likely (Benedict and Olsen 1978; Benedict 1981), it does suggest the possibility of a Mountain/Foothills refugee area.

Benedict and Olsen (1973, 1978) have developed a model of archaic culture

history which revolves around the idea of the altithermal and mountain-protected areas. They argue that several separate complexes representing different hunting and gathering groups are evident in the Early Archaic of the Colorado Mountains. One of these complexes, the Mount Albion Complex (or as Kay (n.d.) would prefer, the Magic Mountain Complex), also involved a significant Early Archaic occupation of the Foothills region which may have persisted throughout the Archaic, most notably in the Foothills area (if the persistence of the large side notched point styles in Middle and Late Archaic assemblages is significant). Descendants of another of these complexes, represented by the Albion Boardinghouse Site and the Fourth of July Valley Site, Benedict and Olsen feel are represented in the sudden appearance of the McKean Complex in Middle Archaic times in the South Platte area. Kay (n.d.) however, would argue for a Northwest Plains origin for the McKean styles in the Oxbow and Oxbow-McKean Complexes.

Kainer (1976:199) and Wood (1967:582) suggest the deeply corner notched varieties of the Late Archaic may represent a development from the earlier stemmed (McKean) forms. Greiser (1980:304), getting away somewhat from the implied lineal relationship reflected in projectile point styles, simply points out that the possible forced close association of groups during the Altithermal may have resulted in Middle and Late Archaic assemblages of greater variability in projectile point morphology. According to this view, stylistic differences in Middle and Late Archaic projectile points cannot be expected to clearly reflect differences in cultural traditions.

Archaic settlement patterns have been studied in some detail. Most of the aceramic site locations considered by Kvamme (1979:21) from the Narrows Survey (Morris et al. 1975) were occupied during archaic times. Thirty-five of the possible 42 high terrace and drainage mouth locations had actually been occupied, showing strong preference for these localities. In another study, the

Boxelder Survey (Morris et al. 1979), Kvamme shows that for all sites found in the survey, camp sites tended to be (13 of 19) located on floodplain and low terraces while lithic scatter sites tended (12 of 13) to be located on ridgetops and high terraces. Greiser (1980:218, 272) found that Early Archaic Period sites were situated on stream terraces, in rock shelters and in protected areas near minor tributaries or springs.

Based on available floor space at Wilbur Thomas Shelter and LoDaisKa, Greiser (1980:275) feels small group size (≤ 2 families) is represented in the Early Archaic, and based on an increase in the number of milling stones and stone-filled hearths, Greiser (1980:281) feels that from Early Archaic times subsistence changed to include greater reliance on plant food. During the Middle Archaic Period (Greiser 1980:284) even greater emphasis on food gathering is indicated by the presence of a few storage pits, roasting pits, stone filled hearths and the now ubiquitous grinding stones.

4.6 Research Problems

Although the archaic stage in Northeast Colorado has more excavated components than the previous Paleo-Indian Stage, few of these components are from single component sites and none are from extensive excavations. Many problems arise in trying to understand the available data. Colorado Plains archaeologists have already identified three broad taxonomic problem areas: the definition of individual groups or cultures, the definition of geographic boundaries in the Archaic of Northeast Colorado, and the investigation of the validity of taxa within the Archaic of Northeast Colorado (Butler 1980). In addition to this list, the work reviewed above (Sections 4.1 - 4.5) raises other important research problems.

Some of the more obvious research problems suggested by this work are:

- 1) the relationship between the Archaic and the Paleo-Indian Stage on

the one hand and the Ceramic Stage on the other.

- 2) typological study of projectile point styles and investigation of the cultural significance of styles such as the McKean and Mountain Side Notched.
- 3) paleoclimate and the Altithermal. Was there an occupational hiatus along the South Platte and continuity in the mountains/foothills?
- 4) possible evidence for population movements and/or increased regionalism.
- 5) possible influences from outside the Colorado Plains area such as the Southwest.
- 6) lithic source identification and distribution.
- 7) subsistence and seasonality.
- 8) site settlement studies similar to Kvamme's.
- 9) formation processes of Archaic sites, the rate of site destruction, and nature of site transformation. These last questions seem particularly important from the management point of view.

Many other research problems will naturally arise as more work is completed and as available data are more carefully considered.

4.7 Potentially Important Resources

All Northeast Colorado Archaic sites are very important resources. Almost all sites would potentially yield information useful in the study of some or all of the few research problems mentioned above. All sites would be of interest in settlement/distributional studies, large single component sites would be important in subsistence/lifeways reconstruction/integrative studies, and stratified sites would be useful in the study of cultural dynamics.

4.8 Needed Research

Any research not duplicating previous research would be a welcome addition to the prehistoric archaeology of eastern Colorado. To answer only the

research questions mentioned above (Section 4.6), much research is needed.

Specifically the Northeast Colorado Archaic needs:

- 1) chronometric dates to answer questions concerning all the research questions.
- 2) surveys to answer questions about the geographic boundaries of the Archaic taxa, validity of existing taxa, demography/population movements, outside influences, Altithermal hiatus, lithic source ID and distribution.
- 3) stratigraphic excavations to define taxa/groups/cultures, the geographic boundaries of these taxa, validity of existing taxa, Archaic/Paleo/Ceramic relationship, projectile point typology, and outside influences.
- 4) single component excavations to answer questions about taxa/groups/cultures, geographic boundaries of the taxa, validity of the taxa, projectile point typology, and outside influences.
- 5) environmental reconstruction to answer questions about the relationship between the Archaic, Paleo, and Ceramic stages, paleoclimate, Altithermal, subsistence, and settlement strategies.
- 6) taxonomic studies to answer questions about definition of taxa/groups/cultures, the geographic boundaries of existing taxa, and projectile point typology.
- 7) studies of the archaeological context to answer questions about the formation and transformation of Northeast Colorado Archaic sites and to answer all other research questions.

5. Archaic in Southeastern Colorado

5.1 Early Archaic (5500 - 3000 RYBC)

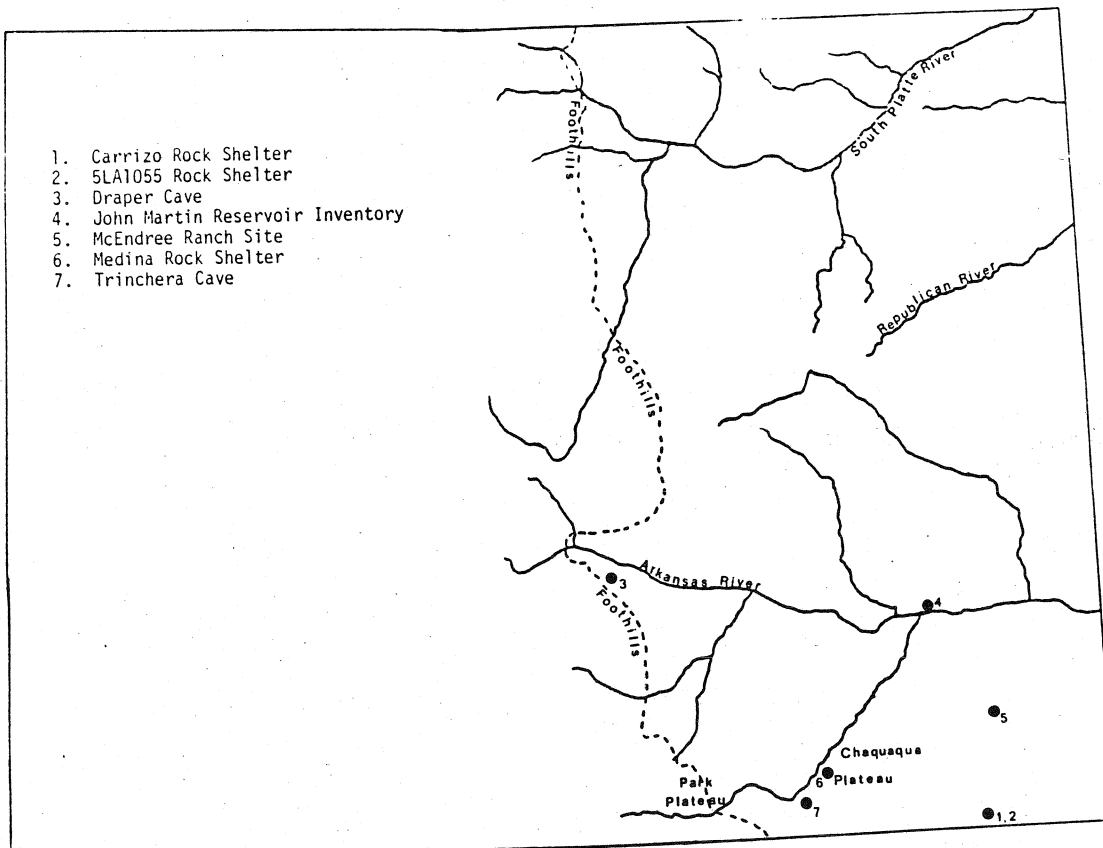
5.1.1 Material Culture and Lifeway Description

As of 1981, none of the radiocarbon dates from southeastern Colorado occurred in this time period (Butler 1981). Although a number of rockshelters have been excavated, no Early Archaic components have been reported. However, based on typological comparisons with material from dated Early Archaic components in surrounding areas, a few Early Archaic components have been identified. Two single component Early Archaic sites and one Early to Middle Archaic component were identified in the John Martin Reservoir inventory (Eddy et al. 1982:145) based on broad shallow side notched projectile point styles (see Figure 12). The same shaped points (typed as Trinity) were used to classify some of the sites in the Chaquagua Plateau as "Archaic" (also including the Middle Archaic time period)(Campbell 1969:364).

Slightly more Early Archaic components are known to exist further west in the southern Foothills and Park Plateau region. Hunt and Lutz (1979:133) found a site with points which they compared with the Early Archaic, MM2 and MM3, from Magic Mountain (Irwin-Williams and Irwin 1966:68). Alexander et al. (1982) also used projectile points to assign four sites in the Fort Carson Military Reservation to this period. Alexander et al. also found Early Archaic type manos (as defined at Magic Mountain) on 13 sites, but they did not feel the chronological placement is particularly meaningful.

Although all these site assignments are based on surface surveys, none of the associated artifacts would negate a general picture of hunting and gathering subsistence. Bifaces, scrapers, utilized flakes, and drills were common (Campbell 1969:364; Lutz and Hunt 1979:Table 25; Alexander et al.

Figure 12. General location of some of the Southeast Colorado Archaic sites mentioned in text. For accurate site locations consult references cited in text.



1982:Table 4.1 through 4.5). Manos, metates, and choppers also were quite common (Campbell 1969:364; Lutz and Hunt 1979:Table 25; Alexander et al. 1982:Table 4.6 through 4.10).

Since most of the formally recorded Early Archaic sites appear in recent survey work, some information on settlement patterns is available. Campbell (1969:364) found most Early and Middle Archaic sites to be surface encampments, concentrated in upper canyons. Lutz and Hunt (1979:181) noticed that in contrast to Middle and Late Archaic sites, Early Archaic sites were never found in the Ponderosa Pine-Douglas Fir Zone west of Trinidad.

Alexander et al. (1982:210-211; 225) could find no clear changes in site size or location with respect to ecozones and drainage units within the Early Archaic northwest of Pueblo. Salient features of this settlement system included a predominance of multiple activity sites in the open grasslands probably "reflecting low diversity spatial zonation of resources in the environment" and a high incidence of single and limited activity loci in the timbered hills (Alexander et al. 1982:225). Assuming that the same long term settlement pattern stability extended back to the Early Archaic, Lutz and Hunt's (1979:194) analysis suggested a settlement system in which base camps (multiple activity) were more common in the lower Pinyon-Juniper/Oak Brush Zones but all other site types were about equal in number. However, they did feel the types of activities reflected in tools represented a warm-weather/cold-weather activity dichotomy with a greater range of activity being reflected in sites supposedly occupied during cold seasons (sites at lower elevation). Again, assuming long term settlement pattern stability, Eddy et al. argue that base camps (multiple activity loci) were located on the south side of the Arkansas at lower elevations near permanent water while limited activity camps tended to be located on the north side at ecotonal edges (see Eddy et al. 1982:337-339). Based on the present day distribution of range types it was further suggested

that the base camps and limited activity sites were located differently in terms of the animals which could optimally be hunted from them.

5.2 Middle Archaic (3000 - 1000 RYBC)

5.2.1 Material Culture and Lifeway Description

Two excavated sites from southeastern Colorado have yielded radiocarbon dates which fall within this period. A date of 1190 RYBC came from the lowest level of a rockshelter (5LA1055) on Carrizo Ranch (Kingsbury and Nowak 1980:121) and dates of 1530 and 1570 RYBC came from middle cultural deposits at Draper Cave (Hager 1976:1).

Unfortunately, no diagnostic artifacts were associated in the same level as the hearth from which the radiocarbon sample was taken at 5LA1055 (Kingsbury and Nowak 1980:26-27). The level contained another hearth, a hammerstone, bifaces, scrapers, manos, metates and other lithic debris. The two dates from Draper Cave also presented an unfortunate problem in that they were not clearly associated with well-defined cultural levels, but, interestingly, McKean Complex (McKean, Duncan, Hanna) points occurred throughout the deposit but mostly below 50 cm (the radiocarbon samples came from 71 and 126 cm). Below the radiocarbon dates (i.e. Levels 31 - 60 or circa 150 to 300 cm) the projectile point assemblage was apparently (i.e. based on Figures 6 and 7) dominated by McKean complex forms (with a few other large dart points with wide, shallow notches--even possibly stemmed). Roughly at the same level as the radiocarbon dates (Level 11 - 30 or circa 55 to 150 cm) small corner notched varieties (some serrated) were added to the assemblage of larger dart points. The author attributed the apparent mixing to rodent activity. The radiocarbon dates and large number of McKean Points clearly related the main occupation of Draper Cave to the Middle Archaic time period. The cave was also the most southern location of a significant McKean component has been excavated and reported (Hager

1976; Kay n.d.)

Single McKean points were found at two sites on the Ft. Carson Military Reservation (Alexander et al. 1982:180), and some of the material lumped into an Archaic Period by Campbell might well relate to a Middle Archaic time period (1969:364; see Section 5.1.1 above). Based almost exclusively on projectile points and hafted tool types, Lutz and Hunt (1979:133) in their survey northwest of Trinidad attributed 14 sites and two isolated finds to the Middle Archaic Period. Since no archaic points or hafted tools could be well dated locally, Lutz and Hunt (1979:185) used generally accepted southern Plains and Southwest types to date the sites. Gunnerson (1981:112-113) also pointed out that some of the points (BT6, XVI) and hafted tools (BT7,VI) bear resemblance to points defined by Irwin-Williams (1967) for the Southwest 'Picosa Culture.' Most of the diagnostic tools, however, were compared favorably with tools found along the Front Range and dated between 3000 and 500 RYBC (Gunnerson 1981:112). In the John Martin Reservoir Inventory (Eddy et al. 1982:150), diagnostic tools suggested two sites had possible Middle Archaic components. Strata below Stratum III at Carrizo Rock Shelter might be Middle Archaic (Kingsbury and Nowak 1980:23; see below Section 5.3.1.1). Although general Archaic components are identified in other cultural resources surveys in Southeast Colorado (Gooding and Hand 1977; Anderson and Hall n.d.; Hand, Latuda and Bair 1977), no specifically Middle Archaic component has been recorded.

Associated with the Middle Archaic dated hearth at 5LA1055 Rock Shelter was another hearth filled with broken sandstone, a hammerstone, cores, bifaces, scrapers, and mano/metate fragments (Kingsbury and Nowak 1980:27). In the three meters of deposit at Draper Cave, numerous ground stones and chipped stone tools were recovered in addition to the 119 projectile points (Hagar 1976). Also in the middle of the deposit was the body of an adult male with 38 large bifaces (Finnegan 1976).

5.3 Late Archaic (1000 RYBC - 1 RYAD)

5.3.1 Material Culture and Lifeway Description

Three radiocarbon dated and excavated sites are known for the Late Archaic in extreme Southeast Colorado: McEndree Ranch Site (Shield 1980), Carrizo Rock Shelter (Kingsbury and Nowak 1980:18-25), and Medina Rock Shelter (Campbell 1969:132). From Stratum II of Carrizo Rock Shelter, Kingsbury and Nowak (1980:22) reported diagnostic Ellis and Garza Points associated with a 90 RYBC date. Unfortunately, no diagnostic cultural material was associated with a possible house floor at the McEndree Ranch Site which dated between 220 and 400 RYBC. At the contact between Level 1 and Level 2 at Medina Rock Shelter, Campbell (1969:146) reported a hearth intruding into Level 2 with a date of 90 RYBC. Stratigraphically below this hearth in Level 2, Campbell found four diagnostic points--a Williams, an Ellis, a Yarrow and a Young--which relate to the Late Archaic in the southern Plains. Ellis Points along with stratigraphy were also used to date Level III at Trincheras Cave to the Late Archaic time period (Wood-Simpson 1976:204), and it seems likely that the upper levels at Draper Cave were also occupied during at least part of this large time interval.

Based on the presence of diagnostic projectile points, several surface components have been attributed to this time period. Eddy et al. (1982:150) argue that Ellis and Ensor Points date two sites in the John Martin Reservoir area to the Late Archaic. On the Chaquaque Plateau, Campbell assigns (apparently on the basis of the presence of Yarrow, Ellis, Edgewood, Palmillas, Shumla and Marcos Points) nine other sites to the Late Archaic Period which he dates between 500 RYBC and 250 RYAD. Lutz and Hunt (1979:100-106, 124, 130) used (primarily) medium sized corner notched points and larger corner notched hafted tools to date 14 sites and two isolated finds to this time period. No

other specifically Late Archaic site has been so identified in cultural resources reports from Southeast Colorado.

The material associated with these Ellis points and dated assemblages resembles the remains of typical hunting and gathering activity. In addition to the four dated dart points, Level 2 at Median Rock Shelter contained chipped stone debris, bifaces, unifacial tools, a bone bead and remains of prairie dog, pack rat, and other mammals, but it did not contain any ground stone (Campbell 1969:145-146). However, elsewhere on the Chaquagua Plateau Campbell found abundant ground stone in Late Archaic components and argues there was, in fact, a relative increase in the occurrence of ground stone and pecked stone in the Late Archaic over the Early and Middle Archaic (Campbell 1969:364-365). Based on frequency of remains, the most common species hunted by these hunters and gatherers were cottontail, prairie dog, pack rat and jackrabbit. There was evidence for a preference for small over large mammals. Notable additions over previous periods in the Chaquagua Plateau assemblages are Olivella shell wastage and Alibates Flint. A preference for canyon site locations suggested to Campbell the importance of hunting and gathering in site selection. Both open encampments and rock shelters are known. No habitation structures are known and no features other than hearths were encountered by Campbell (1969:366).

In Level III and below at Trinchera Cave, the Ellis Points were found with bifaces, scrapers, drills, manos/metates, chipping debris, bone tools and ornaments. From the dry portions of the lower cave deposits came yucca fiber, cordage, and knots and seeds of snow-on-the-mountain, wild plum, gourd, yellow foxtail, prickly pear and dodder. Animals represented included pronghorn, deer, bison, coyote, cottontail (most common), prairie dog, bobcat, mink, fox, duck, quail, crow, and lizard. The animal frequencies suggested the importance

of small game (Wood-Simpson 1976:177). A notable artifact apparently recovered from Level 3 was a piece of split rod basketry.

McEndree Ranch Site is important to Southeast Colorado prehistory because it has the first and only structure dated to an Archaic Period. Unfortunately, in the test excavation of the site, neither was the entire structure excavated nor were any diagnostic artifacts recovered (Shields 1980). The habitation was exposed in a cut bank. Shield identified a northern ramp entrance (uncommon for later Plains pit houses). The floor basin was 2.7 m long. The structure appears to have been semi-subterranean, but no post holes, foundations stones, or ground stone were uncovered. Flake tools, bifaces, and microscopic fiber fragments of pine, juniper, yucca, flax, and willow were found in the structure along with loosely associated (outside the structure feature) hearths (Shields 1980; Scott 1982).

In the late part of the Late Archaic occupation of the Carrizo Rock Shelter was found a hearth, various stone tools and the remains of pinon seeds, acorns, rodents, birds, deer and mollusk (Kingsbury and Nowak 1980:22-23).

For a brief discussion of rock art, some of which might relate to this time period, see Sections 7.2.1.1 and 7.2.2 and see below Section 5.4.

5.4 Process

The Archaic occupation of Southeast Colorado was similar to the occupation of the South Platte and northern Foothills areas in that few Early Archaic sites were recorded. It is different from Northeast Colorado in lacking clear evidence for a Middle Archaic reoccupation of the Plains section similar to the suggested McKean phenomena in the Northeast. In the John Martin Reservoir² survey the small inventory suggested the component frequency in that 100 km survey area during the Early and Middle Archaic was only about 1.6 components/1000 years. Later between 250 - 1000 RYAD the frequency as suggested by the known components jumped to 12.7 components/1000 years. Similar trends

exist in the Purgatoire/Apishapa highlands where Early and Middle Archaic site frequency was also low (1.2 components/100 km²/1000 years) but increased greatly in later years. Between 1 and 1000 RYAD the same area contained a site density-frequency of 66 components/1000 years. However, in none of the major surveys of the area (Wood et al. 1981; Eddy et al., Campbell 1969, Lintz and Hunt 1979) are significant increases in component density evident in the Middle Archaic as has been suggested for Northeast Colorado (notice, however, that neither Campbell nor Wood et al. distinguish between Early and Middle Archaic). Eddy et al. (1982:40), in fact, point out that the Arkansas may have acted as one of the supposed refuge areas. Thoms' (1976:13-15) summary of Northeast New Mexico prehistory suggests much the same thing; the altithermal does not seem to be a useful concept in explaining culture history there. It was apparently during the Late Archaic that component density really began to increase.

Southeastern Colorado also differs from the Northeast in typical projectile point styles characteristic of the period. Except for the occupation at Draper Cave, the McKean Complex styles were extremely rare and were replaced by forms with similarities to the southern Plains and Southwest. Wood-Simpson (1976:204), Campbell (1969), and others see Archaic projectile point similarities with the southern Plains. Lutz and Hunt (1979:185) look to southwestern Wyoming, eastern Arizona, Utah, and northwestern New Mexico to find the closest resemblances to 5 of the 9 Archaic styles picked up in their survey. Gunnerson (1981:112) sees Picoso connections in material from the Park Plateau. Most of these archaeologists seem to suggest that projectile point style distributions were much less restricted during the Archaic than during later periods. Obviously more survey work, more dated Archaic components and a better understanding of the temporal significance of diagnostic artifacts will be needed before answers to these questions can be answered.

The origins of the Early Archaic corner/side notched points (like the Ellis Point) and their makers are currently unknown. It may be an indigenous but widespread development, the technical advantages of notching resulting in rapid adoption of the dart styles. At the Pigeon Cliffs Site in Northeast New Mexico Steen (1955) established the contemporaneity of the stemmed and tanged Archaic points with late Paleo-Indian points styles (Fredrick Complex). But ever since Renaud (1930) introduced the concept of a Desert Culture in Northeast New Mexico and the western Oklahoma Panhandles, researchers have often looked to the Southwest or at least outside the immediate area for the origins of the southeastern Colorado Archaic hunting and gathering stage (Wendorf 1960; Campbell 1969:464).

Mention has been made of the reconstructed settlement pattern and its change suggested by Lutz and Hunt (1979). In a more recent settlement pattern study, Eddy et al. (1982) made a series of observations relevant to the Archaic Period. (Note: in this study only 12 sites could be dated and the settlement study included all sites irrespective of time of occupation.) Using a functional analysis of artifact types, base camps on the south side of the Arkansas and special activity sites mostly on the north side of the Arkansas were identified which, along with locational and range site information, defined a single complexly organized community. As reconstructed, this organization included base camps occupied during the fall and winter while the various special activity site clusters were visited during the spring and summer (Eddy et.al. 1982:226). Within these sites nearest-neighbor analysis allowed the identification of clusters of artifacts which, unexpectedly, did not relate to the base camp-special activity camp distinction (Eddy et. al. 1982:338).

Petroglyphs have been shown to date at least to the Archaic. Abstract petroglyphs have been reported for the southwestern Plains and tentatively assigned to the Archaic Period (Schaafsma 1972:185). Recently, Buckles (1980,

1983) has reported a rock outcrop with these abstract geometric styled petroglyphs which was subsequently covered by a Piney Creek Alluvial unit on which Indians in about 100 RYAD built a radiocarbon dated fire. The petroglyphs are thus no less than Archaic in age. Stuart (1978) shows the relative age of different petroglyph styles based on superposition. 5BN14 and 5BN122 in the John Martin Reservoir might be Archaic in age (Eddy et al. 1982:156).

5.5 Research Problems

Since none of the components from Southeast Colorado have been independently dated within the Early Archaic, one of the most important problems facing archaeologists there will be the identification, excavation and dating of any Early Archaic component found. Colorado Plains Archaeologists have identified three general taxonomic research problems for the Archaic: defining the geographic boundaries of the Archaic, defining individual groups or cultures, and establishing the validity of the taxa within the Archaic (Butler 1980). In addition to these, the review presented above (see Sections 5.1 - 5.4) suggests several other research problems.

Some of the more obvious research problems suggested by this work are:

- 1) projectile point styles, distribution, sequence and comparison with point types outside the Colorado Plains.
- 2) lithic source and distribution, particularly Alibates.
- 3) continuity of occupation and Altithermal hiatus. Were the Park Plateau and/or the Arkansas areas refugee areas?
- 4) Comparative studies of surrounding areas (southern Plains, central Plains, the Southwest) for evidence of outside influences.
- 5) paleoenvironment.
- 6) settlement systems and test of available models (e.g. those by Alexander et al. and Eddy et al.).

- 7) morphology and function of ground stone.
- 8) restudy of McEndree Ranch structure.
- 9) formation processes of Archaic sites, the rate of site destruction, and nature of site transformation. These last questions seem particularly important from the management point of view.
- 10) basic description of the archaic occupation north of the Arkansas since no recent surveys of this area have been done.

Many other research problems will naturally arise as more work is completed and as available data are more carefully considered.

5.6 Potentially Important Resources

All Southeast Colorado Archaic sites are very important resources. Almost all sites would potentially yield information useful in the study of some or all of the few research problems mentioned above. All sites would be of interest in settlement/distributional studies, large single component sites would be important in subsistence/lifeways reconstruction/integrative studies, and stratified sites would be useful in the study of cultural dynamics.

5.7 Needed Research

Any research not duplicating previous research would be a welcome addition to the prehistoric archaeology of eastern Colorado. To answer only the research questions mentioned above (Section 5.5), much research is needed. Specifically the Southeast Colorado Archaic needs:

- 1) chronometric dates to establish independently the existence of the Early Archaic in Southeast Colorado and to answer questions concerning all the research questions.
- 2) surveys to answer questions about the geographic boundaries of the Archaic taxa, validity of existing taxa, demography/population movements, outside influences, Altithermal hiatus, lithic source ID and distribution.
- 3) stratigraphic excavations to answer questions about projectile point

typology and continuity of occupation.

4) single component excavations to answer questions about projectile point and cultural typology and continuity of occupation.

5) environmental reconstruction to answer questions about paleoenvironment/subsistence and continuity of occupation.

6) taxonomic studies to answer questions about cultural taxa, the validity of existing taxa, projectile point typology/distribution/comparisons.

7) studies of the archaeological context to better understand ground stone function and morphology, the nature of the McEndree Ranch structure, and the formation and transformation of Southeast Colorado Archaic sites and to answer all other research questions.

6. Ceramic Stage in Northeast Colorado

6.1 Early Ceramic Period (1 - 1000 RYAD)

In the literature on Colorado Plains archaeology, the Early Ceramic Period is often referred to as the Woodland Period or Tradition.

6.1.1 Material Culture and Lifeways

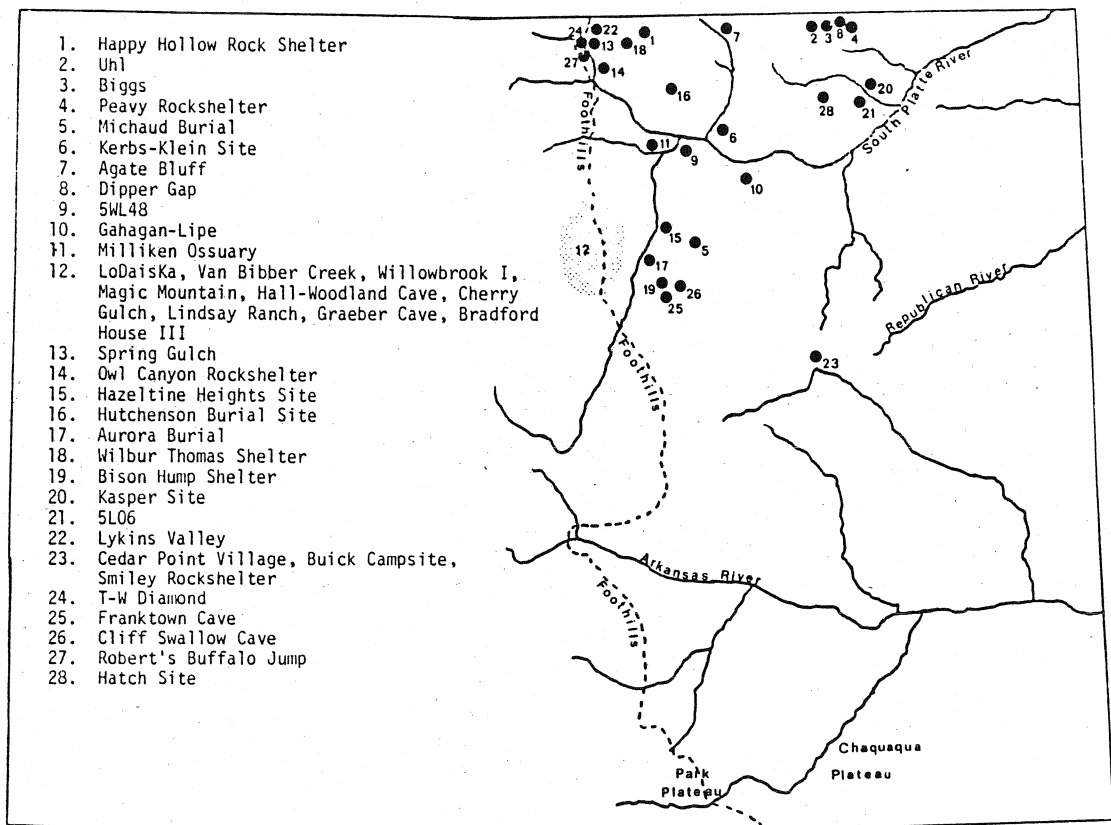
6.1.1.1 Northeast Colorado

In 1967, radiocarbon assays fixed the date of three excavated habitations in Northeast Colorado as falling between 1 and 1000 RYAD (Wood 1967; Steege 1967). At Happy Hollow Rock Shelter charcoal from a hearth at the base of the lowest level of the cultural deposit dated at 680 RYBC; however, no cultural material could be associated exclusively with this date. Comparisons with material from other dated sites in the western Plains suggested to Steege (1967:21) that cordmarked pottery and small side and corner notched points found in the cultural deposit might be related to an Early Ceramic occupation (see Figure 13).

Radiocarbon dates from Zone D at the Uhl Site and Stratum VI at the Biggs Site established an Early Ceramic Period occupation in the Northeast Colorado Platte River drainage (Wood 1967:609). The diagnostic points of Zone D at Uhl were small ovate unnotched and corner notched forms (20% of the corner notched points had serrated blades). Associated pottery had Z twist, deeply cord-impressed exteriors (no smoothing), sand temper, and ≥ 6 mm in thickness. The pots were probably straight-rimmed with slightly curving sides. Lips were often impressed with cords or a round object. The cord impressions were parallel and applied vertically or obliquely to the rim.

A date of 805 RYAD from Feature 5 at Peavy Rock Shelter also suggested an Early Ceramic component at the site; however, Wood (1967:226, 282) could find no difference between the artifactual material associated with the feature and a stratigraphically superimposed hearth which dated 300 years later. He felt

Figure 13. General location of some of the Northeast Colorado Ceramic Sites mentioned in text. For accurate site locations consult references cited in text.



the later date more accurately represented the main occupation of the site; so, he did not associate any diagnostic material with the hearth.

Two radiocarbon dated burials also fall in the Early Ceramic Period. Wood (1971) reported that the Michaud flexed burial east of Denver dated to this period and Scott (1979) reported the Kerbs-Klein Site with six secondary bundle burials from Weld County dating in the Early Ceramic. No diagnostic artifacts accompanied the Michaud burial, but the burial pit was dug through a cultural deposit which contained a small ovate corner notched point, a corner-tanged knife and several exterior cordmarked sherds with sand temper. The rims of these sherds were vertical, the cordmarks were diagonal and the bodies indicated conoidal-bottomed pots. The six secondary bundle burials from the Kerbs-Klein Site were each placed in an irregular-shaped oval pit with the skull placed on top of the long bones, but no diagnostic artifacts were found in association (Scott 1979).

Based on cross dating of diagnostic artifacts with Early Ceramic sites in Northeast Colorado and with Early Ceramic sites outside Colorado, a number of additional undated components in the area have been assigned to this period. Early in the history of Colorado archaeology, Renaud recorded at least seven eastern Colorado sites which have been identified as Woodland and probably relate to this time period (Downing 1981:Table 1). In the 1950s Irwin and Irwin (1957:31) reported what they believed to be a 'Woodland' occupation in the earliest occupation of Site IV along Agate Bluff which they cross dated to an Early Ceramic time period. Several small triangular, corner notched and triangular side notched points were found with cordmarked sherds (circa 7mm thick). The cordmarks (S twist) were vertical or slightly diagonal. The flattened lips were cordmarked. This flattening seemed to have caused a slight thickening of the rim. Rims were straight or slightly flaring. The bodies seemed to be from tall, pointed-bottomed pots. Based on sherds from this site

and three others along Agate Bluff, Irwin and Irwin defined a type called Agate Cord-marked which they saw as very similar to a type defined at Ash Hollow Cave called Ash Hollow Cordmarked.

Zone B at Dipper Gap contained small triangular corner notched points and possibly a cordmarked sherd which Metcalf (1974:131) assigned to the Early Ceramic time period. In addition to the two dated components, Wood (1967:605) assigned 10 other components in Weld and Logan county to the Early Ceramic Period. Breternitz (1967) and Breternitz et al. (1970) found pottery that they said was similar to Early Ceramic Period pottery (Woodland) at a number of sites (9). Preliminary excavations at the stratified 5WL453 Site produced pottery similar to that found in dated Early Ceramic Sites (Woodland)(Lawrence and Muceus 1980). At the 5WL48 Site in Weld county a 10 cm thick occupation zone contained 10 hearths and a posthole. These features were associated with pottery and projectile points which Lutz (1974) labeled as Woodland or in the terminology used here as Early Ceramic.

Over 20 other 'Woodland' components have been described and given site numbers in cultural resources management surveys (Halasi and Huse 1978; Hunt 1981; Weir and Hunt 1982; Angulski 1982; Lutz, Farmer and Muceus 1978; Kranszush and Gordon 1977; Commonwealth Associates 1980; Davis and Cassells 1981). Some of the pottery from a dozen sites from the Narrows Survey area were cord roughened and may represent Early Ceramic occupation (Morris et al. 1975:24).

Several additional undated burials have been assigned to this period. Six primary flexed burials in oval pits were found at the Gahagan-Lipe site in Morgan County, and based on the presence of bird and mammal bone beads and shell (Unio) pendants, the burials were assigned to an Early Ceramic (Woodland) age (Scott and Birkedal 1972:5). Scott and Birkedal (1972:5-6) also mention two other burial sites which they would assign to the Early Ceramic Period, one

of which had bone and shell beads and pendants. At 5WL48 a pit was dug, possibly by Early Ceramic occupants of the site, in the subsoil and a secondary interment was placed in it (Lutz 1974).

Material associated with the excavated and dated components suggests a dominant nomadic hunting and gathering economy. No habitation structures have been excavated although camp site functions have been indicated at both open sites and rockshelters. The artifact inventories at Early Ceramic sites included bifaces, scrapers, drills, miscellaneous flake tools, hammerstones, manos and metates, and bone and antler tools. Faunal remains associated with Early Ceramic occupations included a wide range of small game and approximately equal numbers of pronghorns and bison as evidenced from Wood's excavations at the Uhl and Biggs Sites (Wood 1967:608-609). The most important faunal remains at Site IV at Agate Bluff were bison and elk. Pronghorn and other small mammals were also included in the diet. Hunting at the site was also suggested by chipped stone tools and perishable arrowshafts. Gathering at Site IV was suggested by ground stone tools and the remains of sunflower, waxcurrant bush, wild grape, and yucca. At Dipper Gap (Metcalf 1974), bifaces, scrapers, perforators, choppers and ground stone continued through Zone B from earlier levels but in decreased numbers. The only faunal remains recovered in the zone were of ground squirrel and marmot.

Burials dated or cross dated to the Early Ceramic Period appear in two forms. Most are single primary flexed burials with between 1 and 7 individuals at a site (Scott and Birkedal 1972:2). A second type, secondary pit burials, were reported for the Kerbs-Klein Site (Scott 1979) and for 5WL48 (Lutz 1974:45). A possible ossuary site (27 skulls) has been noted near Milliken, Colorado (Anonymous 1961:42). The physical characteristics of these people included undeformed dolichocephalic skulls and shovel-shaped incisors. Grave

goods were notably absent except for shell and bone beads and Unio shell pendants.

6.1.1.2 Foothills

No less than 18 acceptable radiocarbon dates from 10 excavated and reported sites are known for this period from the northern foothills region of eastern Colorado. This compares with only four excavated, dated and reported components for the previous 1000 years (see section 4.4.1.1). These dated components include both habitation sites and burial sites. Some of these dates, however, were not associated with artifacts (e.g. 2 dates from exposed hearths at Lykins Valley; Ohr, Kvamme, and Morris 1979:20) or were rejected as too early (e.g. a 400 RYAD date from T-W Diamond; Flayharty and Morris 1974:168).

Other associations with dates are only briefly reported and undescribed. A 590 RYAD date at Rainbow Creek was associated with 'Woodland' pottery which had what Scott (1963:46-48; see also Butler 1981:21) characterizes as deeply impressed vertical corrugations. 'Woodland' pottery, projectile points, scrapers, choppers, metates, manos, awls and bone fragments were associated with a 460 RYAD date at Helmer Ranch. At Parker-Hunt a 'Woodland' site overlaid a date of 800 RYAD (Hunt 1954:114; see also Butler 1981:18).

The first excavated component to be dated to this period came from LoDaisKa (Irwin and Irwin 1961:114) with 4 dates between 690 and 980 RYAD. The cultural material associated with this component included cordmarked pottery and some plain surfaced pottery, small corner-notched projectile points (approximately 2/3 of which had serrated edges), small ovoid knives and various other chipped and ground stone tools. One popcorn cob was also recovered. From the small sherd sample it was impossible to tell much about the vessel shapes. The cordmarked pottery did seem to be undecorated, with direct rims and cordmarking extending onto the lip of some pieces. The cordmarking was

either parallel or criss-crossed. A few sherds seemed to be basket or fabric impressed. Tending slightly higher in the deposit than these impressed sherds were the more plain surfaced sherds (Irwin and Irwin 1961:82-88).

Similar cordmarked pottery and diagonally notched small projectile points were recovered in the top level of the Willowbrook I Site with a date of 660 RYAD. The interior of the one rim found had probable fingernail-impressed decorations (Leach 1966:42-46).

In the upper zone (Zone A) at Van Bibber Creek a radiocarbon date of 900 RYAD again placed cordmarked sherds and small, diagonally notched projectile points (only a few of which suggested serration) as artifacts of the Early Ceramic Period (Nelson 1969:85, 102-105). In addition, however, Nelson reported both a small triangular side notched projectile point form and plain surfaced sherds. Nelson also found two atlatl weights in this zone.

At Spring Gulch, small, diagonally notched points and cordmarked pottery were found in Level II and the middle and upper parts of Level III from which 4 Early Ceramic age dates (465 - 1015 RYAD) were taken (Kainer 1976:32, 217). Serrated forms were the most common varieties although unserrated, side notched forms were well represented. Kainer (1976) defined two major types of cord-marked sherds from this site--distinguished in terms of surface treatment. One type had cross-hatched designs and the other had an unpatterned treatment. Lips were rounded or flattened and some rims suggested slight inward sloping.

Diagnostic artifacts dated (670, 945, 1020 RYAD) to this period were also reported from Owl Canyon Rockshelter (Burgess 1981). Nine of eleven associated corner notched points were serrated. Five small triangular side notched points were also recovered here. Both parallel/irregular and cross-hatched cordmarked sherd varieties were associated with these dates. In 11% of the sherds, cord-markings were smoothed over. Of the minimum of three vessels represented in

rim sherds, the rims of two were 'pinched or pinched and flaring." The other had a nearly perpendicular rim (Burgess 1981:29).

Six additional dates establish the age of four other components worth mentioning even though they contain very little diagnostic material. From the Hazeltine Heights Site, a radiocarbon date of 658 RYAD was obtained on human bone from Cultural Level II which contained five primary flexed burials. These burials were accompanied by Unio shell pendants, Olivella shell beads and other bone beads but no pottery or projectile points. At the Hutchenson Burial Site (145 RYAD) three flexed burials were excavated along with some bone beads (Wade 1966). At the Aurora Burial (Guthrie 1983), bones of an adult in a primary flexed burial dated at 720 RYAD were associated with charcoal dated at 910 RYAD and underlay a secondary juvenile burial associated with charcoal dated at 380 RYAD. Associated with the adult was an atlatl weight and broken amazonite pendant.

The features, the floral evidence and the faunal debris discovered with these dated components suggest a hunting and gathering economy with the occasional use of domesticated corn. Macroscopic evidence for Zea Mays (popcorn and dent corn) was uncovered at LoDaisKa (Irwin and Irwin 1959:105), but this is probably not sufficient evidence to prove whether this is due to either local horticultural activity or to trade with the Southwest or eastern Plains. Other than this evidence, the cultural material from the period suggests a continuity of the hunting and gathering tradition extending from the preceding Archaic Stage. At Spring Gulch, 13 rock lined hearths and slab clusters were found with bison and mule deer (no pronghorns) and other small mammals but no significant change in the proportions of faunal remains from earlier levels. At LoDaisKa, eight rock-filled or ash-filled pit hearths were found with a predominance of deer bone but also some bison and small mammals. Again, there did not appear to be any real change from earlier levels (Irwin and Irwin

1959:18-19, 102-103). Here also were found microscopic evidence for Muhlenbergia and Prunus as possible gathered food remains (p. 105). Rock-filled excavated pit hearths were found at Willowbrook I (Leach 1966), and extensive fire rocks and charcoal were found at Van Bibber Creek (Nelson 1969:96). In Owl Canyon Rockshelter slab and stone clusters and two associated compacted living surfaces were found. Faunal remains were predominantly (27 MNI) rabbit with six woodrats, a deer, bison and other small mammals (Burgess 1981:72-84).

Corner notched points and cordmarked ceramics (apparently from conoidal-shaped, straight rimmed vessel) have been used to cross date other components in the Foothills area to this Early Ceramic Period. At Magic Mountain (Zone A) (Irwin-Williams and Irwin 1966:90-95, 162-165, 209), Cherry Gulch (Nelson 1981), and Hall-Woodland Cave (Nelson 1967:3-10) corner notched points (often serrated) and cordmarked pottery (and plain surfaced pottery at Magic Mountain) have been uncovered in strata without definite features but with 'scattered hearth stones', charcoal laden soil, or continuous hearth areas. Unlined and rock-lined hearths have been found with these diagnostic points at Wilbur Thomas Shelter (Breternitz 1971:64-65; Luebben 1971:74-77; Gillio 1971:84) and at Bison Hump Shelter (Hollingsworth 1976:30). At Lindsay Ranch two rectangular stone enclosures with ash concentrations and fire pits were associated with a high incidence of serrated points and cordmarked sherds (some smoothed over) (Nelson 1971). Three undescribed components were attributed to the Early Ceramic Period at Bradford House III (Medina 1975). At Graeber Cave a component attributed to the Early Ceramic Period contained unusual ceramics (compared to supposedly contemporary sites). Recovered was a flat bottomed variety with finger impressions rather than cord impressions. Also recovered were corner notched points which were predominantly serrated (Nelson and Graeber 1966:49-51).

Deer and bison were suggested as the primary animals hunted by the Early Ceramic inhabitants of Hall-Woodland Cave (Nelson 1971:7), Magic Mountain (Irwin-Williams and Irwin 1966:209), Bison Hump Shelter (Hollingsworth 1976), and Graeber Cave (Nelson and Graeber 1966:51). The only exception to this general preference for large mammals is Owl Canyon where rabbits seem to have played an unusually important role in subsistence while Early Ceramic peoples were living in the shelter (Burgess 1981:65-67).

A large number of additional components have been reported for the area from cultural resources management surveys (Windmiller and Eddy 1975; Morris et al. 1979; Lutz 1977; Hillier 1979; Burney et al. 1978; Tate 1979; Colorado Department of Highways 1980; Hand 1981; Joyner and McGuire 1982).

In addition to these dated and undated campsites and rockshelters, several more burial sites have been attributed to the Indians living in the Foothills during the Early Ceramic Period. A primary flexed pit burial with an Unio shell pendant associated and two primary flexed individuals in a bell-shaped pit were reported for Zone A of Magic Mountain (Irwin-Williams and Irwin 1966:51-54). A flexed pit burial was reported from Bradford House III (Fennegan 1978) and a burial was also found near Golden, Colorado which might be of Early Ceramic Age (Nickens 1977).

6.1.2 Process

Between 1 and 1000 RYAD changes in climate for Northeast Colorado have been inferred from various lines of evidence (Scott 1963; Bryson and Wendlund 1967; Wendlund 1978; Wood 1967:561-566). First and foremost, the improvement (moderation in temperature and increased rainfall) in conditions which began after the altithermal continued to hold through this period and at no time was the climate so severe that populations avoided the area. Early in the period (pre - 4th and 5th century AD) conditions seem to be slightly cooler and wetter than present while the 4th and 5th century initiated warmer and dryer condi-

tions (Wood 1967:561-566). The period between 650 and 1050 RYAD has been labeled the Neo-Atlantic and indicates higher temperatures but more moisture on the Plains (Wendlund 1978:281). A major period of alluviation has been identified for eastern Colorado during this period called Post-Piney Creek.

The significance of these changes for the prehistoric peoples of Colorado has yet to be worked out. Wood (1967:562) does suggest that relatively favorable conditions in the Foothills (compared to the Plains) around the 4th and 5th centuries may explain the spread of pottery making to this section at this time.

Wood (1967:615-617) argued that the prehistoric Early Ceramic Period inhabitants of the northeastern Plains of Colorado were indigenous hunter-gatherers who probably borrowed the idea of pottery making from their eastern neighbors. However, changes in their pottery making allowed Wood to distinguish a temporal sequence. In the earliest portion of the period pottery had unthickened rims. Later, in what he proposed calling an Ash Hollow Phase, rim thickening was common (Wood 1967:611). This Ash Hollow Phase followed fairly closely an earlier formulation by Irwin and Irwin (1958) who defined the material from Site IV at Agate Bluff, Ash Hollow Lens D, and the Kelso Site (Nebraska) as the Ash Hollow Focus. Wood only added a number of components he excavated to this group and, following Caldwell and Lehmer (1966:510), he preferred the phase designation.

The closest affiliation to Wood's unnamed earlier phase within the Early Ceramic Period was with the Parker Phase which again was a renaming of the previously defined Parker Focus (Withers 1954).

The Parker Focus was a name proposed for Early Ceramic Period material in the Denver Basin. Traits of this Parker Focus were general -- side notched points and cordmarked pottery with conoidal bases (p.1). The only feature

distinguishing the Parker focus from the other Plains Woodland material was its distribution in central Colorado and south to the Rio Grande.

Irwin and Irwin (1959:132) also interpreted cordmarked pottery and corner notched points (Complex B) from LoDaisKa as a local expression of the Woodland Culture (specifically, of the Ash Hollow Ash Focus of the Orleans Aspect). Apparently, here as well as in the Agate Bluff area, the Irwins did not find much utility in the Parker Focus concept. However, the situation at LoDasiKa was more complex because intermixed with these (Complex B) materials were serrated points and some plain surfaced pottery which they termed Complex A. The Irwins suggested that Complex A was affiliated with cultures farther west in the Fremont area. Several years later at Magic Mountain the Irwins (1966:207) seem to interpret essentially the same situation (i.e. mixed serrated and unserrated corner notched points and mixed cordmarked and plain pottery) as a local cultural manifestation called the Foothills-Montane Woodland Culture (p.213) with similarities/influences from the High Plains Woodland and from the intermountain (Fremont?) region to the West.

This concept of a Foothill-Montane Woodland Culture has found final expression in Nelson's (1971) and Benedict's (1975a,b) definition of a Hogback Phase which is conceived of as an indigenous Front Range population living at Foothills sites in the winter and spring and in the mountains during the summer and fall.

From his perspective further east, Wood (1967:604) found enough utility in the Parker Phase (Focus) concept to attempt a refinement for the Denver Area sites, and he compares this Foothills Woodland phase with his local Plains sequence from Logan and Weld Counties. The Parker Phase is distinguished from other Woodland Phases by the high frequency of serrated corner notched points and its location along the Foothills.

The difference between the Parker Phase (Focus) concept and the Hogback Phase concept in terms of cultural process does not seem to be great. In both cases an indigenous hunting and gathering population with both eastern and western influences is implied. Most significant is the more mountain/intermountain orientation implied by the Hogback Phase concept (but not necessarily excluded from the Parker Phase definition) (Benedict 1975b; Buckles 1979).

Most interesting, perhaps, is that this population, or at least some part of this population, participated in what Breternitz and Wood (1965; see also Scott and Birkedal 1972; Scott 1979) called the Colorado Plains Woodland Mortuary Complex. The distinctive features of the Complex are primary flexed burials (usually individual) and secondary bundle burials (sometimes multiple), pit burials with bird and animal bone and shell beads, and pendants. Similarities between these burial practices and those from the eastern Plains Woodland (see Scott 1979:22-23) were noted, and the contemporaneity of this complex and the widespread elaboration in burial practices during Woodland times is one reason the eastern Colorado Early Ceramic Indians are believed to have had some important eastern contacts.

Of potentially great significance is the finding of 'Shoshonean', Intermountain type ceramics at Graeber Cave. If this single pot is truly a part of the Intermountain Ware ceramics, dates prior to 1000 RYAD and can be supported by additional evidence (plain surfaced sherds at Van Bibber Creek and elsewhere?), then it might suggest that the Foothills were utilized by people of two different traditions.

6.2 Middle Ceramic Period (1000 - 1550 RYAD)

6.2.1 Material Culture and Lifeways

6.2.1.1 Northeast Colorado

Five sites from the Northeast Colorado Plains have components dated within this period. Four of these sites (5L06, Kasper Site, Biggs Site, and Peavy Rockshelter) were reported as part of Wood's 1967 survey and test excavations, although 5L06 was an aceramic site and the date is considered as too late (Butler 1981:15). The remaining date is associated with the main occupation at Happy Hollow Rock Shelter (Steege 1967:22). (See Figure 13).

A date of 1240 RYAD was taken from a hearth in the fill of the main occupation of Happy Hollow Rock Shelter. Loosely associated with this hearth in the fill were nearly 200 finely cordmarked (with smoothing) and coarsely cordmarked sherds. The two ply cords on the finely cordmarked sherds run vertically and some decorations can be found on rims and collars. Rim decorations on these sherds show 3-5 parallel lines incised horizontally, and lips are either plain or incised diagonally. The coarsely cordmarked sherds are thin (5-11 mm) and have flared rims and rounded lips. The only decoration is deep lip incisions. In the same deposit 'Woodland' sherds were found, but Steege identifies these (on typological grounds) with an earlier occupation of the site.

No provenience data were reported on the vertical location of these sherds or lithic material, making component definition at the site extremely difficult since the main occupation probably spans Early as well as Late Ceramic Periods. In this deposit, probably falling within the Middle Ceramic Period, were hearth stains and round bottom hearths and a predominance of small triangular points with concave or straight bases, with or without side notches. Other tools included scrapers, knives, drills and flake tools. Only five manos and 13 metate fragments were found. Arrowshaft abraders, hematite, and miscellaneous

flakes were present. Bone flakers, awls, shaft wrenches, knives, and beads were also found.

According to Wood (1967:282) Peavy Rockshelter also represents a major single occupation during this time period even though one radiocarbon date fell into an earlier period. Diagnostic tools consisted of small triangular notched and unnotched points similar to Happy Hollow and 102 sherds representing at least five vessels. In one group of sherds, the vessels were medium sized globular pots with slightly rounded bottoms and outcurving rims. Rims of this variety were often collared. Like the sherds from Happy Hollow, lips were decorated with vertical or diagonal impressions. Exterior surfaces were cord-impressed in a horizontal fashion and then smoothed. The surfaces were slip-ped, and the interiors had a baked on hematite layer that gives the pots a red color. In the other major group cord-impressions were vertical. The vessels were also medium sized globular jars with constricted necks and possibly straight to gently outcurving rims. The only evidence of decorations was a diagonal cord-impression across the lip (Wood 1967:277-273). At Peavy Rockshelter, two fragmentary burials were found, one of which was associated with the Middle Ceramic occupation. It was a primary flexed interment in a shallow irregularly shaped pit associated with only a sandstone slab and a laterally notched point.

At the Biggs Site, dates of 1215 and 1255 RYAD place two 'living floors' in the Middle Ceramic Period. Unfortunately, these floors had few associated diagnostic artifacts and were indicated primarily by scattered bone debris of pronghorn and bison (p. 382). Stratum IIb in which these two floors occurred contained some ground and chipped stone tools and debris generally similar to that recovered from Peavy and Happy Hollow Rockshelters.

A fourth radiocarbon date (1290 RYAD) from Wood's survey and excavation in Northeast Colorado places part of the Kasper Site in the Middle Ceramic. The site is apparently multicomponent without stratigraphic separation. Wood associated triangular side notched points with the hearth from which the radiocarbon sample was taken. The remainder of the artifacts (small diagonally notched points and straight rimmed, cordmarked sherds) may relate to an Early Ceramic Period occupation.

The independently dated, globular, cordmarked (often smoothed) ceramics with flaring and collared rims and small triangular points can be used to assign other components from Northeast Colorado to this time period. In 1957 Irwin and Irwin, by cross dating ceramic and projectile point types with similar types dated in Nebraska and Kansas, assigned three rockshelters at Agate Bluff on Little Owl Creek to this time period (Upper Republican). Zone A at Dipper Gap was likely of this time period (Metcalf 1974:129). Wood (1967:627-628) assigned six components from his research in addition to those discussed above to this period. At least five of the thirty ceramic sites visited by Renaud could be later identified as coming from the South Platte and Republican River drainages (Downing 1981:Table 1). Many of the ceramic components recorded in recent cultural resources surveys probably post date 1000 RYAD (Halasi and Huse 1978; Weir and Hunt 1982; Morris et al. 1975). W. Raymond Wood (1971) assigned two sites, the Buick Campsite and Smiley Rockshelter in the extreme headwaters of the Republican River drainage to this time period (1971:74-78).

Material from Cliff Swallow Cave can be added to the material assigned to the Middle Ceramic Period even though ceramics from the site differed somewhat (Morton 1954) from other components of the period. The site is located in Elbert County on Boxelder Creek Southwest of Denver. Material from the rockshelter and open portion of the site were not correlated well, but based on

point styles, all the occupation appeared to have been late (i.e. post 1000 RYAD). The dominant projectile point style was the small thin triangular form, and except for pottery, the other artifacts from the excavation were typical of the Middle Ceramic Period. Most of the cordmarked pottery, however was globular and conoidal jars with incurving rims - not the outcurving and collared rims of other Middle Ceramic components. Morton (1954:41) suggested the site was occupied between 1000 and 1300 RYAD.

These additional components add a great deal to our picture of the material life of Indians between 1000 and 1550 RYAD. In addition to the ground and chipped stone and pottery illustrated by the assemblages from Happy Hollow and Peavy Rockshelters, Wood (1967:631-634) argues that the most common rim form of this period from the sites in his survey was a thickened, wedgeshaped collar. The collared rims were usually decorated with incised lines while the lips may have been plain or decorated with longitudinal impressions. W. R. Wood (1971:65-69) classified pottery from the Buick Campsite and Smiley Rockshelter as Cambridge Ware and Frontier Ware, two Upper Republican ceramic types defined from sites much further east in Nebraska and Kansas. All the necks were braced or collared, rims flared out and body shape appeared to be globular. A majority of the rims of Frontier Ware were incised with horizontal or oblique lines while Cambridge Ware rims were usually undecorated. All exterior surfaces were cordmarked tending to be vertical near the vessel necks. At the Agate Bluff sites, Irwin and Irwin defined two ceramic types, Owl Creek Fine Cord-marked and Owl Creek Rough Cord-marked. Owl Creek Fine Cord-marked rims were often collared, some decorated with parallel horizontal incisions and other collars plain. Owl Creek Rough Cord-marked rims were not collared; most lips had diagonal incisions. The one restorable vessel (Owl Creek Rough Cord-marked) had a flaring but uncollared rim.

Faunal debris left by these hunter-gatherers consisted primarily of bison in Sites I - III at Agate Bluff along with elk, pocket gopher, pronghorn, cottontail, mule deer, prairie dog, grizzly bear, and birds (Irwin and Irwin 1957:22). Only one corn kernel suggested the vegetal foods eaten. In the Middle Ceramic components investigated by Wood (1967), the most common animal remains were bison, pronghorn, and other artiodactyls with smaller mammals making up a small proportion of the bone debris, and the only floral remains recovered was a chokecherry pit.

J. Wood (1967:632) comments that handstones and milling stones were much less frequent than in earlier components of the area, and dwelling structures are unknown. Apparently, very few manos and metates were recovered from sites I, II, and III at Agate Bluff (Irwin and Irwin 1957:19) and again only shallow pits and fire places indicate domestic activity. Only three manos and one metate fragment were available for W. R. Wood to study in his reexamination of the Buick Campsite and Smiley Rockshelter, and no features were reported for the sites with the exception of a possible 'light shelter' reported by Withers (1954:2). With the exception of a corn kernel from Site I at Agate Bluff (Irwin and Irwin 1957:22) no evidence of cultigens has been found from these sites, and J. Wood (1967:558) found no evidence of cultigens in the pollen records at the sites he investigated.

In terms of site locations, W. R. Wood (1971:81) reviewed the available evidence for this period and concluded that few of the sites were located in areas suitable for gardens but rather seem to be situated as hunting stations. The weight of opinion (J. Wood 1967:558-565; R. Wood 1971:8; Wedel 1979:18) is that the occupations described for Northeast Colorado from this period represent the camps of eastern Plains Indians (presumed Upper Republican) who visited what was to become Northeast Colorado on primarily hunting trips.

6.2.1.2 Foothills

Although only one dated and only three undated Middle Ceramic components have been excavated from the Foothills region of Colorado, triangular projectile points have suggested to surveyors the existence of many other Middle Ceramic components in the area (Windmiller and Eddy 1975; Morris et al. 1979; Hillier 1979). However, the excavation and survey evidence suggests that the post 1000 RYAD occupation of the area was relatively light.

At the T-W Diamond Site dates of 1020 and 1170 RYAD (see section 6.1.1.2 for a third rejected date) were believed to date 47 stone rings (approximately 5 meters in diameter) found on this shallow (maximum depth of 18 inches) site. The dates came from the floors of two of the stone rings. The only diagnostic artifact associated with these dated rings was one small triangular unnotched point with a concave base. However, other of the stone ring features contained side notched triangular points (28%) and unnotched triangular points (57%) and 139 sherds thought to represent a single flat-bottomed vessel. The surface of the vessel was regularly indented and then smoothed over. The lip was flat, the rim straight or slightly out curving and undecorated. Also found in the dated ring structure were scrapers, utilized flakes, hearths, ground stone fragments and bone debris (Flayharty 1972:66-92).

At Franktown Cave (Withers 1954:2) and at Cliff Swallow Cave (Morton 1954) wide mouthed, cordmarked jars with conoidal bases and incurving rims were found with typical side-notched small to medium sized projectile points. Some of the Franktown pottery is reported by Withers as having a slight thickening of the lip.

The one excavated and reported component (Witkind 1971) can be placed in this period based on the existence of small notched and unnotched triangular projectile points. According to Witkind, this single component at Robert's Buffalo Jump contained the remains of a badly eroded kill-butcher area and a

habitation site. The two areas were contiguous and grade into each other which suggested to Witkind that all the areas were occupied contemporaneously. Although no MNI could be calculated for the entire kill, the excavated portion (120 sq ft) of the kill-butchering area was a bone layer which contained at least 18 animals (p. 44-45). From the habitation area an amateur recovered a flat bottomed, shouldered, smooth surfaced pot. The pottery was thick (nine mm - one cm). Twenty six other sherds were fingernail-marked (Witkind 1971:39-43). The stone tools associated with the kill and habitation areas were all chipped stone (scrapers, knives, bifaces, utilized flakes) except for two shaft smoothers. Bone artifacts included awls, fleshers and a possible scoop. The only other possible subsistence evidence reported were of canid. The site was clearly a special purpose hunting location which probably explains the complete lack of ground stone.

6.2.2. Process

J. Wood (1967:560, 564-565) and W. R. Wood (1971:81) suggested that the Neo-Atlantic climatic improvements (see Section 6.1.2) may have increased bison population and made the area more attractive to Upper Republican hunters during the Middle Ceramic. Thus, this would explain the apparent increased importance in hunting over previous periods and the fact that sites tended to reflect camping activity located in areas suitable for hunting.

W. R. Wood (1971:80) remarked that the seasonal camps within the South Platte and Republican River drainages can be readily identified as the camps of Upper Republican peoples rather than other Plains manifestations (for example, the Nebraska Aspect or Panhandle Aspect). The implication is that these sites were seasonal hunting camps of non-indigenous inhabitants (Wood 1969:104). In partial defense of this view, W. R. Wood (1971:81) pointed out that indications of a more permanent Upper Republican occupation (such as the numerous burials associated with the Early Ceramic Period?) have yet to be found west of the

102nd Meridian. He then suggested that the Buick Campsite and Smiley Rock-shelter represent a phase (he suggested the name Buick Phase) in the local chronology of the Cedar Point area, but not necessarily a phase developing out of the previous Early Ceramic (Parker Phase) occupation. J. Wood's (1967) interpretation was much the same. "Taken as a whole, these data are indicative of recurrent, temporary, and perhaps seasonal occupations of the study area by small hunting groups who normally resided farther east" (p. 633). For Northeast Colorado, Wood defined an Upper Republican Phase (p. 627) and avoided attempts at more specific, local chronological/taxonomic refinement, but the 'sociology' was much the same. He saw this Upper Republican Phase occupation as essentially 'site-unit' intrusion by peoples from the East (p.636).

J. Wood's and R. Wood's model of the Middle Ceramic in Northeast Colorado differs from earlier interpretations which attempted to organize the material in terms of regional units with some internal homogeneity and with an almost assumed indigenous, year-around, even if marginal to the eastern Plains, population. A good illustration of this earlier model of the social reality which produced the Middle Ceramic material in Northeast Colorado was given by Irwin and Irwin (1959:29): "On the whole, the material from Sites I - III suggests a marginal representation of a sedentary culture, adapted here to a more nomadic hunting-gathering pattern and stripped of many the refinements of its eastern parent." The Irwins were not the first to formalize this model, however. Withers defined the Buick Focus centering on the upper reaches of the Republican and South Platte drainages in 1954. He found the closest comparisons with the diagnostic artifacts (globular jars with out-curving collared rims) in the Sweetwater Focus (Champe 1936). Irwin and Irwin (1957:28), although also using the focus concept, disagreed with Withers' comparisons. They felt the Buick Focus and their material from Agate Bluff were more similar to the Lost Creek Focus of western Nebraska (Champe 1936).

Also, in line with this "indigenous" culture history model is Wither's proposal that the material from Franktown Cave can be assigned to a Franktown Focus which represents the transition between his Early Ceramic Parker Focus and the later Buick Focus. As originally defined, the Focus had one major distinguishing trait - cordmarked pottery jars with incurving rims. The only reported component assignable to this focus was Cliff Swallow Cave (Morton 1954). Structurally (i.e. as a transition stage of development) and temporally this focus might then be similar to the Ash Hollow Focus/Phase late in the Early Ceramic Period of Irwin and Irwin (1957) and of Wood (1967:611) (see Section 6.1.2.).

Outside a few purported Upper Republican components (e.g. Windmillier and Eddy 1975) and the Franktown Focus, the only other cultural affiliation made for the sparse Middle Ceramic occupation of the Foothills has been 'Shoshoni' based on the Intermountain Ware found at the Robert's Buffalo Jump (Witkind 1971) and at T-W Diamond (Flayhart and Morris 1974). W.R. Wood (1972:13) felt that in 1972 no firm evidence had been found of Upper Republican occupation of either the Foothills or Montane-Alpine areas. The 'intrusion' of the eastern Plains populations seemed to be restricted to the grasslands. It may be that evidence from the Roberts Buffalo Jump and T-W Diamond (and from Graeber Cave?; see section 6.1.2) represents the remains of a 'Shoshonean' Intermountain Tradition use of the area. Wood (1967:647) identified fingernail impressed sherds from Site 5WL41 in Weld County as 'Shoshonean' but felt the occupation was post 1550 RYAD. Since there is no independent evidence for the age assignment the site might as well be Middle Ceramic and provide additional evidence of contact and/or overlapping ranges of Eastern and Western traditions.

6.3 Research Problems

The Ceramic Stage in Northeast Colorado illustrates one of the unequivocally true statements concerning archaeological resource evaluation. As more is known about the archaeology of an area, archaeologists and the interested public find more and more questions to ask of the resource, so that the dwindling archaeological data in a heavily researched area become more and more important. Thus, when Colorado Plains Archaeologists were asked to mention important research questions, they listed more questions from the Ceramic Stage than any other even though many more Ceramic Stage sites have been excavated and the period is shorter than any other prehistoric period. These archaeologists mentioned (Butler 1980):

(with reference to the Early Ceramic)

- 1) examination of taxa.
- 2) investigation of horticulture.
- 3) examination of temporal and cultural variation in ceramics.
- 4) documentation of demographic trends and variation.
- 5) documentation of cultural boundaries.
- 6) examination of external relationships.

(with reference to the Middle Ceramic)

- 1) establishing the taxa and locations of prehistoric cultural groups.
- 2) establishing the relationship between archaeological and presumed cultural units.
- 3) studying settlement/subsistence patterns.

Additional work and careful study of available data will undoubtedly reveal many other significant research problems. A few of these are suggested by the data reviewed above (Sections 6.1 - 6.2).

Some of the more obvious research problems suggested by this work are:

- 1) independent dating for finer chronological control.

- 2) influences from the Northwest and central Plains.
- 3) subsistence/settlement differences between the Early and Middle Ceramic.
- 4) relationship between the Ceramic Stage and the Archaic Stage on the one hand and the Protohistoric on the other.
- 5) projectile point typology including a consideration of the taxonomic position of serrated points.
- 6) pottery typology particularly in the Early Ceramic. Questions regarding differences between the ceramics of the Foothills and the South Platte areas, change through time, production by indigenous peoples, and affiliation of fingernail impressed pottery will need to be asked.
- 7) paleoenvironment and variation in climatic conditons.
- 8) position of stone ring structures in the cultural taxa of the Middle Ceramic.
- 9) types of structures in use.
- 10) formation processes of Ceramic sites, the rate of site destruction, and nature of site transformation. These last questions seem particularly important from the management point of view.

6.4 Potentially Important Resources

All Northeast Colorado Ceramic sites are very important resources. Almost all sites would potentially yield information useful in the study of some or all of the few research problems mentioned above. All sites would be of interest in settlement/distributional studies, a large single component site would be important in subsistence/lifeways reconstruction/integrative studies, and stratified sites would be useful in the study of cultural dynamics.

6.5 Needed Research

Any research not duplicating previous research would be a welcome addition to the prehistoric archaeology of eastern Colorado. To answer only the research questions mentioned above (Section 6.3), much research is needed.

Specifically the Northeast Colorado Ceramic needs:

- 1) chronometric dates to establish a finer chronology and to answer questions concerning all the research questions.
- 2) surveys to answer questions concerning cultural/ceramic/projectile point taxonomy, extent of horticulture, demographic trends and variation, cultural boundaries, settlement/subsistence patterns, and outside influences.
- 3) stratigraphic excavations to answer questions about cultural/ceramic/projectile point taxonomy, demographic trends and variation, settlement/subsistence changes, and the relationship between the Archaic, Ceramic, and Protohistoric Stages.
- 4) single component excavation to answer questions about cultural, ceramic, and projectile point taxonomy, demographic variation, cultural boundaries, and settlement/subsistence patterns.
- 5) environmental reconstruction to answer questions concerning climatic conditions and the role of horticulture.
- 6) taxonomic studies to answer questions about cultural/ceramic/projectile point taxonomy and cultural boundaries.
- 7) studies of the archaeological context to better understand the formation and transformation Northeast Colorado Ceramic sites and to answer all other research questions.

7. Ceramic Stage in Southeastern Colorado

7.1 Early Ceramic Period (1 - 1000 RYAD)

7.1.1 Material Culture and Lifeway Description

7.1.1.1 Southeastern Colorado

Five radiocarbon dates are useful in understanding the prehistory of Southeast Colorado between 1 - 1000 RYAD and in cross dating a number of other sites in this area to this period.

One of these dates (270 RYAD) in the Chaquagua Plateau area is from a brown carbonaceous soil (Levels 2 and 3) in Metate Cave (Campbell 1969:192) (See Figure 14). Diagnostic artifacts associated with this date in the same general level were side notched and unnotched dart points (particularly the Catan type), small unnotched triangular (arrow) points and small stemmed/corner notched (Scallorn) points. Also several cordmarked sherds were recovered (Campbell 1969:86, 188-193). At the Belwood Site an oval, semi-subterranean house with eight support posts set into the floor near the wall contained charcoal which dated at 450 RYAD. Most of the points from the site were small corner notched varieties (some serrated) with a few dart points included (Hunt 1975:36-37, 84). All the pottery was cordmarked.

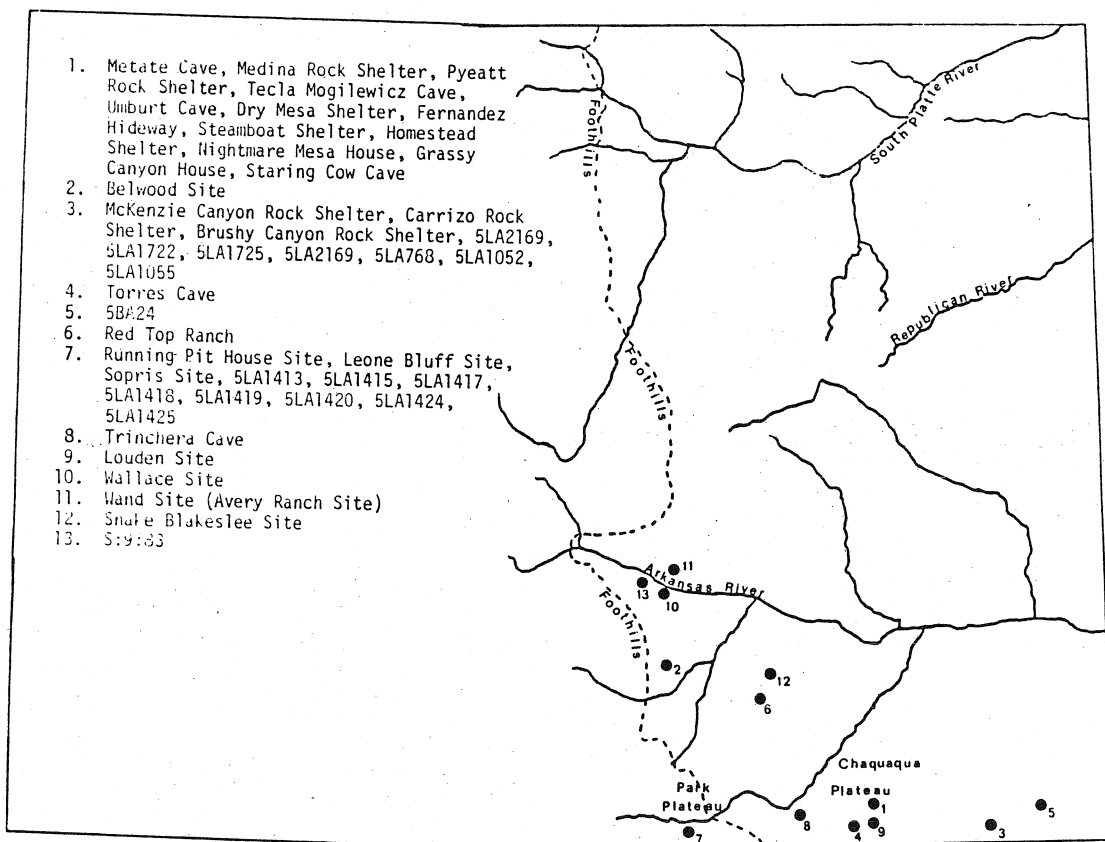
In extreme southeastern Colorado within the Cimarron drainage sites on the Carrizo Ranches yielded diagnostic artifacts in association with radiocarbon dates at McKenzie Canyon Rock Shelter (5LA1110) and Carrizo Rock Shelter (5LA1053). In Stratum II at McKenzie Canyon Rock Shelter, a date of 940 RYAD was associated with Reed, Scallorn, Harrel, and Young point types and a "micaeous potsherd" (Kingsbury and Nowak 1980:30). In Stratum II of Carrizo Rock Shelter a 660 RYAD date from the lower of two hearths suggested that at least a portion of the occupation of this stratum occurred during the Early Ceramic Period. Exact vertical provenience for material from Carrizo Rock Shelter was not reported but generally at Stratum II (which also had a 1350 RYAD date

from an upper hearth) and Stratum I, Scallorn, Reed, Keota, Bonham, Fresno, and Young points were discovered (Kingsbury and Nowak 1980:22). Pottery was not reported for Stratum II (p. 22). A fifth date has been reported for Site 5LA2169 which falls within this period (Nowak and Berger 1982:8-11), but it appears to be unusually early, and the site is believed to represent a later occupation (1200 - 1300 AD).

A fifth date was recovered from a large (9 X 8 meter) concentration of fire broken rock at 5 LA2169 (Nowak and Kingsbury 1981:17). Both chipped stone debris and ground stone fragments were found in the excavation of two square meters within the rock pile. Nowak and Kingsbury felt the charcoal yielded a date of 730 RYAD suggesting intensive food processing of some sort occurred during the Early Ceramic Period. Nowak and Kingsbury (1981:18) pointed out that the date is earlier than dates for stone enclosures in the general vicinity; so that, it likely predates the other stone features (enclosures) described for the site.

Small corner notched points (generally similar to the Alba and Scallorn types) and cordmarked pottery have been used to cross date many other sites in Southeastern Colorado. Nearly 30 other sites from the Chaquagua Plateau fall in this category (Hoyt 1979:18; Campbell 1969:377-378), and several of the sites have been excavated and reported (Torres Cave, Medina Rock Shelter, Pyeatt Rock Shelter, Tecla Mogilewicz Cave, Umburt Cave, Dry Mesa Shelter, Fernandez Hideaway, Steamboat Shelter, Homestead Enclosures, Nightmare Mesa House, and Grassy Canyon House). Stratum 4 at 5BA24 Cave on the Comanche National Grasslands with cordmarked pottery, Bonham, Marcos, and Scallorn Points also suggested an Early Ceramic occupation here, and abundant chipped and ground stone and long and small mammal bone fragments suggested an intensive occupation (Nowak 1981). Small corner notched projectile points in a collection which included both earlier and late forms suggested that at least

Figure 14. General location of some of the Southeast Colorado Ceramic Sites mentioned in text. For accurate site location consult reference cited in text.



some of the stone enclosure sites on Red Top Ranch (between the Huerfano and Apishapa drainages) were occupied during the Early Ceramic Period. Points and pottery have been used to classify a number of other sites discovered during survey work as Early Ceramic (Downing 1981:Table 1 - from Renaud's surveys; Eddy et al. 1982:150; Wood et al. 1981:64-66; see also Kingsbury and Nowak 1980).

The components dated or assigned to this period reveal the continuation of the Archaic hunting and gathering pattern of subsistence with the important possible addition of cultigens into the diet. Hunting and gathering is suggested by tool, flora and faunal debris. Knives, bifaces, scrapers, sub-nosed scrapers, and drills were common tools. Slab metates and one hand manos were present. The ceramics from these components were all cord impressed. Campbell (1969:368) felt that pottery was not common on the Chaquaqua Plateau until after 450 RYAD. This pottery varied from deep and wide cord impressions to shallow and narrow. Wall thickness was variable but less than six mm. Thinner sherds with shallow cord impression tended to be later and were identified as Borger Cordmarked (Suhm and Jelks 1962:15). Most rims and lips were straight (Campbell 1969:114). At Torres Cave, a majority of the cordmarked sherds were smoothed over shallow, parallel or criss crossed impressions. These were also identified as Borger Cordmarked (Hoyt 1979:10). Belwood Site ceramics were cordmarked.

On the Chaquaqua Plateau, large mammal remains such as bison and deer predominated over those of small mammals (Campbell 1969:372). Utilized wild plants included gourds, plums, pinyon nuts, and various unidentified seeds (Campbell 1969:372). Eddy et al. (1982:52) pointed out that at Metate Cave Harinosa de Ocho corn remains were bracketed by dates of 20 RYBC and 1140 RYBC which suggested that cultigens played at least some dietary role in the early portion of the Early Ceramic Period. Campbell made the same point (1969:373,

382); he found evidence between 750 and 1000 RYAD for Pima Papago Maize as well as Harinosa de Ocho. From Torres Cave, small mammals constituted the majority of animal remains (primarily squirrel, prairie dog and rabbit); however, artiodactyls were also reported from McKenzie Rock Shelter (Kingsbury and Nowak 1980:31). Bird bones, large mammal bones, small mammal bones, and mollusk shells were reported for Carrizo Rock Shelter (Kingsbury and Nowak 1980:21).

When compared to the earlier Late Archaic Period, a significant development is the number of structures apparently in use at the same time. The most extensive evidence for this comes from Campbell's work on the Chaquagua Plateau. Prior to 450 RYAD in the Chaquagua Plateau only naturally sheltered sites with hearths were being used as habitations (Campbell 1969:369). Between 450 RYAD and 750 RYAD simple stone foundation enclosures were first constructed and occupied. Most of these sites consisted of one single circular unit (3-5 meters in diameter) with low, horizontally-placed, dry-laid slab foundations and basin shaped floors. Three sites consist of three enclosures each and one site had a partitioned enclosure. Some rooms had hearths. The stone walls were erected by piling rocks to a height of one to three feet above the surface. In excavated enclosures clear evidence of doors was detected (Campbell 1969:376). Although rockshelters were still inhabited, the indications are of a shift toward surface structures. Stone enclosures were also noted inside rockshelters (p. 380). After 750 RYAD stone enclosures were still erected usually one per site, but sites were now located in upper canyons, wide canyons and river plains presumably due to the increased importance of agriculture. Some floors were semi-subterranean. In addition most settlements were protected by barrier walls (p. 383). After what Campbell estimated to be 900 RYAD contiguous or abutting structures were built. Frequently, the structures were oval or oblong in outline. Also during this final stage of the Early Ceramic,

enclosures with vertically placed slabs used as foundations may have been introduced (p. 388).

At the Belwood site two oval, semi-subterranean houses were excavated. The radiocarbon dated house had drylaid masonry about 2/3 way around the edge. A rubble and wood roof were indicated for the structure by the roof debris laying scattered in the fill along with rocks of various sizes. A bell shaped storage pit and a central hearth were found on the floor. The second structure was a small oval pithouse with six support posts two of which were found at the surface flanking a presumed ventilator shaft. The structure had an eastern entrance defined by five postholes. This house was compared with BM II and BM III houses in Southwest Colorado (Hunt 1975:93). At Red Top Ranch, Anderson found eleven stone enclosure sites ranging from one to ten enclosures each with resemblances to the surface structures at Belwood and the structures of the Chaquaqua Plateau. Unfortunately, only one was cross dateable. All were circular enclosures with sandstone slabs stacked on top of one another and slanting slightly inward indicating they might have been vertical at one time. Two of the sites had low walls connecting the circular structures (Anderson 1976:9).

For a brief discussion of rock art in the area, some of which might relate to the Early Ceramic Period, see Sections 7.2.1.1 and 7.2.2.

7.1.1.2 Park Plateau

No independently dated components are known for the Park Plateau region between 1 and 1000 RYAD. However, based on cross dating of architecture and projectile points one important site, the Running Pit House Site, can be tentatively assigned to the early portion (1 - 850 RYAD) of the period.

The Running Pit House Site, located at the confluence of Mulligan and Reilly Canyons, was a multiroomed pithouse. The house had four connected quasi-circular pits or rooms and a bench. There was evidence that Rooms 3 and

4 were earlier than 1 and 2. House construction consisted of pits dug about one meter into native soil, and twelve posts were found in the various rooms and along the bench. Rocks found in the excavation were believed to be part of a retaining wall constructed above the pit walls. Between each room was a small partition 30 - 50 cm high. The excavated doorways were 15 cm high in the wall partition and well defined. The partition between Rooms 2 and 3 was a rock and detritus wall. The posts were placed in excavated holes in the floor around the perimeter of the wall and bench. No mention was made of internal floor features (Dick 1974). Projectile points were mostly small corner notched varieties (Type I, 39%; Type II, 13%; and Type III, 29%). The Type III point illustrated (Dick 1974: Figure 24) has a serrated blade. Other artifacts described were drills, knives, scrapers, graters, metates, manos, graphite and stone pendants and beads, bone beads and awls and worked shell. No pottery was found (Ireland 1974a:180)! Faunal remains indicated that deer, cottontail, jackrabbit, and gopher were hunted (Ireland 1974a :178). Ireland states that the inhabitants raised corn (Ireland 1974a:181). Ireland (1974a:180; 1974b) pointed out that two other sites (5LA1424 and 5LA1450) contained similar structures (i.e. pithouses with perimeter postholes), but, based on the presence of ceramics, these pithouse sites were assigned to a post 1000 RYAD age (Ireland 1974b). In fact, Ireland (1974b:14-55) suggested that, because of architectural similarities, the Running Pit House Site may have been an aceramic site of post 1000 RYAD age.

Recent survey work (Lutz and Hunt 1979) has suggested a continual occupation of the Park Plateau occurred during the Early Ceramic Period. Based on subtle differences between styles of small corner notched points, Lutz and Hunt (1979:96-100, 134) assigned 18 of 58 sites to a pre 400 RYAD period and nine sites to a period between 400 - 1000 RYAD. The later of these two divisions

(i.e. Woodland, see Section 7.1.2 below) tended to be more widely distributed (Lutz and Hunt 1979:181) while those earlier (i.e. Basketmaker, see Section 7.1.2 below) tended to be more concentrated at lower elevations.

7.1.2 Process

The early part of this period in Southeast Colorado is generally viewed as a continuation of patterns and people of the Late Archaic. No major discontinuity in cultural material has been recognized (Campbell 1969:364-370; Eddy et al. 1982:42). The bow and arrow and cordmarked pottery were introduced early between 200 and 450 RYAD, but the atlatl (as evidenced by the continuation of dart points) apparently remained important. These pre-450 RYAD developments are seen as part of a widespread "Early Woodland" phenomenon (e.g. Watt 1971:134-135) similar to that occurring in the northeastern Colorado Plains at that time. Thus, the concept of the Parker Focus/Phase has been applied here as well as in northeastern Colorado to refer to the material between roughly 1 and 450 RYAD (Campbell 1982:367; Eddy et al. 1982:42; see Section 6.1.2). If the characterizations of Campbell, and Eddy et al. continue to accurately fit data, then the conceptualization of the 1 - 450 RYAD period of the Early Ceramic Period differs radically from the conceptualization of the preceding Late Archaic (see Section 5.4). In the Late Archaic distinct differences in projectile point morphology suggested to eastern Colorado archaeologists that a distinction between the South Platte and the Arkansas drainage should be made. Apparently, during the Archaic, sociocultural interaction did not range freely over the two areas nor did lines of exchange and communication freely extend into both areas.

Does the use of the Parker Focus/Phase in both areas, then, suggest by contrast some freely interacting social system/network during the 1 - 450 RYAD period? Not necessarily, although the clear implication is that some communication was going on (see, for example, Campbell's Diffusion Model; 1967:501).

A synthesis of the prevailing views (i.e. those essentially proposed by J. Wood for the Northeast and by R. Campbell for the Southeast) for the first 500 years after the time of Christ would include local populations in the two drainages gradually adopting similar ceramics and projectile point styles. This ceramic and projectile point similarity would confer technological uniformity but not necessarily imply a thoroughly integrated social network. Therefore, use of the Parker Focus/Phase concept in this way to refer to the 1 - 450 RYAD material from eastern Colorado probably is meant to suggest general uniformity in material culture and subsistence with stylistic similarities resulting from diffusion and trade, and its use is conceptually different from the more areally restricted Hogback Phase or Graneros Phase (see below) concepts.

Some time after 450 RYAD it is likely that the more adaptable and productive Harinoso de Ocho maize, developed in the Upper Rio Grande, was introduced to the Arkansas drainage (Galinat and Campbell 1967; Eddy et al. 1982:51-53), and the area experienced a more moist climate (Neo-Atlantic). It was after this date that clear distinctions between the two drainages (i.e. the Arkansas and the South Platte) have, once again, been drawn. This more productive maize variety and improved climatic conditions may, then, have raised the carrying capacity of the Arkansas drainage, allowed populations to grow in number, and encouraged more permanent settlements at locations more useful to maize agriculture. The trends, once established, continued throughout the Late Ceramic Periods, but as the technological and subsistence developments (i.e. bow and arrow technology, maize horticulture, and substantial habitations) coalesced after 450 RYAD, a distinct archaeological manifestation, the Graneros Focus, has been recognized.

In 1954, Withers proposed the Graneros Focus which referred to material later than the Parker Focus/Phase, but restricted to southern Colorado

(1954:2). Campbell (1969:370), Hunt (1975), and Eddy et al. (1982:42) find the concept useful in dealing with post 450 RYAD material in the Arkansas drainage. Campbell (1969:370 - 381), in fact, divides the Graneros material from the Chaquaqua Plateau into three periods, 450 - 750, 750 - 1000, and 900 - 1050 RYAD. In the first period corner notched arrow points and dart points were about equal in number, and circular stone enclosures were built. Stones were horizontally placed as a dry-laid slab foundation surrounding a saucer-shaped floor (Campbell 1969:370-381). Most of the sites were single enclosures which suggested to Eddy et al. (1982:43) family units with a small surrounding territory possibly organized into tribes.

During the middle period (750 - 1000 RYAD) arrow points were much more numerous than dart points and contiguous-room stone structures were built. However, the style of building changed little. Defensive barrier walls were built and most sites had more than one structure on them (Campbell 1969:381-386). Finally, by 1050 RYAD enclosures with vertically placed slab wall bases and pottery with shallow cordmarking may have appeared (Campbell 1969:386).

Comparisons with the Southwest are common, and they suggest that most of the architectural ideas were stimulated by Southwest examples. Campbell compares the structures of the Chaquaqua Plateau to the Los Pinos Phase of the Upper San Juan (Dittert et al. 1963); Gunnerson (1982:191) finds similarities from southern Colorado with the Vermijo Phase of the Cimarron Area (Glassow 1980:71); and Hunt (1975:84-93) points out the close resemblance of House 2 at the Belwood Site with the BM II and BM III pithouses from Southwest Colorado.

In line with this view of Southwest influence is Campbell's summary of dated structures in Southeast Colorado and the southern Plains in which he suggests that prior to 1000 RYAD, stone structures were not known east of the 103° E longitude (Campbell 1982:427, 499) and that Graneros Focus preceded the

Apishapa Focus and other Panhandle Aspect foci of the Middle Ceramic (See Sections 7.2.1.1 and 7.2.2 below) further east.

All the small corner notched projectile points (Types BT6, Subcategory III) which Lutz and Hunt (1979:123) reported for the Park Plateau as dating between 500 and 1000 RYAD seemed to them to have their closest similarities with sites on the Plains. Therefore, they concluded that the period after 500 RYAD on the Park Plateau was dominated by the Plains Woodland Tradition (Lutz and Hunt 1979:134). An early time period (pre 500 RYAD) was assigned to other small corner notched points (Type BT6, Subcategories VII, VIII, and IX); however, the cross dating of the two most important (numerically) of these types (VIII and IX) was based on points from the Running Pit House Site and the earlier of Ireland's (1974a:180) two possible age assignments for that site (i.e. the preceramic BM II interpretation at circa 500 AD)(Lutz and Hunt 1979:125).

Thus, the Running Pit House Site is crucial to almost all the reported archaeological work in the Park Plateau during this time period. To review, since the site was aceramic, it had been interpreted as early in the Early Ceramic Period (1-500 RYAD). However, since similar structures were found with Southwest Ceramics of post 900 AD age (or with what is locally called the Sopris Plain Ceramics, see below Section 7.2.2), the Running Pit House Site could be interpreted as an aceramic (not preceramic) Sopris Phase Site (Ireland 1974b:14-55). Thus, the site has been suggested as either before 500 AD or after 900 AD. Similar structures with early Southwest ceramics (BM III - P I, between 500 and 900 AD) have not been found in the area. In fact, except for a few possible Woodland Cordmarked sherds, no ceramics exclusively earlier than 1000 AD have been identified (Wood and Bair 1980: 204-209; Lutz and Hunt 1979:132). It is precisely in this later (500 - 1000 RYAD) part of the Early Ceramic Period (as used in this report) that Lutz and Hunt have postulated a

strong Plains Woodland influence in the Park Plateau area. Clearly, until sites definitely dated to this period are excavated, cultural dynamics and cultural affiliations must be only tentative in nature.

7.2 Middle Ceramic Period (1000 - 1550 RYAD)

7.2.1 Material Culture and Lifeways

7.2.1.1 Southeast Colorado

Level 1 in Medina Rockshelter has produced the single most important dated Middle Ceramic component in Southeast Colorado. A date of 1140 RYAD from a Harinosa de Ocho cob in this level (1B) was found associated with a hearth feature, fire drill bits, prepared plant material and wastage, cordage and knots, other maize material, gourd fragments, plum pits, seeds, bone beads, flake tools, and bifaces. The remains of cottontail, prairie dog, pack rats, and other small animals were numerous along with mollusks and cray fish, suggesting the importance of small mammal and rodent hunting. Unnotched triangular (Fresno and Young) points were recovered in Level 1B and Level 1, generally.

Above Level 1B in Level 1A not only Harinosa de Ocho but also Pima-Papago, Chapolote-Reventador and Fremont-Dent corn were recovered, and a Scallorn point and one Ellis Point were recovered below Level 1B in Level 1C. Campbell estimates the dates of these levels as:

1A 1150 - 1300 RYAD

1B 750 - 1150 RYAD

1C 100 - 750 RYAD

Unfortunately, no pottery was found in the cave to help cross date pottery sites in the area (Campbell 1969:121-146; Campbell 1963:58). At both sites 5BA24 and 5LA1053, however, in the Cimarron drainage, dated levels (1350 RYAD) with ceramics suggested that fine shallow cordmarked (apparently of the Borger Type) and plain surfaced pottery were being made during the late portion of the Middle Ceramic Period (Nowak 1981:51-56, Kingsbury and Nowak 1980:21-222, 48).

Also included in the dated level (Level 2) at 5BA24 were two Scallorn points, considerable quantities of both large and small mammal bones, and

miscellaneous chipped stone tools and debris but no ground stone. The entrance to the cave may have been blocked by a barricade because a line of post molds extended across the entrance and quantities of decaying vegetal material were outside the line of post molds (Nowak 1981:52, 56).

At Carrizo Rock Shelter (5LA1053) a date of 1350 RYAD was also determined for a hearth in Stratum II. Associated with the hearth was a carbonized corn cob, cores, waste and utilized flakes, knives, scrapers, red ochre, mollusk shell, bone awls, bone beads, and Young, Fresno, Bonham, Scallorn, Reed, and Keota points (Kingsbury and Nowak 1980:21-22) and Berger Type cordmarked pottery.

In contrast to the few absolutely dated stratified deposits dating between 1000 and 1350 RYAD several dates have been reported from unstratified (i.e. non-rock shelters) deposits for this 350 year period. All were associated with surface structures of one sort or another.

In the Cimarron drainage on Carrizo Ranch, Nowak and Berger (1982:29) reported six dates between 990 and 1350 RYAD from five structures. At 5LA1722, Structure A contained a hearth which produced a date of 1100 RYAD (Kingsbury and Nowak 1980:42). The structure had a 6 X 9 meter oval shape with wall foundations of slabs set vertically and buttressed (p. 41). Within the structure were recovered one small side-notched triangular point (Washita) and several shell and bone ornaments. Thirty-three meters south of Structure A was another stone (but not vertical slab) foundation, Structure B, 4 X 5 meters in an oval outline. This structure contained one Scallorn and five Fresno points and two cordmarked sherds all of which suggested to Nowak and Berger a component possibly earlier than Structure A. On the surface of this very shallow site were numerous domestic tools - chipped stone tools and flakes, hammer stones and grinding stones.

Only one kilometer northwest of 5LA1722, three additional stone structures were excavated at 5LA1725. The three structures were all similar to the ruins

described for 5LA1722. Rootlet-contaminated bone in the hearth of one structure dated at 1020 RYAD and was associated with two Fresno points, chipped stone tools and ground stone fragments. Another of the structures contained charcoal dated at 1320 RYAD and was associated with two Washita type points, chipped stone tools and ground stone fragments. Both structures also contained mammal bone and shell fragments (Kingsbury and Nowak 1980:45-47).

Approximately 100 years (990 RYAD) earlier a structure similar to Structure A at 5LA1722 was occupied at 5LA2169. Here a 6.4 X 6 meter oval room with buttressed sandstone slab wall foundations was excavated (Nowak and Kingsbury 1981:12-13). Although no diagnostic artifacts were recovered in the excavation of the structure, a few chipped and ground stone tools were found. The site contained five other circular to C-shaped stone enclosures (made of irregular, horizontally placed sandstone slabs), but contemporaneity can not be established. A small triangular side notched (Washita) point suggested that at least one of these undated structures also dated to this Middle Ceramic Period. A large hearth just north of one of the C-shaped stone structures yielded a date of 1255 RYAD but again it can not be definitely associated with the structure or with diagnostic artifacts (Nowak and Berger 1982:31; Nowak and Kingsbury 1981:15-17).

A date of 1175 RYAD was recovered from a circular (3 meter diameter) structure at site 5LA768 on the Chaquagua Plateau. The structure had a stone wall base and several slabs were still in a vertical position upon excavation (Campbell 1969:229). Site 5LA768 on which Structure B was located is on top of an isolated butte along Chacuaco Canyon. Structure B was contiguous with Structure A (10 meters in diameter) and Structure C (3 meters in diameter). This three unit complex was adjacent to an inner wall which isolated it from the central portion of the site. The central portion contained a fourth

structure (Structure D - circa 8 meters in diameter), and the only approach to the butte site was barred by a second (outer) stone wall.

No diagnostic artifacts were found in Structure B but from the other structures and the surface were recovered predominantly Reed, Washita, Scallorn and Fresno Points. Diagnostic pottery was smoothed-over cordmarked sherds (7), plain surfaced sherds (39) and corrugated sherds (12). Campbell (1969:236) identified the plain surfaced sherds with pottery from the Park Plateau area dating between 1000 - 1300 AD. He felt that except for the smaller (storage) Structure C, the structures were habitation rooms. Campbell (1969:229) recovered bone, awls, bone debris, ground stone tools, and chipped stone tools.

These dated components suggest that Washita, Reed, and Fresno Points, shallow-narrow cordmarked (Borger Type), and stone and slab foundation habitations were characteristic of the Middle Ceramic Period (Campbell 1969:389-390; Kingsbury and Nowak 1980:48; Eddy et al. 1982:41). Consistent with this impression are 1) repeated findings of these projectile and ceramic styles stratigraphically above deposits containing earlier dates and/or earlier projectile point and ceramic types and 2) these point and ceramic types have been found with a great number of other stone structures and with Southwest trade sherds which date generally to this period (Eddy et al. 1982:41).

Other types of features have been recorded in Southeast Colorado which were produced during the Middle Ceramic Period. In Las Animas County east of Trinidad, Greer (1966:60) reported a large (circa 8 meters in diameter) accumulation of burned rock and ashy soil which dated at 1435 RYAD. Upon excavation of the rock midden, the center contained mostly ash and a central pit. The doughnut-shaped pile of rocks was interpreted as a mescal processing pit (Greer 1966:64; see also Greer 1965).

Kingsbury and Nowak (1980:66) reported a date of 1350 RYAD from charcoal in a circle of rocks (#3) at 5LA1052. By comparison with reported rings from

the area, stone Ring #3 from 5LA1052 differed from other stone features described for the ceramic periods 1) in being more nearly circular as opposed to oval or square, 2) in that fewer stones made up the outline, and 3) in never being made up of more than one course. Within Ring #3 were found two unnotched and one notched small triangular points, a bone bead, mano and metate fragments as well as chipped stone debris (Kingsbury and Nowak 1980:65). At 5LA1052 three other of these 'tipi' rings were also recorded.

A large number of rockshelters have excavated components which essentially reproduce the material recovered from Median Rock Shelter, 5BA24, and Carrizo Rock Shelter. One of the most important of these is Trinchera Cave (Wood-Simpson 1976) where Level I produced 49 cordmarked sherds which Wood-Simpson assigned to the Stamper Type (a type defined in the Panhandles of Oklahoma and Texas and similar to the Borger Type). Most of these sherds were unfired and found in a partially excavated jacal structure. The remains of this structure were approximately 4 meters in diameter within a bowl-shaped pit approximately one half meter deep. A portion of the floor of this structure was slab lined, and the roof was, apparently, supported by interior roof posts. The structure contained an interior hearth and storage pits (Wood-Simpson 1976:23-25). Thirty-nine of the 67 points from Level I were small triangular notched and unnotched or stemmed varieties. In addition to points the level contained the usual chipped stone and ground stone tools and bone and shell tools and ornaments. A large number of perishable specimens give us a fuller picture of life during the Middle Ceramic than is usual for sites of the period. These include snares, arrowshafts, yucca sandals, cordage and basketry. Seeds of corn, prickly pear, cholla, gourd, juniper, wild plum, and chokecherry attest to the importance of horticulture and wild plant collecting. The remains of deer, pronghorn, bison, elk, coyote, duck, bird, cottontail, squirrel, gopher,

woodrat, prairie dog, turkey, lizard and crayfish attest to the importance of both large and small animal hunting (Wood-Simpson 1976:160-77).

In other Southeast Colorado caves and rockshelters, components cross dated to the Middle Ceramic have also provided evidence of horticulture, small game hunting and collecting. On the Chaquaqua Plateau direct evidence of horticulture has been uncovered at Pyeatt Rock Shelter (maize) and Umbart Cave (beans) (Campbell 1969:153-156,180-187) and of small game hunting at Pyeatt Rock Shelter, Tecla Moglewicz Cave, Umbart Cave, and Staring Cow Cave (Campbell 1969:153-156, 163-171, 180-187, 201-207). Barrier walls are common in the rock shelter occupations of this period (Campbell 1969:392). 'Mammal' bones and vegetal debris were found with Fresno Points on the Carrizo Ranch in Stratum I of 5LA1055 while a posthole alignment across the front of Brushy Canyon Rock Shelter was likely associated with this time period (Kingsbury and Nowak 1980:17, 25-26). In the upper few centimeters of Torres Cave, shallow cord-marked pottery (identified as Borger) and side notched points cross date the upper level to the Middle Ceramic Period (Hoyt 1979). In Level I of Torres Cave small animal bones seem to increase in importance relative to large animals in the uppermost levels (Guthrie 1979:40-42).

A large number of surface structures and non-rockshelter sites have been cross dated to this time period. Generally, the basis of these assignments has been the presence of small triangular (notched and unnotched) points, shallow cordmarked pottery and the presence of some form of habitation structure.

All totaled Campbell identified 29 stone and slab enclosure sites for the Chaquaqua Plateau dated between 1000 and 1400 RYAD (1969:392-397). The vast majority of these were slab enclosures. Most rooms were single units either circular, oval or D-shaped. The houses do not appear to have had entryways on the ground surface. Although most sites assigned to the early part of the

Middle Ceramic (i.e. 1000 - 1400 RYAD) were single room sites, one site contained 37 rooms. Fortified sites in inaccessible locations were common.

After 1300 RYAD, Campbell (1969:402) believes, the occupation of the Chaquaqua Plateau fell off markedly. A few rectangular stone structure sites were recorded, but stone ring sites (tipi rings) like those dated by Kingsbury and Nowak (1979:65) were much more common (Campbell 1969:404). In addition, earth rings composed of charred soil and heated stones similar to the dated 'mesal pit' at the Loudon Site were found on the Chaquaqua Plateau and assigned to this period, but Campbell would prefer to interpret the Chaquaqua Plateau examples as winter habitations (Campbell 1969:342-344, 404).

In general, a set of site types similar to those of the Chaquaqua Plateau have been reported for the Carrizo Ranch area on the Cimarron drainage. A large number of stone and slab enclosure sites appear to be contemporaneous with sites 5LA1725 and 5LA1722 (i.e. pre 1350 RYAD) (e.g. Nowak and Kingsbury 1981:10-11) and no less than 13 'tipi' ring sites have been identified with a later occupation (post 1350 RYAD) (Kingsbury and Nowak 1980:59-61). In addition, Nowak and Kingsbury (1980:58-59) reported an earth ring composed of charred and fire-reddened soil and fractured sandstone very similar to that dated at the Loudon site and to those reported for the Chaquaqua Plateau by Campbell. It was 1.8 to 2 meters in diameter.

To complete the comparison with the Chaquaqua Plateau (Nowak and Kingsbury 1980:36-39, 49-59) were massive linear stone alignments, some of which were reported as game drives and others as refuge fortifications. These structures could not be assigned a temporal placement with any certainty.

Northwest of the Chaquaqua Plateau four other important sites with the remains of habitation structures have been assigned to the Middle Ceramic Period on the basis of similar ceramics, similar projectile points, the presence of architecture and dated Southwest trade sherds ((1)5PE349, the Wallace

Site with associated petroglyph site, 5PE81, (2) 5PE172, (3)5PE56, the Wand or Avery Ranch Site, and (4)5LA1665, Snake Blakeslee). These sites were reported by Ireland in 1968. The Wallace Site and S:9:83 are located on the Arkansas west of Pueblo, the Wand Site is northwest of Pueblo on Turkey Creek, and Snake Blakeslee is east of Walsenberg on the lower part of the Apishapa drainage. The sites were selected for excavation because they contained ceramics and what appeared to be house depressions, and, as it turned out, all four were apparently very small Middle Ceramic villages. According to Ireland (1968), the sites produced predominantly (80-99%) smoothed-over cordmarked ceramics. However, Watts' (1971; 1975) re-analysis of the Avery Ranch Site suggested the ceramics should be divided into deep and shallow cordmarked groups. As presented by Ireland and based on rim percentages for all four sites, approximately 1/3 of the pots had outcurving rims and 2/3 had straight rims. Watts (1975:21-23) describes a rim sherd from the Avery Ranch Site with a collared rim. One restored pot of the smoothed over cordmarked type from the petroglyph site near the Wallace Site was globular shaped with outcurved rim and with an oriface diameter of 21 cm (Ireland 1968:22). Lips were very occasionally incised or cordmarked.

These four sites exhibit a remarkable degree of variability in architecture, the sites west of Pueblo showing more internal similarity than the far distant Snake Blakeslee Site. At Snake Blakeslee long rectangular pillars of sandstone were used in wall construction and, apparently, in roof support. The thirteen stone enclosures at the site range from circular to square with rounded corners and from four to six meters on a side/diameter. Two of the five excavated rooms were made of irregular shaped stones of different lengths and several courses. The walls of Room 1 at Snake Blakeslee were built like those of the first group except the blocks were of a more regular size and shape and partially chinked. The walls of Room 3 and possibly Room 5 were made

again of horizontal courses but stabilized by vertical members 1.5 to 2 meters high placed on both sides of the wall. Room walls made of blocks placed edge to edge to form a stone palisade were also reported. Two of the rooms at Snake Blakeslee contained Sante Fe Black-on-White sherds, suggesting a post-1275 AD date (Ireland 1968:89-90).

At the Wallace Site seven structures were reported (Ireland 1968). As interpreted by Ireland, these structures were earth and pole 'earth lodges'. The shapes of these structures were difficult to detect and reconstruct, but they appeared to be subrectangular with possibly east-facing entrances. As evidenced by the irregular post hole patterns, some of the posts were probably roof supports. Feature maps reveal a large number of sandstone rocks around the wall perimeter, but Ireland prefers, usually, not to view these rocks as part of masonry wall construction but rather as part of earth and rubble packed in around the vertical post wall supports. Frequently hearths were located in the structures and pits were found along structure walls and exterior to the structure. The dimensions of the structures range, generally, between 3 and 5 meters (Ireland 1968:35-39). A Sante Fe Black-on-White sherd from Structure 2 dates the use of this structure as post 1275 AD also. Two semi-subterranean 'earth lodges' otherwise similar to structures at the Wallace Site were uncovered at S:9:83. The roof supports for these houses were fitted into natural limestone cracks rather than man-made post holes (Ireland 1968:46-47).

At the Avery Ranch Site three rectangular to sub-rectangular structures with stone wall bases were present and two nearly square structures were excavated. No posts were used in the construction of these two structures although several extramural post holes were discovered. Structure 1 looked incomplete and too large (> 5 meters) to have been roofed. Structure 2 was contiguous to Structure 1 on the northwest and about 2.2 meters across. A

center pit and a pit under the wall were present in Structure 1 (Ireland 1968:53-57; Watts 1971:12-19; Watts 1975).

Evidence points to the probability that these villages were engaged in horticulture. Carbonized corn cob fragments were found at the Snake Blakeslee Site and at the Wallace Site. Other than the numerous chipped stone and ground stone tools, evidence for the undoubted hunting and collecting that went on from these sites is unreported by Ireland (1968:33-39, 42-44, 48-51, 59-67, 78-88), but Watts reported that 1,298 identifiable animal bones were recovered from the Avery Ranch Site. Ninety-five percent of these were bison bones. The killing & butchering of these animals appeared to have taken place away from the site because 71% of the bison remains were from the limbs (Watts 1975:20).

Except for Snake Blakeslee these villages described by Ireland seem to be loosely clustered (assuming contemporaneity which has by no means been established). The 13 houses at Snake Blakeslee were tightly compacted on a promontory overlooking the Apishapa drainage.

A large number of other ceramic sites are known for Southeast Colorado from several cultural resources management surveys (Eddy et al. 1982; Withers and Huffman 1965; Anderson and Hall n.d.; Gooding 1977; Grant 1980; Wood et al. 1981), and many of these undoubtedly were occupied during the Middle Ceramic. Renaud, of course, originally recorded many of the above sites and several of them have been recently reconfirmed by Downing (1981:Table 1).

A number of rock art sites are known for Southeast Colorado (Renaud 1931:65-86); most of these were probably produced during Ceramic Periods (Campbell 1969). Pictographs have been reported in Baca (Kingsbury and Nowak 1980:34-36), Pueblo (Ireland 1968:40-44), and Las Animas (Campbell 1969:4) counties. Petroglyphs have been recorded and reported in Baca County (Kingsbury and Nowak 1980:34-36), Las Animas County (Campbell 1969:4; Blair 1980), Bent County (Eddy et al. 1982:151-161), and Prowers County (Buckles 1980).

7.2.1.2 Park Plateau

In a situation unparalleled (fortunately) on the eastern Plains of Colorado, not one of the twelve radiocarbon dates nor the seven archaeomagnetic dates available from the two independently dated sites on the Park Plateau is acceptable. Wood and Bair (1980:225) threw out all twelve radiocarbon dates from sites 5LA1211 (Leone Bluff Site) and 5LA1416 (Sopris Site) because the assays disagreed with Southwest dated ceramics, and the seven archaeomagnetic dates, as reported, are suspect (even though they overlap the ceramic dates) largely because the Southwest Archaeomagnetic Master Curve has been recently recalibrated and changed between AD 1000 and 1300 (Sternberg 1982; McGuire and Sternberg 1982). In general, new interpretations of the archaeomagnetic dates would be 'somewhat' earlier (10-50 years) although reinterpretations of the samples are impossible because actual pole positions were not reported. The locations were, apparently, tightly grouped with only a 65 year spread between the earliest and the latest date.

Southwest trade ceramics are useful in distinguishing pre and post AD 1250 sites, but despite repeated attempts, ceramic dates do not by themselves date sites in the Park Plateau any more accurately than this (i.e. AD 1000 - 1250 and AD 1250 - 1550) with any confidence. Southwest Ceramics found in the Park Plateau are dated thus:

Type	Date Range	Authority
Taos Gray, Taos Incised	1000-1300	Peckham and Reed 1963
	1150-1250	Dick 1963
	1000-1200	Wetherington 1968
Taos Black-on-White	1150-1250	Breternitz 1966
	1100-1400	Wetherington 1968
	1050-1225	Peckham in Wood and Bair 1980:204
Red Mesa Black-on-White	859-1125	Breternitz 1966
Aqua Frio Red-on-Glaze or Rio Grande Glaze I Red	1300-1450	Breternitz 1966
Casitas Red-on-Brown	1672-1890	Dick 1968
Sante Fe Black-on-White	post 1200	Breternitz 1966
Gallup Black-on-White	1000-1200	Breternitz 1966

The Southwest sherds occurred in extremely low frequencies (< 10% of the sherd samples). Neither at the Sopris Site (Area C) nor at the Leone Bluff Site (TC:C9:8 Area) do stratigraphic excavations indicate any major shifts in Southwest trade ceramic frequencies between AD 1000 and 1250 (see Tables 4 and 5). Therefore, dating within the early part of the Middle Ceramic Period on the Park Plateau seems less secure than it has often been assumed to be.

In 1954, Dr. Herbert Dick initiated archaeological research at Site 5LA1416, the Sopris Site (Ireland and Wood 1973:1). After at least three other archaeologists conducted several seasons of work at the site, a picture of this remarkable site has emerged (Ireland and Wood 1973; Wood and Bair 1980). The site is on the Purgatoire River about five miles west of Trinidad. It contained evidence of jacal, adobe, pithouse and masonry construction, all of which was built apparently between AD 1000 and 1225.

Besides the variety of structural types evident at the Sopris Site, the site is important because in Area C masonry construction was found superimposed over adobe construction giving some indications of a developmental sequence within this variety. In Level I of Area C an apparent subrectangular room (Room I) with at least four semi-circular rooms added around the outside had been built. An occasional post hole, burned beams and chunks of daub suggested the roof was of pole and thatch construction. The walls were constructed of sandstone slabs cemented with mortar. Approximately 79.9% of the sherds in Level I were Sopris Plain and 12.5% were Taos Incised. It has been given a date of AD 1150 - 1225.

This masonry structure was found stratigraphically above another structure that had adobe walls (Level II). Only one room was defined (circa 6.3 meters X 3.15 meters). The floor of the room contained a mud-collared fire hearth, an ash pit, a bell-shaped storage pit and a human burial. Level II contained two Taos Black-on-White sherds (6.7%) and one Gallup Black-on-White (3.3%), 13.3%

Table 4. Ceramics from stratigraphic excavations at the Sopris Site (Area C).

Level	Taos B-on-W		Gallup B-on-W		Taos Incised/Sopris Plain		Miscellaneous	
	N	%	N	%	N	%	N	%
I	-	-	-	-	27	84.4	5	15.6
II	2	6.7	1	3.3	19	63.3	8	26.7
III	-	-	-	-	13	92.7	1	7
IV	-	-	-	-	18	94.7	1	5.2

Source: Ireland and Wood 1973:169

Table 5. Ceramics from stratigraphic excavations at the Leone Bluff Site (TC:C9:8 Area).

Level	Cordmarked		Taos Incised/Taos Gray Sopris Plain		Micaceous		Spanish		Miscellaneous	
	N	%	N	%	N	%	N	%	N	%
1	5	9.2	36	66.7	2	3.7	3	5.6	8	14.8
2	2	7.1	22	78.6	3	10.7	-	-	1	3.5
3	-	-	4	100	-	-	-	-	-	-
4	1	8	11	92	-	-	-	-	-	-
5	1	50	1	50	-	-	-	-	-	-
7	-	-	2	100	-	-	-	-	-	-

Source: Wood and Bair (1980:200)

Taos Incised and 50% Sopris Plain. It was estimated that the structure dated between AD 1100 and 1150 (Wood and Bair 1980:70).

Beneath Level II was another occupation surface (Level III) with several storage pits.

Area A at the Sopris Site contained four contiguous rooms of horizontally laid sandstone slabs mortared together with mud. These mud and slab walls probably stood 5-6 feet high. A centrally located mud-collared hearth was located in Room 1, two pits and a hearth were in Room 3. A subfloor human burial was located in Room 2 and a post occupation burial in Room 3. In the floor of Room 1 was a single post hole. Ceramics from Room 1 included Sopris Plain (70%), Taos Incised (22%), Taos Black-on-White (2%) and one possible Red Mesa Black-on-White sherd, all of which clearly dated this component of the site between AD 1000 and 1300.

North of the Area A structure (Feature 17) the remnants of a jacal structure were revealed. The structure had been set over a saucer-shaped depression with a diameter circa seven meters. At least six posts were found around the periphery and a post and post hole in the interior suggested roof supports. The structure contained a mud-collared hearth, fire pit and subfloor pits. No entryway could be located. Forty-one sherds were associated with the structure. These included Sopris Plain/Taos Incised/Taos Gray (83%), Taos Black-on-White (5%), and Gallup Black-On-White (2%). The structure's date clearly falls between AD 1000 and 1250, but a more narrow date range has been suggested. Based on the relatively low percentage (i.e. 83%) of Sopris Plain and the presence (5%) of Taos Black-on-White (and using Breternitz as the authority), Wood and Bair (1980:39) suggested that the likely dates fall between AD 1150 and 1225.

Directly adjacent to Feature 17 was found a large pit (Feature 6), circa 3 X 5 meters and 1.2 meters deep. Three shallow depressions were the only indications of possible roof support. The pit was surrounded by a bench 18 cm X 18 cm. The floor and a central depression were plastered. The pit contained four burials (one adult female, one adult male, and two subadults) in recessed burial pits. The strange pit looked as if it had been back filled. Ceramics associated with Feature 6, Sopris Plain/Taos Gray/Taos Gray Incised (92%), Taos Black-on-White (7%) and one Red Mesa Black-on-White (<1%), suggested to Wood and Bair (1980:45) a date of AD 1150-1225.

In area B of the Sopris Site a pithouse with an elevated ramp doorway (Feature 28) was excavated. The pit was roughly 2.7 meters in diameter and 5 meters deep. Three post holes were found along one edge and a well prepared collared hearth had been constructed in the center. A storage bin with a raised collar had been excavated into the east wall. All sherds (9) were Taos Gray/Sopris Plain. Apparently based almost exclusively on architectural style comparison (re: with the aceramic Running Pit House Site) Feature 28 was assigned an 'early' date of AD 1000 - 1100 (Wood and Bair 1980:48).

Also in Area B, seven adobe walled rooms were cleared out. The central room had a cist, mud collared hearth and an upright slab lining in the doorway. The walls were adobe with a rock or slab base. Surrounding this room were five small rooms, one with a cist and another large room with a cist and mud-collared hearth.

Other cultural material at the Sopris site was fairly uniform across the entire site. These materials included an almost equal number of side and corner notched projectile points, unnotched points, bone awls, beads, cores, choppers, drills, scrapers, knives, manos, metates, pipes, and shell ornaments. Faunal remains were represented mostly by deer and small animals (rabbits,

woodrat, prairie dog, and gopher) and birds. Carbonized corn and sunflower seeds were recovered (Ireland and Wood 1973).

At the Leone Bluff Site (5LA1211) any hope of a nice neat developmental scheme for the architecture of the Park Plateau was dashed. In the TC:C9:8 Area an adobe structure was found to underlay jacal construction thus suggesting the possibility of the contemporaneous usage of jacal and masonry construction. Here, at the Level 1 portion of the site, a circular jacal structure was delineated. It was about five meters in diameter with a saucer shaped floor and around the periphery were nine charred posts. Taos Gray Incised and Sopris Plain Ceramics were found in this and the underlying level. In Level 2, an adobe structure was incompletely defined, but it would have measured circa 5.7 by 6 meters. Thirteen charred posts within the structure indicated interior, jacal-type partitions (Wood and Bair 1980). Level 1 was gues dated slightly later than AD 1150 and Level 2 at AD 1100 - 1150.

Two pithouses, jacal structures, an adobe and jacal structure, and multi-roomed (8) adobe-wainscott complex were also uncovered from the site, all of which dated, generally, between AD 1100 - 1300 (Wood and Bair 1980; Ireland 1971). Like the pit house at the Sopris Site (Feature 28), few sherds were found in the two pit houses (2 and 31). Also, in another portion of the site (area D), an upper level contained Aqua Fria Glaze-on-Red (AD 1300-1450) and Cimarron Micaceous sherds (AD 1750-1900).

The material culture from Leone Bluff was very similar as a whole to that recovered from the Sopris Site (See Wood and Bair 1980:101-209). In addition, the human osteological remains from the Sopris Site and from the Leone Bluff Site have been studied as a population for comparative purposes (Turner II 1980; Miller 1980; Wood 1980). In terms of dentition and ABO blood groups the thirteen skeletons from the two sites could not be separated statistically from

Navajo or Canadian Athabascans, but could be distinguished from historic and prehistoric Southwest populations.

In summary, Sopris and Leone Bluff provide evidence of:

- 1) a sedentary horticultural (no evidence of beans and squash) population living in the area between AD 1000 and 1300,
- 2) possible non-Southwest physical types,
- 3) villages with considerable architectural variation,
- 4) adobe construction preceding masonry construction,
- 5) and, based on low sherd frequencies, the possibility that pit houses were an early architectural style.

At least eight other sites with architecture have been excavated, at least partially reported, or discussed in the literature of the Park Plateau. These provide evidence which essentially reproduces that established at the "base" sites, Sopris and Leone Bluff. These are:

5LA1413	Ireland 1971
5LA1415	Dick 1963
5LA1417	Ireland 1973
5LA1418	Ireland 1973
5LA1419	Ireland 1974a
5LA1420	Baker 1967
5LA1424	Ireland 1973, 1974b
5LA1425	Ireland 1974a

7.2.2 Process

Three areas displaying relatively distinct architecture can be isolated for Southeast Colorado. One is centered on the Chaquaqua Plateau and Cimarron drainages and has slab or stone masonry structures tending to change from circular stone enclosures to slab enclosures during the 1000 to 1350 RYAD period. A second area along the Apishapa River has pillar construction, and a third in the Upper Arkansas area relied more heavily on posts and rubble construction. Although the three areas can be roughly isolated in the archaeo-

logical record, notable exceptions exist (e.g. Anderson (1976) found 'Woodland' stone structures in the Apishapa area and Lutz and Hunt (1979:132-133) found Panhandle-like stone structures in the Park Plateau) and the sociological significance of the differences remains unclear. The differences may reflect nothing more than availability of materials. Accordingly, archaeologists in the area have tended to deemphasize these differences in favor of lumping the area south (vast areas north of the Arkansas remain unreported in the literature) of Southeast Colorado into a single archaeological unit called the Apishapa Focus. Other than architectural material, culture assemblages over the entire area do exhibit considerable uniformity.

Arnold Withers (1954:2) in his cursory synthesis of eastern Colorado prehistoric cultural developments was the first to propose the Apishapa Focus concept. Specifically mentioned as characteristic of this material were the stone structure sites described by Renaud along the Apishapa and Cucharas Rivers. In addition cordmarked pottery with outcurving rims and side-notched triangular points were characteristic of the Focus. In accordance with current thinking on the Plains at that time, the concept of the Apishapa Focus simply implied temporal and morphological similarity among a group of artifacts and components (usually in an area). Since 1954, the concept of an Apishapa Focus or Phase has been consistently used and extended to include nearly all the material mentioned for the Middle Ceramic Period in Southeast Colorado (Ireland 1968; Wood-Simpson 1976; Hoyt 1979; Eddy et al. 1982; Campbell 1969; Nowak and Kingsbury 1980).

The notable exception to this generalization is Watts' (1975) affiliation of the Avery Ranch Site to the Franktown Focus. Although originally defined for the South Platte area (see Section 6.2.2), the Franktown Focus has been used to define material from the Arkansas Valley. As conceived by Withers (1954), the Franktown Focus had one major distinguishing trait, cordmarked

pottery with incurving rims, which distinguished it from other Middle Ceramic units (i.e. Upper Republican or Buick). The idea was that this Focus was early in the Middle Ceramic and transitional between Woodland and Upper Republican complexes. For unspecified reasons Watts felt the Avery Ranch Site was an expression of the Franktown Focus transition (Watts 1975:25-26). Ireland, on the other hand, makes no discrimination among the sites he describes, and thus includes the Avery Ranch Site (he calls it the Wand Site) in the Apishapa Focus. In either case the one collared rim jar described by Watts (1975:22-23) is the strongest evidence available for contact between groups normally visiting the South Platte during the Middle Ceramic Period (i.e. the Upper Republican hunter-gatherers of Wood and Wood; see Section 6.2.3) and the contemporary and more sedentary people (i.e. the Apishapa Focus) living along the Arkansas.

Since 1954, the concept of the Apishapa Focus has received greatest attention by Campbell (1969:389-402; 1976). Campbell elaborates but does not fundamentally disagree with the original formulation. Campbell would restrict the Focus to 1000 - 1350 RYAD time period. Washita and Reed arrow points were the most common projectile point and shallow cordmarked pottery (Borger Type) was the typical ceramic type. A wide variety of chipped stone and ground stone tools as well as perishable material are known for the Focus. Five varieties of maize and beans suggest horticulture was important to the population and may have been important in the spread of Southwest maize to the Plains (Galinat and Campbell 1967). All sites of the Focus were found in the proximity of arable land. Gathering and a return to some large game hunting seems to have been important.

Houses of the Apishapa Focus when compared to the earlier Graneros Focus/Phase were usually made of stones/slabs set in earth rather than dry laid

masonry. Most rooms were still single units and circular. Entryways were not found at the surface and most firepits were found outside the structure.

Sites more often (than in earlier times) had defensive works and/or were located in naturally defensible positions. The number of rooms at fortified sites increased (maximum of 37) and were arranged in contiguous rooms or, more commonly, were randomly placed. Even rock shelters occupied during this time had barrier walls. The overall impression from the size, density and number of sites is of a remarkable population increase.

Campbell felt that sites of the Apishapa Focus were large enough to contain lineages and bands on a rather sedentary basis. Campbell credits this rise in social complexity directly to the increased reliability and productivity of maize horticulture. Some of the small stone structures could have been granaries. Contact of some sort with the southern Plains and the Southwest was likely based on the presence of Alibates Flint, obsidian, and Southwest ceramics.

After 1300 RYAD and until 1550 RYAD evidence for the occupation of the Chaquaqua Plateau is scarce. Campbell called the period Terminal Prehistoric (Campbell 1969:402-408), and he felt the Chaquaqua Plateau was most likely used as a hunting and gathering area for other (possibly eastern) groups. Nowak and Kingsbury (1981:10-11) attribute the post 1350 RYAD tipi ring sites of Carrizo Ranches to Plains Apache (See Section 8.2 for a fuller discussion of the Plains Apaches).

After an extensive review and comparison of archaeological material from areas surrounding the Chaquaqua Plateau, Campbell (1969:500-510) suggested that after the introduction of maize during the Early Ceramic Period into the Graneros Focus/Phase the later Apishapa Focus people expanded southward and eastward to give rise to the Optima and Antelope Creek Foci of the Panhandle Aspect. This developmental model fits nicely with Galinat and Campbell's view

of the importance of the Colorado Arkansas area in stimulating the spread of Plains maize agriculture. However, Lintz (1979:176) pointed out that neither radiocarbon dates nor architectural styles support an Apishapa --> Antelope Creek developmental sequence within the Panhandle Aspect. Lintz (1978:50; 1979:76) would prefer to see the Antelope Creek Focus as a development out of a local Panhandle Woodland population though, surely, interacting with the contemporary Apishapa Focus.

In the absence of any clearly demonstrated phylogenetic relationship among the prehistoric groups of Southeast Colorado, the period in Southeast Colorado can be viewed as one where groups of horticulturalists in the area became more sedentary, experimented with various forms of permanent architecture, lived in the area for several hundred years, but abandoned it with the onset of Neo-Boreal climatic conditions (Baerreis and Bryson 1966). Migration from the Southwest (Wendorf 1960) or from the East (Bell 1961) into the area remains a real but currently undemonstrated possibility. The question of what happened to the peoples of the Apishapa Focus after 1450 RYAD remains an important research problem. In the East it has been suggested that the Apishapa peoples may have contributed to the Great Bend Aspect (Campbell 1976; Wedel 1982).

Campbell's attempt to date rock art on the Chaquaqua Plateau suggested that most of the art appeared in the Ceramic Periods. He found no rock art associated with the early prehistoric occupations. Archaic period sites do occur near rock art but only when later material (Graneros, Apishapa, and Dismal River) was also present. Therefore, he considered these later cultural units as the most likely producers of this art. To quote from Campbell's (1969:9) conclusions:

Rock art of the pre-Graneros phases remains undefined, and it may be non-existent in this region. In the Graneros Focus or Phase, A.D. 500 to 1000, rock art containing small figures of fully pecked, multi-horned quadrupeds and small-lined, curvilinear geometric designs appears. In the

succeeding Apishapa Focus or Phase, A.D. 1000 to 1300, few changes occur, but fully pecked, spread human figures appear, along with fully pecked curvilinear figures. No elements or figures of the rock art can be assigned to the poorly represented A.D. 1300 to 1750 period, but, with the dawn of historic time, the larger, more realistic. outline figures appear.

The pictographs (now destroyed) at 5PE81 were probably associated with the Wallace Village which was directly above them (Ireland 1968:42-48).

In the early 1960s, Dick (1963, 1964) began to use the terms Upper Purgatoire Complex and Sopris Phase to refer to the architectural sites of the Park Plateau. Based on ceramics, Dick proposed the Sopris Phase had a short 50 year time span between AD 1225 and 1275.

After working at several sites (5LA1211 and 5LA1413) Baker (1964:11-14) suggested the Upper Purgatoire Complex contained two phases. According to Baker's scheme, 5LA1413 with its nine contiguous masonry rooms and associated Upper Republican (?) ceramics should date between AD 1000 - 1150 and represent a St. Thomas Phase. 5LA1211 with its adobe architecture spanned an AD 1150 - 1250 time period in what he continued to call a Sopris Phase. Ireland (1971) has shown that, because the purported St. Thomas Phase sites have a predominance of Taos Incised ceramics which were produced after AD 1150, "no known archaeological site fits the defined boundaries of the St Thomas Phase." He suggested lumping the 5LA1211 and 5LA1413 sites back into a Sopris Phase but extended the dates of the Phase back to AD 1150 because of the presence of Taos Black-on-White sherds. After another round of fieldwork (often at the same sites) Bair (1977) again suggested that early and late phases of the Sopris phase could be recognized largely by the change from adobe and open jacal-type construction to masonry construction such as that demonstrated by superposition at the Sopris Site (Area C). Also, he felt the Red Mesa Black-on-White was relatively more common early (AD 1075-1150) and that Taos Black-on-White continued to be made after Red Mesa Black-on-White dropped out (AD 1150-1225)(Bair 1977:11-12).

Later Wood and Bair (1980:228) suggested that pithouse construction distinguishes an Initial Sopris Phase. We have then:

Late Sopris	AD 1150 - 1225
Early Sopris	AD 1100 - 1150
Initial Sopris	AD 1000 - 1100

Jacal or wattle and daub seems to be present through the phase. Although the above [pit house --> adobe --> masonry] developmental sequence makes sense in terms of what is known of architectural developments in the Southwest and in the Panhandle area where adobe construction underlies masonry construction and in terms of the apparently earlier aceramic pit house (Running Pit House Site) architecture on the Park Plateau, the sequence has not been independently dated on the Park Plateau. If the archaeomagnetic dates are ignored for the present as is suggested, then dating simply remains very uncertain. Thus, not only are these recent phase proposals only tentatively dated, but Wood and Bair(1980:228-231) show that extremely short (in archaeological terms) periods of time must be involved and that no significant changes in material culture (other than the proposed architectural changes), subsistence, demography, etc. occur (see also Lutz and Hunt 1981:18-22). In the final analysis, the Sopris Phase concept seems to be useful while some question remains as to the reality and utility of further divisions.

What does the Sopris Phase look like? Following Ireland (1971), Bair (1977), and Lutz and Hunt (1981), its salient features can be described as:

- 1) Dating between AD 1000 and 1225.
- 2) Substantial architecture (jacal, pithouses, masonry, adobe). Possibly pithouses early and masonry construction later; however, architectural types apparently coexisted.
- 3) Sopris/Taos Plain and Incised were the common ceramics.

4) Subsistence was primarily horticulture, gathering and deer-rabbit hunting.

McCabe (1973) postulated that the settlement pattern of the Sopris Phase sites was a function of a moiety division north and south of the Purgatoire, but the idea was tested on only five sites. Wood and Bair (1980:237) argue convincingly that the Sopris Phase should not be viewed as a northern extension of the Southwest. This argument along with the data from human osteology (Turner II 1980, Miller 1980, Wood 1980) suggests that the origins of the Sopris Phase should be viewed as an indigenous group with Plains rather than Southwest connections.

Immediately after AD 1225 the Sopris Phase/Upper Purgatoire Complex archaeological material on the Park Plateau is extremely scarce. Bair (1977) called the AD 1225-1450 period the Panhandle Aspect of the Nomada Complex, but he doubts that Panhandle Aspect (as originally defined) people actually lived on the Park Plateau. Lack of typical Panhandle Aspect characteristics like evidence for bison hunting and use of Alibates Flint, diamond beveled knives and Borger Cordmarked pottery during this time suggest that the Park Plateau was extremely peripheral to the Panhandle Aspect of Texas, Oklahoma and southeastern Colorado.

7.3 Research Problems

The Ceramic Stage in Southeast Colorado illustrates one of the unequivocally true statements concerning archaeological resource evaluation. As more is known about the archaeology of an area, archeologists and the interested public find more and more questions to ask of the resource; so that, the remaining archaeological resources in a heavily researched area become more and more important. Thus, when Colorado Plains Archaeologists were asked to mention important research questions concerning the Ceramic Stage, they listed

more questions from the Ceramic Stage than any other even though many more Ceramic Stage sites have been excavated and the period is shorter than any other prehistoric period. These archaeologists mentioned (Butler 1980):

(with reference to the Early Ceramic)

- 1) examination of taxa (it might be emphasized here the importance of investigating the taxa of the Park Plateau area).
- 2) investigation of horticulture.
- 3) examination of temporal and cultural variation in ceramics.
- 4) documentation of demographic trends and variation.
- 5) documentation of cultural boundaries.
- 6) examination of external relationships.

(with reference to the Middle Ceramic)

- 1) establishing the taxa and locations of prehistoric cultural groups.
- 2) establishing the relationship between archaeological and presumed cultural units.
- 3) study of settlement/subsistence patterns.

Additional work and careful study of available data will undoubtedly reveal many other significant research problems. A few of these are suggested by the data reviewed above (Sections 6.1 - 6.2).

Some of the more obvious research problems suggested by this work are:

- 1) independent dating (particularly of the Park Plateau) and, generally, for finer chronological control.
- 2) influences from the Southwest, Panhandle Aspect, and Northwest Colorado (Parker Phase).
- 3) subsistence/settlement differences between the Early and Middle Ceramic and between the Arkansas and the Park Plateau.
- 4) relationship between the Ceramic Stage and the Archaic Stage on the one hand and the Protohistoric on the other.

- 5) variation in the form of structures, possible functional or regional/cultural significance of the variation.
- 6) pottery typology particularly in the Early Ceramic. Questions regarding differences between the ceramics of the Park Plateau and the Arkansas. Was the Park Plateau aceramic during the Early Ceramic Period?
- 7) paleoenvironment and variation in climatic conditons.
- 8) was the Park Plateau really abandoned after 1450 RYAD, and if so, why?
- 9) Plains area origins of the Sopris Phase people.
- 10) why were defensive sites so common in the Arkansas drainage area?
- 11) what sort of resources are in the area north of the Arkansas River?
- 12) formation processes of Ceramic sites, the rate of site destruction, and nature of site transformation. These last questions seem particularly important from the management point of view.

7.4 Potentially Important Resources

All Southeast Colorado Ceramic sites are very important resources. Almost all sites would potentially yield information useful in the study of some or all of the few research problems mentioned above. All sites would be of interest in settlement/distributional studies, a large single component site would be important in subsistence/lifeways reconstruction/integrative studies, and stratified sites would be useful in the study of cultural dynamics.

6.5 Needed Research

Any research not duplicating previous research would be a welcome addition to the prehistoric archaeology of eastern Colorado. To answer only the research questions mentioned above (Section 7.3), much research is needed. Specifically the Southeast Colorado Ceramic needs:

- 1) chronometric dates to establish a finer chronology and to answer questions concerning all the research questions.
- 2) Surveys to answer questions concerning cultural/ceramic/projectile

point taxonomy, extent of horticulture, demographic trends and variation, cultural boundaries, settlement/subsistence patterns, outside influences (particularly from the Panhandle Aspect, the Southwest, and Northwest Colorado-Parker Phase), nature of resources north of the Arkansas, differences in structure types, and abandonment of the Park Plateau.

3) stratigraphic excavations to answer questions about cultural/ceramic/projectile point taxonomy, demographic trends and variation, settlement/subsistence changes, the relationship between the Archaic, Ceramic, and Protohistoric Stages, existence of an aceramic Park Plateau during the Early Ceramic, ceramic changes on the Park Plateau, structural differences, and possible abandonment.

4) single component excavation to answer questions about cultural, ceramic, and projectile point taxonomy, demographic variation, cultural boundaries, settlement/subsistence patterns, outside influences, possible aceramic Park Plateau, structural differences, possible abandonment, and origins of the Sopris people.

5) environmental reconstruction to answer questions concerning climatic conditions, the role of horticulture, and possible abandonment of the Park Plateau.

6) taxonomic studies to answer questions about cultural/ceramic/projectile point taxonomy, cultural boundaries, existence of phases within the Middle Ceramic on the Park Plateau, and outside influences.

7) studies of the archaeological context to better understand the formation and transformation of Northeast Colorado Ceramic sites and to answer all other research questions.

8. Protohistoric/Historic Stage (1550 - 1800 RYAD)

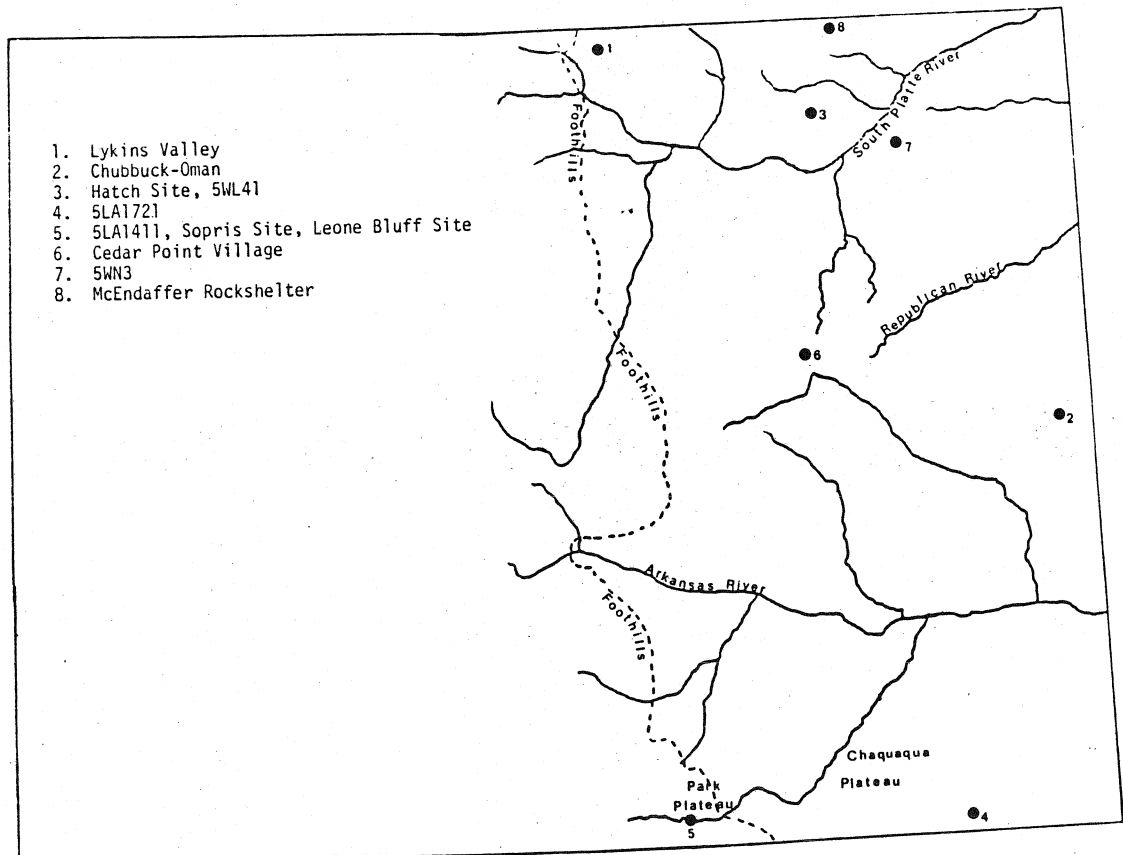
8.1 Material Culture and Lifeways Description

Only one reported component and one reported burial have produced acceptable radiocarbon dates in the prehistoric era after 1550 RYAD, and in both these instances associated cultural material is nearly absent. At the Lykins Valley Site along Box Elder Creek in Northeast Colorado a small, thin lens of ash over charcoal in Level 3 dated at 1530 RYAD (See Figure 15). Cultural material associated with the date were flakes and bone fragments from bison, deer and pronghorn (Ohr, Kvamme and Morris 1979:48-51). In Cheyenne County, Southeast Colorado bone from a human burial produced dates of 1530 and 1550 RYAD (Tipton 1967). The flexed burial was associated with Olivella shell beads and Unio shell pendants had been placed in the individual's mouth. Although the burial is reminiscent of Early Ceramic burials of the Colorado Plains Woodland Mortuary Complex (see Section 6.1.2; Scott and Berkedal 1972; Scott 1979), the dating suggests burial in the period shortly after Coronado and his men visited Pecos, New Mexico. Clearly, the post 1550 RYAD prehistoric period is poorly documented in eastern Colorado.

Modern dates and historic trade goods attest to historic Indian occupation of eastern Colorado. At the Hatch Site, Weld County, Northeast Colorado, charcoal from a hearth in a circular arrangement of angular sandstone rocks (circa four meters in diameter) produced an historic date of less than 160 years with 95% confidence (Wood 1969:396). No diagnostic tools were recovered; just flakes, bone fragments and a metate fragment. The vast majority of the fragments were from bison and pronghorn. This component which contained possibly 12 other tipi rings overlay a cordmarked ceramic component but was, apparently, itself aceramic (Wood 1967:416-417).

At the Lykins Valley Site, hearths in Level 1 and 2 dated the best documented historic occupation of eastern Colorado at 1700 and 1740 RYAD (Ohr,

Figure 15. General location of some of the Protohistoric/Historic sites mentioned in text. For accurate site location consult references cited in text.



Kvamme and Morris 1979:31-48). Cultural material associated with the amorphous hearth in aceramic Level 1 were tri-notched triangular points, a scraper, flakes, grinding slab fragments, glass beads, clay pipes, metal tinklers, and metal pieces (possibly of a kettle). One horse bone fragment was recovered. Faunal material consisted of bison bone fragments and deer fragments. Level 2 contained much the same as Level 1 except for differences in proportions - fewer trade beads, more bison and pronghorn remains.

In Southeast Colorado plain surfaced, dark pottery with heavy micaceous tempering is believed to indicate protohistoric occupation of the area. Micaceous pottery is believed to be a post AD 1550 type because a thin form (Ocate Micaceous) has been cross dated with Southwest ceramics between AD 1550 - 1750, and a thick form (Cimarron Micaceous) has been cross dated between AD 1750 and 1900 (Gunnerson 1969).

On the Chaquaqua Plateau 10 sites with micaceous pottery tended to be located near arable land in canyon areas (Campbell 1969:409). No habitation structures have been detected, however. Associated with the pottery was an elongated, unnotched triangular (Fresno) point style with side notched varieties also present. Chipped stone tools and the remains of small game animals indicated the importance of small game hunting (Campbell 1969:410).

On the Cimarron drainage, micaceous pottery has been found at site 5LA1721 along with sherds of San Lazaro Glaze-Polychrome (AD 1400-1700, P IV Period, Kidder and Shepard 1936:161-213). In and around the three excavated rings (total number of rings equaled 44) were found small triangular side notched points, manos and metates, and chipped stone tools. The rings seemed to average about 4 meters in diameter. Although another similar stone ring site (5LA1052) dated at 1350 RYAD (see Section 7.2.1.1), Kingsbury and Nowak (1980:66) seemed to attribute many of the 12 stone ring sites located in their survey to the post 1550 RYAD period.

Gunnerson (1960:235) reported two other occurrences of mica tempered pottery in Southeast Colorado attributable to the Protohistoric Period, but at six other sites he noted plain surfaced pottery (vary rarely simple stamped) with sand or grit tempering. This pottery, called Lovitt Plain or Lovitt Stamped, has been attributed to this period based on cross dating of the pottery style to sites in Nebraska (see below)(Gunnerson 1960:233-235). Nothing else was mentioned about these Colorado sites except that they were, apparently, originally recorded by Renaud.

Two stone rings with micaceous pottery were also reported on the Park Plateau at 5LA1411 (Wood and Ireland 1974). The rings were roughly six meters in diameter. One had a central firepit, and the other had seven to eight short rock alignments radial to the center and no hearth. Wood and Ireland (1974:113) considered the micaceous sherds to be of the Ocate variety and, thus, possibly dating between AD 1550 and 1750. Micaceous sherds were also found on the surface and upper levels of the Sopris Site and Leone Bluff Site (Wood and Bair 1980:208) along with Agua Fria Red-on-Glaze and Casitas Red-on-Brown which, again, cross dated these last occupations into the Protohistoric/Historic Period. Associated with these sherds in Level 1 at the Sopris Site was an occupation surface with a plastered hearth, plastered ash pit and possible post holes. A brush or jacal type shelter was indicated, and it was directly over an earlier adobe structure (Ireland and Wood 1973:69-70). Exact artifact provenience is no longer available for this portion of the site.

Plain surfaced, sand/grit tempered pottery has been used to tentatively assign the Cedar Point Village near Limon, Colorado, to the Protohistoric Period. Eight sherds of this pottery type were found in House 4. Only a meager description of the house is available (Wood 1971:57), but it appears to have been a rectangular pithouse (4.5 X 5 meters) with post supports and possible partial stone wall construction. The pithouse had a central firepit

and a great deal of broken bison bone. Cedar Point Village contained six other pithouses - mostly circular in outline. In one of these, Upper Republican-like sherds were found. It is unfortunate that better information on the site is not available since temporal placement is currently tenuous (Wood 1971:81) and rests ultimately on cross dating the ceramics with similar ceramics (Lovitt Plain/Scott Plain and Lovitt Simple Stamped) associated with tree-ring dated sites in Nebraska between AD 1675-1725 (Gunnerson 1968).

Wood (1967:647-648, 510-512) used ceramic similarities to place two components from his survey in Northeast Colorado in the Protohistoric Period. Some of the plain sherds from the highly disturbed McEndaffer Rockshelter and from site 5WL3 suggested occupation by Protohistoric Indians. No other definitive associations could be made due to the pothunting at the site (Wood 1967:324-325). The associations at the single component 5WN3 site suggested that the protohistoric assemblage included small triangular points, but nothing else was recovered from the small site (Wood 1967:512).

Gunnerson documented the presence of Lovitt Plain and Lovitt Simple Stamped (i.e. sand/grit tempered sherds) as well as mica tempered sherds (later, Gunnerson (1968) called this type of pottery either Ocate or Cimarron Micaceous) at a large number (28) of sites in Northeast Colorado. Interestingly, at some of the sites, grit/sand temper occurs on some sherds and mica temper on other sherds. At other sites, mica tempering appeared to be mixed with the sand/grit tempering (Gunnerson 1968:232-233).

Based almost exclusively on pottery similarities other sites found during cultural resources surveys in eastern Colorado have been or could possibly be assigned to the Protohistoric/Historic Period (Hand, Latuda, Bair 1977; Grant 1978, 1980; Halasi and Huse 1978; Brechtel 1979).

As mentioned earlier (see Section 6.2.1.1) fingernail impressed pottery from site 5WL41 (Wood 1967:447-455) was used to date the main component of the site to the Protohistoric Period. Similar ceramics have been found on the Uncompahgre Plateau and dated between 1500 and 1800 RYAD (Buckles 1971:1243). Level 1 at the site contained undiagnostic flakes and a roasting pit.

8.2 Process

Virtually all the Protohistoric sites in eastern Colorado have been associated with the Dismal River Aspect, a designation implying Protohistoric Apache affiliation (Morris 1982:223). In fact, Bair (1977) defined a Carlana Phase to distinguish an Apache occupation of site 5LA1411 on the Park Plateau. The Apache occupation of eastern Colorado is thought to have begun with the Athabascan expansion southward sometime prior to 1550 RYAD. By the middle part of the 16th Century what are believed to be Apache bands mentioned by Coronado settled in Southeast Colorado. At that time the bands were living in small horticultural hamlets. With the adoption of the horse sometime in the late 17th Century many of the Plains Apaches took up horse nomadism. Thus, Apache history went through three phases:

- post 1725 - horse nomadism
- 1550-1725 - Dismal River Aspect
- pre 1550 - Hunting and gathering, southward expansion

The exact date of Apache arrival in eastern Colorado is disputed. Some would place it as early as 1000 RYAD when, presumably, the technological and subsistence advantages given by the bow and arrow allowed the Athabascans to exploit the relatively unoccupied eastern Plains of Colorado (remember: the model of Upper Republican use but not permanent occupation of the eastern Plains)(Husted and Mallory 1967). Others feel there is no archaeological evidence in the Plains or the Southwest to support an entry date into the eastern Plains of Colorado by the Athabascans previous to the Spanish entry

into the region (Wilcox 1981:227). In any event, the archaeology of eastern Colorado will be absolutely essential to settling the issue.

Many of the numerous tipi ring sites and late hunting camps may represent the remains of these people. Many authorities (e.g. Wood 1972) believe that the Plains Apache/Dismal River Aspect occupied the Plains of eastern Colorado at a time coeval with the Upper Republican, Apishapa and Sopris. Only better dated archaeology will be able to establish the contemporaneity of some of these sites and Upper Republican and Apishapa sites. Currently, except for tipi ring sites on Carrizo Ranches (see Section 7.2.2)(Nowak and Kingsbury (1981:10-11), no pre-1550 RYAD Athabascan sites have been identified as such in eastern Colorado.

All dates for the Dismal River phase of Apache prehistory fall between 1650 and 1725. None of these dated sites comes from eastern Colorado, although, as previously mentioned, diagnostic ceramics have been used to assign sites in Colorado to this time period. Only one site assigned to the Protohistoric Period has been attributed to cultural affiliations other than the Dismal River Aspect. The Fingernail Impressed pottery found at 5WL41 suggested to Wood (1967:647) a possible Intermountain Tradition (Shoshoni, Ute) affiliation.

The Dismal River Aspect was first defined from sites in western Nebraska where horticulturists were living in distinctive 5-post houses. It may be that the Cedar Point Village is one of these sites although it is an unlikely agricultural location. Lovitt Plain, Lovitt Simple Stamped, Ocate Micaceous and Cimarron Micaceous are the diagnostic ceramic types for the Dismal River Aspect. The shape of the vessels tends to be large jars with smooth shoulders, slightly flaring rims and rounded bottoms. Mica Tempering appears to be more common in Southeast Colorado and simple stamping more common in the Northeast. Dismal River type ceramics have been recovered from rockshelters, open sites and (in New Mexico) from adobe pueblos (Gunnerson 1968, 1969). Also diagnostic

are roasting pits, 'cigar' shaped drills and a snub nosed scraper (Gunnerson 1968).

The most likely historic (i.e. post 1725 RYAD) Apache site so far identified in eastern Colorado is the Lykins Valley Site (Ohr, Kvamme and Morris 1979) at which possible Kiowa-Apache were believed to have camped. This site and the Hatch Site suggest that the last phase of Apache occupation was aceramic and more heavily dependent on hunting (with the horse) of large herd animals.

8.3 Research Problems

In general the Protohistoric Stage in Colorado is depicted as one of relatively sparse population and occupation. The Plains of Colorado are no different except that the area is believed to have received an influx of population from other areas. This agrees nicely with the idea that at the end of the Middle Ceramic several Plains areas were partially abandoned (e.g. the Panhandle Aspect and the Sopris Phase). However, little direct evidence exists to support such an idea. For example, in the Colorado Plains there are approximately 11 protohistoric components for this 250 year period (i.e. 4.8 reported components/100 years) and 84 ceramic components for that 1550 year period (i.e. 5.4 reported components/100 years) ^{*}. An important set of research questions will surround, then, documenting the supposed abandonment, explaining the dislocations and understanding the indirect role of the European invasion of North American in the Colorado Protohistoric Stage. Already a number of important research questions have been asked by Colorado Plains Archaeologists: Who and where were the aboriginal occupants? What was the nature of Anglo-Indian interaction (Butler 1980)? To these questions can be added others derived from the material reviewed above (Section 8.1).

*

These calculations are taken from Figures 13, 14, and 15 and are intended to give only indications of potential research problems.

Some of the more obvious research problems suggested by this work are:

- 1) independent dating for finer chronological control.
- 2) clarifying Dismal River and Carlana Focus/Phase taxa and their cultural implications.
- 3) documenting fully the place of ceramics in these protohistoric cultures. Were some aceramic?
- 4) changes and variability in architecture and subsistence.
- 5) ceramic taxonomy.
- 6) outside influences, Athabascan expansion, and Shoshonean occupations.

8.4 Potentially Important Resources

All Colorado Protohistoric sites are very important resources. Almost all sites would potentially yield information useful in the study of some or all of the few research problems mentioned above. All sites would be of interest in settlement/distributional studies, large single component sites would be important in subsistence/lifeways reconstruction/integrative studies, and stratified sites would be useful in the study of cultural dynamics.

8.5 Needed Research

Any research not duplicating previous research would be a welcome addition to the prehistoric archaeology of eastern Colorado. To answer only the research questions mentioned above (Section 8.1), much research is needed.

Specifically the Colorado Protohistoric Stage needs:

- 1) chronometric dates to establish a finer chronology and to answer questions concerning all the research questions.
- 2) surveys to answer questions concerning abandonment and demography, cultural boundaries, extent of occupation, nature of contact, architectural variability, outside influences, Dismal River and Carlana taxa, aceramic occupation.

- 3) stratigraphic excavation to answer questions about abandonment, cultural boundaries, extent of occupation, nature of contact and subsistence.
- 4) single component excavations to answer questions about abandonment, cultural boundaries, nature of contact, Dismal River and Carlana taxa, aceramic occupation, architectural variation, subsistence, and outside influences
- 5) environmental reconstruction to answer questions about subsistence.
- 6) taxonomic studies to answer questions about cultural boundaries, extent of occupations, Dismal River and Carlana taxa, ceramics, and outside influences.

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