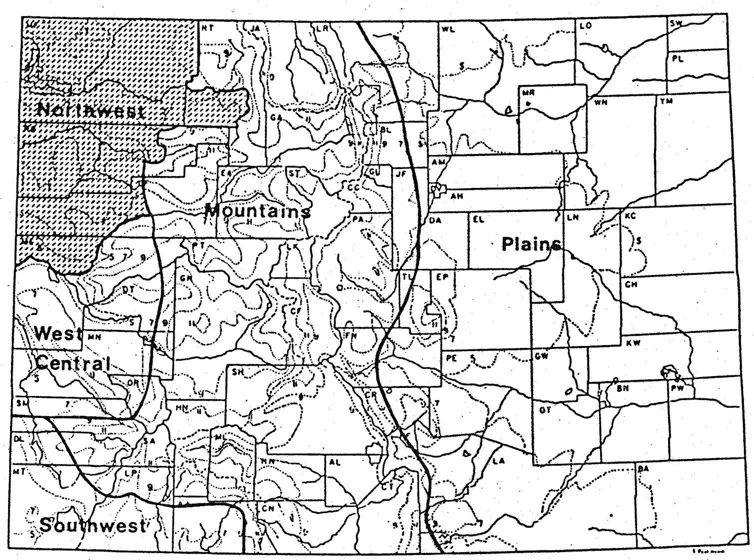
# NORTHWEST COLORADO PREHISTORIC CONTEXT

by

James Grady




COLORADO
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# NORTHWEST COLORADO PREHISTORIC CONTEXT

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James Grady

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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

Barbara Sudler
President
State Historic Preservation Officer

## TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

SECTION PAGE

## LIST OF FIGURES

FIGURE PAGE

## LIST OF TABLES

TABLE PAGE

## ACKNOWLEDGEMENTS

In preparing this report, I have once again found out just how helpful one's professional colleagues can be. In no instance did I find any hesitation in supplying information, reports, or answers to questions. Particular thanks go to Bobbi Klausing-Bradley for her help and efforts in tabulating some 4,991 site forms; to Kris Kranzush and Kinzie Gordon, Alan Reed, Paul Nickens, Halcyon LaPoint and Judy Newkirk for suppling needed publications, and Barbara Walker and Margaret David for word processing and editing.

A very special thanks goes to Calvin Jennings for providing help and aid too numerous to mention. His contributions to our understanding the prehistory of northwestern Colorado is exceeded only by his willingness to help others. We are all in his debt.

Thanks also go to Judi Halasi and Linda Gregonis of the Colorado Preservation Office for their help and advice.

## 1.0 The Study Area

### 1.1 The Project Area

1.1.1 Boundaries. During the initial selection of boundaries for the northwest study area, it was decided to use a combination of man-made and physiographic features that could be precisely located and given legal descriptions. The objective was to avoid duplication that would result from using only physiographic boundaries, many of which are imprecise. These boundaries are arbitrary and were chosen only for their ease of location. Obviously, they have no significance or bearing on the prehistory of the region.

Boundaries defined (Figure 1) for the Northwest region are as follows: the Colorado-Wyoming state line to the north, the Colorado-Utah state line to the west, and the Colorado River to the south. The eastern boundary, moving from south to north is as follows: starting at the Colorado River at Rifle, the boundary is Colorado Highway 13 and 789 to Meeker, Colorado; east along the White River to Buford, Colorado; north to the White River National Forest boundary; then west, then north following the forest boundary until the Rio Blanco-Moffat county line is reached. The Rio Blanco county line is followed due east until it turns south. Where the Rio Blanco county line turns south, an imaginary line is projected eastward using the east-west Rio Blanco county line as a baseline until Colorado Highway 131 is reached at a point just south of Phippsberg, Colorado. Highway 131, north bound, becomes the eastern boundary until Highway U.S. 40 is reached. Highway U.S. 40 becomes the eastern boundary through the town of Steamboat, Colorado and westward until U. S. 40 crosses the Moffat-Routt county line. The boundary then proceeds north along the county line until the Colorado-Wyoming state line is reached.

1.1.2 Project Area Characteristics. The study area is made up of four physiographic provinces, the Colorado Plateau, the Wyoming Basin, the Yampa Basin and the Middle Rocky Mountains (Figure 2).

1.1.2.1 The Colorado Plateau. The Colorado Plateau is distinguished by four main features: 1) the approximate horizontality of its rock formations; 2) its great elevation--most of the province lies above 5,000 ft, and some of its plateaus are as high as 11,000 ft in elevation; 3) the literally hundreds of canyons within the province; and 4) the predominant pattern of erosion, the retreating escarpment, which is characteristic of the combination of arid areas and horizontal strata found in this province (Fenneman 1931:274-75).

The Colorado Plateau province may be subdivided into a series of smaller and more manageable physiographic units.

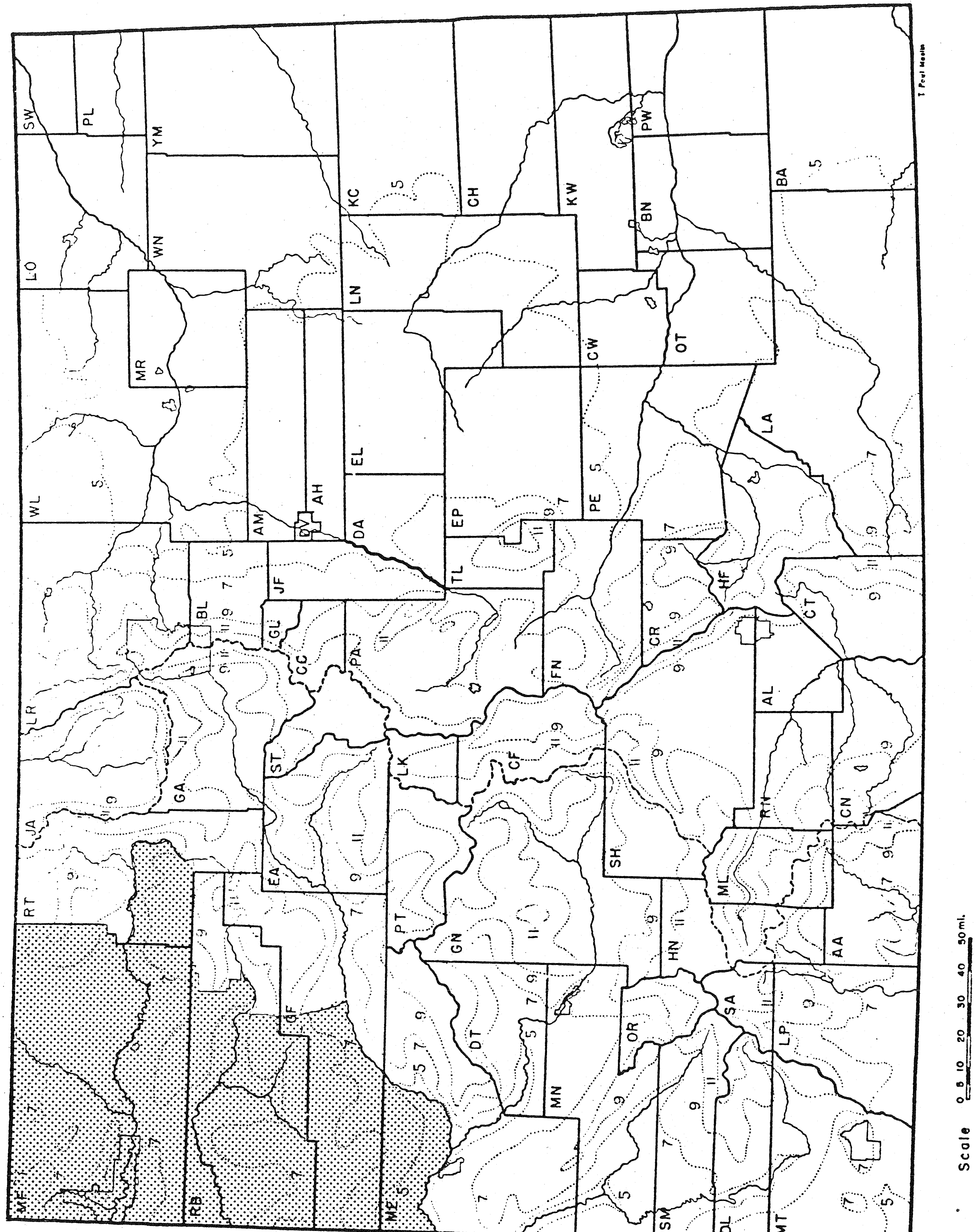



Figure 1. Map of Colorado Showing Study Area.

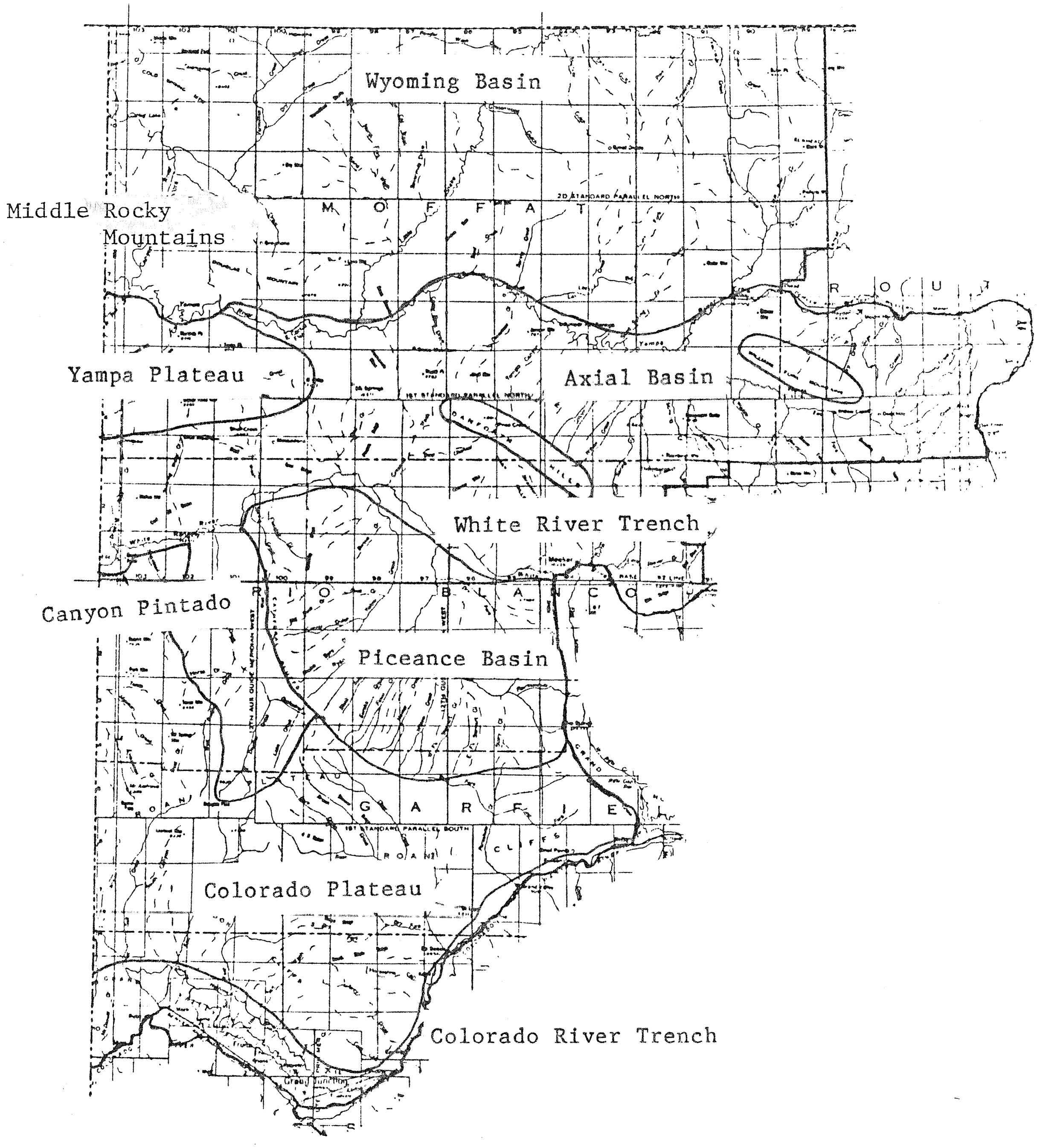



Figure 2. Regions in the Study Area.

1.1.2.1.1 The Uintah Basin. The Uintah Basin is located just south of the Uintah Mountains and extends from the Wasatch Mountains of Utah in the west to the Grand Hogback of Colorado in the east. In the west in Utah, the southern boundary of the basin is a two-step series of cliffs of which the Roan Cliffs are the higher and more northerly set, and the Book Cliffs are the more southerly and lower set. As Fenneman points out, "east in Colorado the two lines of cliffs are poorly distinguished and the names Roan and Book are used interchangeably" (1931:305). Most of the basin is deeply dissected, making movement across the basin difficult.

1.1.2.1.2 The Piceance Basin. The Piceance Basin is described by Chronic and Chronic (1972:29) as being the southeastern portion of the Uintah Basin. It covers an area of some 1,600 square miles in three counties, Rio Blanco, Garfield, and Mesa. It is bounded on the north by the White River, on the west by Douglas Creek and the Douglas Uplift, on the south by the Book Cliffs and the Colorado River trench, and on the east by Grand Hogback. In elevation, it ranges from 9,000 ft in the south to 5,700 ft in the north. Since the Piceance Basin is particularly rich in oil shale, it has been the focus of a number of archaeological and historical surveys.

1.1.2.1.3 The Axial Basin. The Axial Basin is a continuous and sharply outlined anticline or trough that extends from the Uintah Mountains on the west to the White River plateau on the east. The Yampa River follows the western half of this trough (Fenneman 1931:138).

1.1.2.1.4 The Danforth Hills. The Danforth Hills whose summits lie some 2,000 ft above the bordering valleys are located on a series of folds found between the Axial Basin and the White River (Fenneman 1931:138-139).

1.1.2.2 The Wyoming Basin. The floor of this basin is a plateau covering some 40,000 square miles in southwestern Wyoming (Fenneman 1931:135). In a sense it is a continuation of the Great Plains, and it is directly connected with the plains through a gap between the Bighorn and Laramie Mountains. The Wyoming Basin is made up of a series of sub-basins and intervening mountain ranges. In the southern portions of the Wyoming basin, a series of high cuestas rising in some instances to 1,000 ft above the surrounding countryside define the Washakie Basin. That portion of the Washakie Basin that extends into Colorado is known as the Yampa Basin.

1.1.2.3 The Yampa Basin. The Yampa Basin is characterized by broad areas of low relief which are interrupted by scarps and dissected cuestas (Fenneman 1931:145). The Axial Basin described above forms the southern boundary of the Yampa Basin.

1.1.2.4 Middle Rocky Mountain Physiographic Basin. That portion of the Middle Rocky Mountain physiographic region that extends into Colorado is synonymous with the Uintah Mountains. These mountains are the largest east-west range in the United States (Fenneman 1931:176). It includes the canyons of the Yampa and Green rivers.

1.1.3 Vegetation. The distribution of vegetation and vegetation communities in northwestern Colorado is a function of elevation and exposure (i.e., temperature and moisture). In the valleys along the major rivers, a riparian woodland zone consisting of cottonwood and box elder is found.

Away from the rivers and extending into the mid-elevation ranges is a series of shrub communities such as big sage, greasewood, and salt brush. As elevation increases, hillside fringe sage, grassland, and mountain mahogony zones are encountered. Other shrub communities present include Gambel's oak, serviceberry, chokecherry, and snowberry. However, of all of the shrub communities present, big sage is the most common through the area (Grady 1980:47). Pinyon/juniper is the dominant mid-elevation (ca. 7,000 ft) woodland community, with juniper predominating in the lower elevational ranges and pinyon in the upper.

Above 8,000 ft, aspen meadows are found, as are stands of mixed Douglas fir and aspen. Douglas fir tends to be found on steep, (35$^{o}$) north-facing slopes.

1.1.4 Wildlife. Several species of animals were present of sufficient size (i.e., mule deer, antelope, bighorn sheep, and bison) or in sufficent numbers (i.e., rabbits) to make northwest Colorado an attractive environment to hunters or gatherers.

1.1.5 Climatic Stability. The following discussion of past climatic conditions in northwestern Colorado is drawn in part from Grady (1978 and 1980). While the discussion was originally developed for the Piceance Basin, it is equally applicable to the study area in general. Since 1980, two rockshelters, Debeque (Reed and Nickens 1980) and Sisyphus (John Gooding, personal communication, 1982) both located on the Colorado River, have been excavated, as have two sites, the Brady site (5RB726) and Dripping Brow Cave (5RB699) located in the Douglas Creek drainage (Creasman 1981). Their contributions to our understanding of past climatic conditions in the area will also be considered.

Having comparatively few studies of past environmental conditions with which to work causes uncertainty as to whether or not presently observed conditions are truly representative of conditions in the past. It is reasonable, however, to make certain modest assumptions that may help to clarify this problem. The first assumption is simply that the present, observable environmental conditions are the result of past conditions. The second assumption is that man has, since 1870, introduced new economic and exploitative techniques into the study area that have undoubtedly had impact upon the environment, and account in part for the modern ecological makeup of the study area. These impacts must be filtered out if we are to understand either environmental change or stability.

The problem of long-term change could best be approached by examining studies emphasizing climatic change, but since so few studies are available for the study area proper, we are forced to rely on studies peripheral to the area. These studies seem to indicate Holocene environments have not changed dramatically since the Pleistocene (Baerreis and Bryson 1965; Bryson et al. 1970; Heusser 1960; and Matthews 1976).

In his study, Matthews (1976:615) notes that a change of two degrees in the mean annual air temperature could have profound effects on the environment. Higher temperatures could expand arable land and increase lushness of vegetational cover, but only if accompanied by increased precipitation. Alternatively, higher temperatures could result in increased aridity.

Using 15 degrees Celsius as a baseline, Matthews (1976:615) has established a graph (Figure 3) based on mean annual air temperature. In the past 10,000 years, only once in the period 6000 to 8000 B.P. does he indicate a mean annual air temperature change of more than one degree Celsius. This is coincident with the Altithermal period.

By 5500 B.P. (Matthews 1976:615), mean annual air temperature was below 15 degrees Celsius (14.6 C), and this cooler period lasted until about 5000 B.P., followed by a period of mean annual air temperatures approaching 16 degrees Celsius. Another cool phase (mean annual air temperature of $14^{o}$ C) followed. By 2600 B.P., mean annual air temperature had risen to 15 degrees Celsius and this rise continued until a level of 15.6 degrees Celsius was reached around 1600 B.P. By 850 B.P., mean annual air temperature once again reached 15 degrees Celsius, and temperature fluctuated generally on the warm side between 950 B.P. to 500 B.P., when the cycle entered the "Little Ice Age."

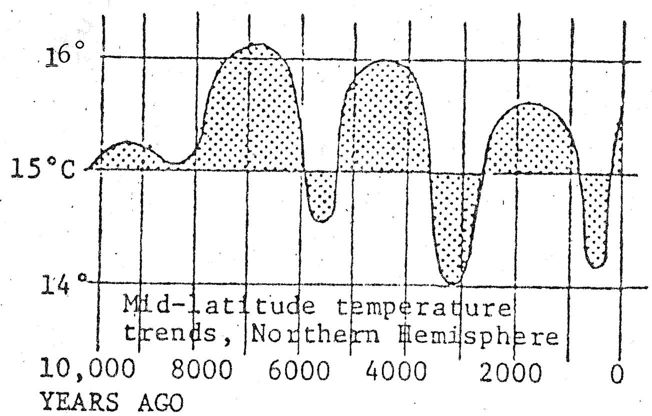
The Little Ice Age lasted with some variation into the present century. Since 1910, the general trend has been one of increasing warmth until a peak was reached just prior to 1940. Since 1940 there has been a general decrease (Matthews 1976:615).

Figure 4, showing mean annual air temperature for the past 1,000 years, indicates a peak cold period starting some 300 years ago when the mean annual air temperature dropped almost one full degree Celsius.

FIGURE 3

MEAN ANNUAL AIR TEMPERATURE CHANGES

PAST 10,000 YEARS

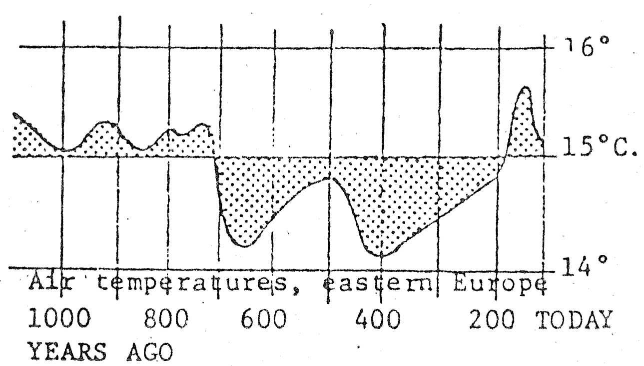



(after Matthews 1976)

FIGURE 4

MEAN ANNUAL AIR TEMPERATURE CHANGES

PAST 1000 YEARS




(after Matthews 1976)

Even a change of this magnitude does not seem to have had a drastic effect on vegetation in western Colorado. Studies conducted at Mesa Verde National Monument on dated forest fire burn areas indicate mature pinyon/juniper forest requires at least 300 years to reach climax (Erdman 1970). There is no doubt that the pinyon/juniper forests of the Piceance Basin and the study area are at climax and are comparable in every way to the Owl Canyon stand on the Front Range north of Fort Collins which are at least 300 years old (Weber 1965:463). This finding would seem to indicate that, even during the Little Ice Age, conditions were not so severe as to prohibit the seeding and germinating of pinyon and juniper forests in the Piceance Basin.

Of particular interest to this study is the air temperature record of the past 96 years. As noted in Figure 5, mean annual air temperature has ranged from a low of 14.6 degrees Celsius (about 1883) to a high of 15.7 degrees Celsius, a range not exceeded in the past 3,200 years (see Figure 3). Yet, based on descriptions of the vegetation in the Piceance Basin contained in the initial land survey of 1883 (Moore 1883-1885, microfilm survey notes on file, Denver), there does not seem to be any appreciable difference in either the vegetation noted or its distribution.

Weber (1965:464) goes even further in describing the conspicuous flora of western Colorado (Astragalus, Atriplex, Cryptantha, Phacelia, and Gilia to name only a few) as elaborations of an old Tertiary flora that radiated into the Great Basin out of a Mexican reservoir, thus arguing for a far greater antiquity than considered by Matthews.

Pollen samples taken at the Debeque rockshelter and analyzed by Scott (in Reed and Nickens 1980:79-91) produced three climatic episodes: a warmer than present period lasting from 5090 B.C. to 3700 B.C.; a cooler period lasting from 3700 B.C. to 1740 B.C.; and a post-1740 B.C. warmer period lasting through 610 B.C. Diagnosis of these periods is based on shifting frequencies of pinyon and juniper pollen in the stratigraphic record of the site. However, Scott cautions:

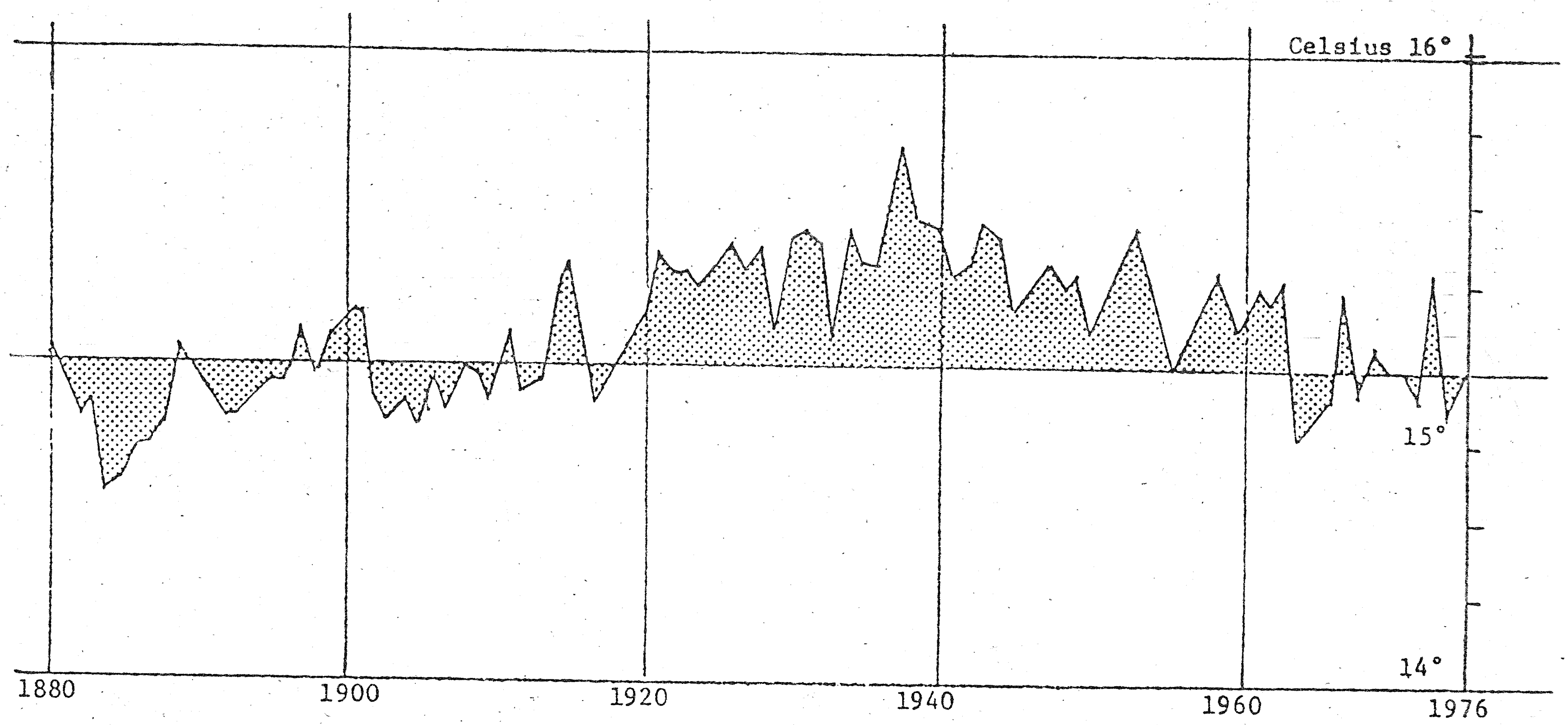
> Throughout the changes noted in the pollen record, there is no evidence that the ecotone near the Debeque Rockshelter changed from a pinyon/juniper habitat. There appears to be a certain amount of stability in the environment, since the components of the ecotone remain the same throughout the occupation of this rockshelter during the past 7,000 years. Fluctuations in the relative frequency of some pollen types indicate some changes in the environmental

FIGURE 5

MEAN ANNUAL AIR TEMPERATURE CHANGES

PAST 100 YEARS

(After Matthews 1976)



> circumstance at the Debeque Rockshelter. There, changes most closely correlate with Benedict and Olson's (1978) model of the Altithermal and Maher's (1961, 1973) reconstruction of environmental change in the Rocky Mountains (1980:91).

Unfortunately the pollen analysis of the material from the Sisyphus rockshelter is incomplete at this time (John Gooding, personal communication, 1983); consequently, we do not know at this time if the sequence at Debeque is to be relied upon. Based on his work at the Brady site and at Dripping Brow Cave in Douglas Creek, Creasman (1981) notes that prior to A.D. 800 at the Brady site, alluvium was being deposited by spring runoff and that after A.D. 800 there was a shift to today's summer thunderstorm deposition patterns in which the alluvium is drawn from the side canyons that feed into Douglas Creek. At Dripping Brow Cave, Creasman found that prior to A.D. 700, the environment changed to unusually stable (relatively dry). Around A.D. 850 there was a shift to more moist conditions followed by a return to dryer conditions at around A.D. 1100. The period A.D. 1300-1500 was again relatively moist and was followed after A.D. 1500 by a drying trend.

This situation is best summarized by Creasman (1981:IV-87) when he notes:

> Although it appears that there have been no major changes in the vegetation on the site (Dripping Brow Cave) from its present day composition, minor changes in boundaries or diversities of communities surrounding the site, particularly the pinyon-juniper community, may have occurred from time to time.

Based on our present state of knowledge, it would seem that, while there were fluctuations in the climate, none of these fluctuations was severe enough to dramatically alter the environmental makeup of the study area. Therefore, we have no choice but to assume that the types and distribution of vegetation communities within the study area have been unchanged except for minor variations for at least the past 3,000 years.

1.2 Cultural Units. Four stages are proposed to encompass the prehistory of the northwest Colorado study area. These include: the Paleo-Indian stage, the Archaic stage, the Formative stage, and a Protohistoric stage.

1.2.1 Paleo-Indian Stage. The term "Paleo-Indian" stage is synonymous with Willey and Phillip's (1958) lithic stage. This stage deals with the antiquity of human settlement in the New World and with the nature of the adaptations made by these early immigrants into a pristine post-Glacial environment. In general, the big-game hunting peoples of the Paleo-Indian stage seem to be the earliest inhabitants of northwest Colorado. Their presence in the area is marked for the most part by distinctive lanceolate projectile points. This stage may be dated from approximately 10,000 B.C. to 5500 B.C.

1.2.2 Archaic Stage. The Archaic stage is currently viewed as an adaptive response to the warming trend that occurred at the end of the Pleistocene period, and to the loss of the Pleistocene megafauna and its replacement by modern faunal forms. As a continent-wide phenomenon, hunting and gathering societies intensively exploited their local environments, heavily exploiting plant resources, seeds, and a wide variety of faunal species. Virtually all ecological niches were systematically exploited for their resources; consequently there is, through time, an increase in the diversity of tool types and specialization. Dates for the Archaic stage range from as early as 5000 B.C. to as late as A.D. 500.

1.2.3 Formative Stage. In 1955, Willey and Phillips defined the Formative stage "by the presence of maize and/or manioc agriculture and by the successful socioeconomic integration of such an agriculture into well-established sedentary village life." By 1958 they had modified this definition to include "the presence of agriculture, or any other subsistence economy of comparable effectiveness and by the successful integration of such an economy into well-established, sedentary village life." Date estimates range from A.D. 300 to A.D. 1300.

It is this latter definition that is reasonably appropriate in northwestern Colorado. It is true that the Fremont culture, known primarily from Utah and present in northwestern Colorado, fits the Willey and Phillips definition. However, in northwestern Colorado, it is present in at best an attenuated form. Hunting and mobility always played a major, if not critical role, in the Formative stage in northwestern Colorado.

1.2.4 Protohistoric Stage. The Protohistoric stage follows the Formative (Fremont culture) in northwestern Colorado. This replacement occurs around A.D. 950 according to Marwitt (1970), by A.D. 1150 according to Breternitz (1970), or by A.D. 1210 according to Creasman (1981). This stage covers the period of time between the abandonment of horticultural practices of the Fremont and the arrival of the first Euro-Americans in the region.

## 2.0 Definition of Taxa and Terminology

2.1 Spatial and Material Culture Definitions. Archaeological concepts are nothing more than a series of building blocks which may, and often are, recombined in various ways. These concepts are aribitrarily defined and are subject to continuing revision to maintain their usefulness. These concepts permit us to generalize patterns of human behavior from the archaeological data.

### 2.1.1 Spatial Units

2.1.1.1 Isolated Find (IF) or Isolated Artifact (IA). Isolated artifacts are either single or small numbers of artifacts whose location does not exhibit any apparent form of human behavior. Isolated artifacts should be treated with care since there is the possibility that:

1. an isolated artifact may be indicative of subsurface material that is eroding out, or

2. a given IA or IF may be, particularly in arid lands, all that was deposited at a given "site."

2.1.1.2 Site. A site is the smallest unit of space dealt with by the archaeologist and is the most difficult to define. It can vary in size, but it must be fairly continuously covered by remains of former occupation (Willey and Phillips 1958). It is a spatial clustering of artifacts, features, and/or ecofacts whose association is presumed to be the work of human beings. In other words, the artifacts, features, and so forth, exhibit patterned behavior.

2.1.1.3. Locality. A locality is a unit generally not larger than the space that might be occupied by a single community or local group (Willey and Phillips 1958). The concept of locality permits the assumption of cultural homogeneity at any given time; consequently a locality can vary in size from a single site to many sites spread over a large area.

2.1.1.4 Region. A region is a unit of geographic space that is larger than a locality, often coinciding with physiographic boundaries. It is useful archaeologically for defining areas "in which at a given time a high degree of cultural homogeneity may be expected" (Willey and Phillips 1958:20). The region is roughly equivalent to the space occupied by a social unit larger than the community or tribe (Willey and Phillips 1958).

2.1.1.5 Area. An area is a geographical unit much larger than a region. It corresponds to the cultural area (Willey and Phillips 1958).

2.1.2 Site Typology

In order to cope with large numbers of sites and site data, it is essential to classify recovered sites and their contents into manageable units to facilitate analysis. In general, there are two classificatory schemes that may be used to classify sites (i.e., descriptive classification and functional classification). In the first category, descriptive classification, only the physical attributes are described. In the second category, the site's function is inferred from these attributes. Obviously both schemes have advantages and disadvantages. Ideally both schemes should be used wherever possible (e.g., "The site is a lithic scatter which served as a summer hunting camp").

2.1.2.1 Descriptive Classification. In this category, sites are given labels that simply describe the physical attributes observable on the site and no attempt is made to imply function. Since we cannot determine function, we cannot imply human behavior patterns. Examples of sites with descriptive labels from northwest Colorado would include the following types.

2.1.2.1.1 Open Lithic Scatter Sites. These sites are defined by the presence of lithic materials in unsheltered locations. Open lithic scatters can range from a few square meters in area with several flakes to several thousand square meters with hundreds of flakes and stone tools. On some site forms, the term lithic concentration is used to describe this site type.

2.1.2.1.2 Open Lithic Scatter/Ceramic Sites. This site is the same as the open lithic scatter, but with the presence of potsherds.

2.1.2.1.3 Open Lithic Scatter/Ground Stone Sites. This site is the same as the open lithic scatter, but with the presence of groundstone implements.

2.1.2.1.4 Open Lithic Scatter/Ground Stone/Ceramic Sites. This site is the same as the open lithic scatter, but with the presence of both ceramic sherds and groundstone implements.

2.1.2.1.5 Rock Shelter. Sites of various types and containing a variety of materials are located under a natural overhang. The overhang may protect a large area but a shelter is not deep enough to be classified as a cave.

2.1.2.1.6 Rock Art. Rock art sites are of two types; pictograph and petroglyphs. Rock art panels can range in size from a small single figure or motif to very large panels consisting of dozens of figures. Both pictographs and petroglyphs can be found on the same panel. Representations can range from the realistic to the highly stylized. Rock art sites can and often are associated with other site types.

2.1.2.1.7 Masonry Structures. A variety of masonry structures exist in northwest Colorado. Included in this category would be masonry storage cists of varying sizes and types ranging from free standing units to small chinked-up walls found in rock shelters. This category would also include the circular and rectangular promontory structures as well as stone alignments, upright and horizontal slab shelving, dry walls, and cairns found in the study area.

2.1.2.1.8 Tipi Rings. Tipi rings are circles of stone thought to have been originally used as weights to hold down flaps on tipis to keep drafts out. They may also be associated with vision quests. They can range in size from 1 to 2 meters to 5 to 6 meters in diameter.

2.1.2.1.9 Wickiups. Wickiups are pole and/or brush structures probably used for habitation. These structures currently may be found either standing or collapsed. If standing, they are usually conical in shape. They can be free-standing or use a tree for additional support. They are usually 2 to 3 meters in diameter and 1.5 to 2 meters high.

2.1.2.1.10 Burned Rock/Fire pits. Burned rock sites and fire pits usually consist of cobble concentrations with associated ash or charcoal. Creasman (1981:111-127) has identified four types, simple basins with no rock associated, slab-lined fire pits usually less than one meter in diameter, cobble-lined fire pits, and cobble and/or slab-filled fire pits. The latter are the most common. Fire pits may or may not be associated with other site types.

2.1.2.1.11 Tree Platforms. Tree platforms are platforms built in trees usually near game trails. They are made of poles and brush.

2.1.2.1.12 Brush Fences. Brush fences consist of lines of pinyon and/or juniper trees cut down and arranged in a line or pattern. They may represent game drives. However, north of the intersection of Piceance Creek and the White River, a series of brush fences seem to represent historical ranching activity during the Great Depression when the cost of barbed wire was prohibitive. Consequently, caution and careful mapping is essential to determine if brush fences are prehistoric or historic.

2.1.2.2 Functional Site Types. In this category sites are given labels that imply site function. Examples of functional labels would include: resource extraction, storage, social or ceremonial, defensive, and transportation. The problem with functional descriptions is simple. The perceived function may be more in the eye of the beholder than in fact unless the criteria for determining function is clearly spelled out.

Most workers seem to be fairly consistent in differentiating between open lithic sites (descriptive) and campsites (functional). For example, Arthur and Collins (1981:25) define the two site types in the following manner:

> Open Lithic--Sites containing debitage, cores, blanks or finished stone tools. These sites may be lithic manufacturing sites or tool use sites.

There is an underlying assumption that sites of this type were probably utilized on a short-term basis and represent only a few activities.

> Prehistoric Open Camp--Sites containing evidence of family behavior such as ground stone tools, hearths, or other non-portable cultural material. The implication is that occupation took place over a longer period, and a broader variety of activities took place at campsites than at lithic sites. The presence of ground stone tools is significant because they imply food processing or preparation. Campsites are generally, but not necessarily associated with chipped stone tools and debitage (Arthur and Collins 1981:25).

A different approach was taken by Newkirk and Roper (1983) using the number of activities determined to have taken place at each site. They were able to define two site types, residential/extractive sites (four or fewer activities) and base camps (five or more defined activities).

It is obvious that most, but not all, functional site types fall into one of two functional categories: extractive or habitational. In the former category we would place such types as quarries, kill sites, eagle pits, hunting blinds, and possibly granaries (in other words, sites whose primary function is involved with the acquisition of some resource). Since we are dealing with special purpose sites, we would expect the tool inventories of these sites also to be specialized and directed toward the resource being exploited.

Habitation sites would, on the other hand, have tool inventories that represent a broad range of activities. Site types in this category would include camps, base camps (summer activity), and various kinds of shelters. Functional categories other than extractive and habitational would include religious or ceremonial sites (none of which have yet been identified as such in northern Colorado), or sites related to defense and transportation.

Whatever categorizing system is used, it is essential that the method and/or criteria used be clearly set forth in the report.

2.1.2.3 Application of Typologies. As noted earlier, the ideal goal is to use both descriptive and functional typologies for each site. The use of the former permits comparison of observed phenomena while the latter permits interpretation of human behavior. Problems arise when trying to compare site descriptions used in different reports by different authors (for example, the terms "campsite" and "lithic scatter" may be synonymous). The data dictionary proposed by the CPO is a step in the right direction in resolving this problem, and in establishing consistency in the literature.

2.1.3 Social Space

2.1.3.1 Activity Area. An activity area is an area within a site which "served as a locus of activity of one or more members of a community" (Flannery 1976:5-6).

2.1.3.2. Site Territory. This is "the territory surrounding a site which is exploited habitually by the inhabitants of the site" (Higgs and Jarman 1975:ix). Site territory for hunters and gatherers is considered to be the area that lies within a two hour walk (Higgs and Jarman 1975). It is different than a locality since it is site-exclusive.

2.1.3.3 Annual Territory. Annual territory is "the total area exploited by a human group through the year. It may contain one or more site territories" (Higgs and Jarman 1975:ix). Hunters and gatherers usually move within their annual territory, shifting from one resource locale to another on a seasonal basis.

2.1.3.4 Social Territory. Social territory is "the total territory drawn upon for supplies, including raw materials and finished products as well as foodstuffs, by a given community by virtue of belonging to a larger social grouping" (Clark 1975:14). At this level we are concerned with reciprocity between nonbiologically-related groups.

2.1.4 Material Culture (Artifacts)

2.1.4.1 Artifacts. Artifacts are objects whose characteristics of form result wholly or partially from human activity. The human activity may be either a manufacturing process or a use process.

2.1.4.2 Artifacts (in situ). *In situ* refers to artifacts in their original positions or context. Since *in situ* artifacts retain their archaeological associations, they can provide critical data on human behavior.

2.1.4.3 Assemblages. Assemblage is the term used to refer to the total artifact inventory of a given archaeological culture at a site.

2.1.4.4 Features. Features are nonportable manufactured artifacts. That is, they are artifacts that cannot be recovered from their archaeological matrix. Hearths and human internments (burials) fall into this category. Features are indicators of specific activity usually within a larger context (i.e., a site).

2.1.5 Material Culture (Architecture)

2.1.5.1 Masonry and Adobe Storage Structures. These structures are usually beehive-shaped and can be made of wet-laid or dry-laid masonry or adobe. They range in size from .5 meters to 2.5 meters in diameter.

2.1.5.2 Promontory Structures. These structures are located on benches, small pinnacles, or ridge tops. All seem to be located in positions to maximize visual surveillance of the surrounding area. In general promontory structures are of two types: curvilinear and rectangular.

2.1.5.3 Wattle-and-Daub Structures. Wattle-and-daub structures consist of a framework of sticks and small poles overlain with mud or clay. They are fairly rare in the study area.

2.1.5.4 Tipi Rings. Tipi rings are circles of stone thought to have been originally used as weights to hold down flaps on tipis to keep drafts out. They may also be associated with vision quests. They can range in size from 1 to 2 meters to 5 to 6 meters in diameter.

2.1.5.5 Wickiups. Wickiups can be found as either standing or fallen brush structures. If standing they are usually conical in shape. They can be free-standing or use a tree for additional support. They are usually 2 to 3 meters in diameter and 1.5 to 2 meters high.

2.1.5.6 Miscellaneous Structures. Included in this category are tree platforms (2.1.2.1.11), brush fences and game drives (2.1.2.1.12) and hunting blinds.

2.2 Synthetic Units. Synthetic units are artificial devices used to organize and structure archaeological data.

2.2.1 Stage. As used here, the term "stage" refers to levels of general similarity in the lifeways and material culture utilized in those lifeways. Although stage refers to an equivalent lifestyle level, cultures with different technologies or other unique characteristics may be included in the same stage. Consequently, when we refer to the Archaic stage on the western slope and to the Archaic stage on the plains of Colorado, we are referring to similar levels of adaptation but we are NOT implying cultural uniformity or connections.

2.2.2 Period. Period is a unit of time without cultural content or spatial boundaries (Eddy 1983:15). On the other hand, periodization refers to classification of cultural levels on the basis of content. Consequently, when two stratified cultural levels are different in content, the archaeologist feels confident that he is dealing with two different time periods (Hester and Grady 1982:42).

2.2.3 Horizon. Horizons are "a previously spatial continuity represented by cultural traits and assemblages whose nature and mode of occurrence permit the assumption of a broad and rapid spread. The archaeological units linked by a horizon are thus assumed to be approximately contemporaneous" (Willey and Phillips 1958:33).

2.2.4 Traditions. "An archaeological tradition is (primarily) a temporal continuity represented by persistent configurations in single technologies or other systems of related forms" (Willey and Phillips 1958:37).

2.2.5 Complex. Complexes are arbitrary chronological units defined by data categories, such as artifact industries. Consequently, we can talk of ceramic complexes and point complexes. The concept, however, favors attributes and types that are most sensitive to change through time (Sharer and Ashmore 1979:484-85). The concept is particularly useful in cultural historical interpretation.

2.2.6 Component. A component is a given archaeological manifestation at a specific site. In terms of people, it represents the activities of a single cultural group of people at a specific point in time.

2.2.7 Phase. This is an archaeological unit implying similarity in cultural context that is restricted to a limited geographical space and to a brief period of time.

## 2.3 Lifeway Descriptors

2.3.1 Settlement-Subsistence Patterns. It is possible, for purposes of definition, to separate settlement from subsistence. In this case, settlement patterns per se are concerned with the way a society distributes itself over a landscape, while subsistence is concerned with supply of a society's nutritional needs. In actual practice, however, the two are closely interlinked. In combination they refer to the way in which a society meets its basic needs. This effect can be achieved through seasonal movement from resource to resource or through a sedentary life style in which resources are transported to a reasonably fixed central location. The study of changes in settlement/subsistence patterns and their interrelations with environmental factors provide the basic models of human adaptation to the region.

2.3.2 Technology. Technology is the means used by human societies to interact directly with and adapt to the environment. It is the interface between people and the environment (Eddy et al. 1983). In the archaeological record, technology is very closely associated with the material culture (artifacts and the inferences drawn from them) recovered from a site.

2.3.3 Demography. Demography is the statistical study of human populations. In general, demography is concerned with population levels, groups composition, and population distribution. Population fluctuations through time are a major research interest in the study area.

2.3.4 Social Organization. Social organization deals with the structure of society (groups), positions (status), and appropriate behavior patterns (roles). In northwest Colorado, social organization is primarily concerned with the nature and size of local groups and the nature of their political organization.

2.3.5 Interregional Interactions. Within the study area there is considerable evidence for influence from the Great Basin, the Great Plains, and the mountainous regions of central Colorado. This influence may be the result of trade, migration, or a combination of both. Evidence of this interaction is found in ceramics, point types, rock art, and in some of the cultigens of the Formative stage.

## 3.0 Cultural Units

3.1 Paleo-Indian Stage. The term "Paleo-Indian" stage is synonymous with Willey and Phillip's (1958) lithic stage.

> This stage was conceived of as embracing two major categories of stone technology: (1) unspecialized and large unformulated core and flake industries with percussion the dominant and perhaps only technique employed, and (2) industries exhibiting more advanced "blade" techniques of stone working, with specialized fluted and unfluted lanceolate points the most characteristic artifact types.

This stage is concerned with questions about the antiquity of human settlement in the New World and the nature of the adaptations made by the immigrants into a pristine post-Glacial environment.

### 3.1.1 Paleo-Indian Culture History

3.1.1.1 Pre-Clovis Period. A number of sites and localities have been excavated for which arguments of great antiquity (prior to 10,000 B.C.) have been developed. These sites and localities are, for the purpose of this paper, being subsumed under the general heading of "Pre-Clovis." Pre-Clovis sites tend not to be accepted as valid sites by archaeologists in general. However, some of the sites attributed to the Pre-Clovis period are probably genuine. The controversy tends to center on either the nature of the archaeological evidence, the geological context of the site, or the efficacy of the dating methods used.

In Colorado, at the Dutton (5YM37) site near Wray, and at the Lamb Springs (5DA83) site south of Denver, there is the possibility of Pre-Clovis layers, but no diagnostic artifacts have yet been recovered. However, both sites contain what has been described as culturally modified bone. There has been a reluctance by archaeologists to accept bone implements and dates derived from bone collagen. In both cases, the proported Pre-Clovis material underlies accepted Paleo-Indian material. In the case of the Dutton site, the Pre-Clovis underlies Clovis material, while at Lamp Springs the Pre-Clovis underlies Plano material. No material from northwest Colorado recovered to date has been attributed to the Pre-Clovis period.

3.1.1.2 Clovis (Llano) Complex (10,000 to 9,000 B.C.). The fluted lanceolate points of the Clovis complex are the earliest products of human workmanship recognized by all archaeologists working in North America.

Clovis hunters specialized in the hunting of mammoth, and, based on the frequency and widespread distribution of Clovis kill sites, they seem to have accomplished this with some ease. Clovis kill sites are known from Arizona, New Mexico, Oklahoma, Wyoming, Montana, and Idaho.

In Colorado, materials potentially attributable to the Clovis period have been recovered at the Dutton, Dent, and Claypool sites. Of the three, Dent has occupied a position of importance; however recent reevaluation of the site indicates that the remains of the 12 or 14 elephants have been redeposited and that the associated Clovis points may be souvenirs of a brush with Clovis hunters in which the elephants escaped only to be overcome by some other catastrophe. At the Dent site, there is no evidence of butchery, tool working, or any other human activities.

3.1.1.3 Folsom Complex (9000 to 8500 B.C.). Folsom material follows Clovis and it too is characterized by fluted projectile points. These points are smaller and more finely made than Clovis points. It is tempting to see the Folsom point as a lineal descendant of the Clovis point, but, as Frison (1978:30) points out, there is a gap of several hundred years in which there are no radiocarbon-dated intermediate forms. This gap may yet be filled by the Goshen complex (Irwin et al. 1973).

Folsom hunters specialized in the taking of the now extinct longhorned bison (*Bison antiquus*). As many as a dozen of these huge creatures were taken at one time during a typical hunt. Folsom material is well represented at eight sites in Colorado.

A variety of points that closely resemble Folsom points in form and workmanship are Midland points. The only difference between the two is the lack of flutes on the Midland variety. At Hell Gap (Irwin et al. 1973) some separation was perceived between the Midland and Folsom materials, but at the Hanson site (Frison 1978:31), Folsom and Midland were found together. Frison feels that the Folsom-Midland problem has yet to be resolved. There are six known Folsom sites in Colorado, but none are reported for northwest Colorado.

3.1.1.4 Plano Period Complexes (8500 to 5000 B.C.). Between 8500 and 5000 B.C. there is a shift from the hunting of large Pleistocene fauna toward the hunting of more modern species. Concurrent with this shift is the tendency to include a wider range of smaller animals and a probable increase in the variety of plants consumed.

A number of point types are characteristic of the Plano period and these have been grouped into a number of complexes. In general, Plano points are lanceolate in shape, lenticular in cross-section, and are finely made using a pressure-flaking technique that produces shallow, parallel flake scars. *Bison occidentalis*, a more modern form of bison, was taken in considerable numbers; approximately 190 were killed at the Olson-Chubbuck site in southeastern Colorado in a matter of minutes (Wheat 1972).

The following complexes have been defined for the Plano period: Agate Basin, Hell Gap, Firstview, and Cody. All are present in Colorado and several isolated finds from these complexes have been recorded in northwestern Colorado.

3.1.2 Paleo-Indian Lifeways. Our knowledge of the environmental adaptations of the Paleo-Indian stage is limited, for the most part, to the terminal phases of the Pleistocene period (i.e., the Wisconsin Glaciation and the succeeding post-Glacial period). It was a period of rapid change in climatic conditions and shifting vegetation patterns. During this period a number of faunal species became extinct, and the role human beings played in the extinction process has yet to be worked out. Based on the numbers and types of sites (usually kill sites) attributed to the Paleo-Indian stage, there seems to have been a heavy emphasis on hunting. For example, in each of the periods described above, there seems to have been a preferred prey: Clovis period and the mammoth; Folsom period and *Bison antiquus*; and Plano period and *Bison occidentalis*. On the other hand, plant resources were in all probability more important than current evidence suggests.

The basic social unit of the Paleo-Indian stage seems to have been the band. Band mobility, resulting from the need to move from one exploitable resource to another on a seasonal basis, probably accounts for the lack of any permanent structures attributable to this stage.

3.1.3 The Paleo-Indian Stage in Northwest Colorado. According to Walton (personal communication, 1980), there are no known Paleo-Indian sites in northwestern Colorado. However, there are several Paleo-Indian manifestations in the study area, and some sites are known in the wider region.

The only "Clovis" site near the area is the U.P. site in Wyoming (Irwin et al. 1962:828). Although this site dates to 9000 B.P. and is contemporaneous with Clovis, there are no diagnostic tools (projectile points) that definitely pin down the U.P. site's cultural affiliation. On the other hand, Hall (1982:95) reports Clovis points have been found in the Skull Creek drainage south of Dinosaur National Monument, and a Clovis point has been recorded at site 5RB2263, south of Rangely in Rio Blanco County. Numerous reports of finds of the Folsom period have been made by amateurs or collectors in southwest Colorado, but to date no site locations or isolated find locations have been recorded at the state office.

Jennings and Daniels (1976) also comment on several reports of Folsom finds in the vicinity of Maybell, Colorado, to the east of their Little Snake River study area. They also note that they have not seen any of this material. The author of this report has had two different amateurs report to him the presence of a Folsom chipping station in the Rangely, Colorado area. To date, the author has neither seen the site nor any material from the site. H. Bloomfield (personal communication, 1983) reports a Midland point has been found in the center of the Piceance Basin. No provenience has been recorded for this find.

Bloomfield (personal communication 1983) also reports scattered finds of Eden Valley and Scottsbluff material from the Piceance Basin. Scottsbluff points have been reported from site 5MF132 in Brown's Park (Eddy 1980), and from Deluge Shelter (Leach 1970) along with nontyped fluted points. In Routt County, Hand (1980) reports a Cody complex component at a site near Hayden (5RT139). Hand feels that the site may be Paleo-Indian and represent plant processing activities.

In the lower White River drainage, a Scottsbluff point and a point fragment that resembles an Agate Basin or Angostora point were found (Gordon et al. 1982). Bill Buckles (1974) also reports the presence of a Plainview point at the confluence of Piceance Creek and the White River.

Two Hell Gap-like points that exhibit transverse oblique modifications have been found west of Rifle, Colorado in the study area (Hall, personal communication, 1983). Marie Wormington (personal communication, 1983) reports the presence of oblique-flaked, late Paleo-Indian points similar to Jimmy Allen, Betty Green, and Angostura points in the Rangely, Colorado area.

Most of the Paleo-Indian finds in northwest Colorado are surface finds and these finds are broadly scattered through the region. One possible site (5RB726) does exist; even so, it is impossible at this time to identify and define site types for this stage. However, using evidence from Paleo-Indian sites outside the study area as a data base, we would expect to find:

1. long-term habitation sites that exhibit a wide variety of activities;

2. short-term habitation sites that exhibit a limited range of activities;

3. mass kill and butchering sites; and

4. butchering and processing sites.

Certain physiographic features would have a reasonable probability of containing Paleo-Indian materials. These would include: box canyons, sand dunes, bogs, arroyos, and jumps.

3.1.4 Evaluation of the Data Base

3.1.4.1 Quantity and Quality of the Research. Virtually all research has been limited to the interpretation of surface finds. One site, 5RB726, excavated by the Laboratory of Public Archaeology at Colorado State University, has the only known radiocarbon date attributable to the Paleo-Indian stage (Creasman 1977) with a date of 9190 B.P. ± 130 (7240 B.C.).

3.1.4.2 Number and Physical Conditions of Resources. Review of 4,991 individual site forms and isolated artifact forms on file at the Colorado Preservation Office reveals 18 (.004%) of the entries are attributed to the Paleo-Indian period in general. Of the Paleo-Indian entries nine are classifies as isolated finds, four as lithic scatters, four as campsites, and one as a kill site. All of this material was recovered by professional archaeologists and has been properly curated and protected. The conditions of material held by private collections is unknown.

3.1.5 Research Problems

3.1.5.1 Paleo-Indian Occupation. Considering the paucity of Paleo-Indian sites in the area, a key theme is the nature and location of Paleo-Indian sites. In terms of chronology, data is needed on the date range of the various Paleo-Indian points in the study area. Information is also needed on the tool types and food resources, both plant and animal, which occur with the various defined Paleo-Indian traditions in the study area.

3.1.5.2 Paleo-Environment. Analysis of environmental conditions, persisting during the Paleo-Indian period (10,000 B.C. or earlier to 500 B.C.) has yet to be undertaken in northwest Colorado. Data to support these analyses can be drawn from either cultural or noncultural deposits.

3.1.6 Important Resources. Any sites producing Paleo-Indian artifacts, fauna attributable to the Paleo-Indian stage and radiocarbon dates attributable to the Paleo-Indian stage are extremely important and must be preserved or subjected to rigorous scientific excavation.

3.1.7 Data Gaps. The whole Paleo-Indian period must be considered a data gap. The present evidence is so sparse it can only be considered suggestive.

3.1.8 Future Needs. Considering the scarcity of Paleo-Indian sites, a concerted effort should be made to locate and document any site attributable to the Paleo-Indian period.

## 3.2 The Archaic Stage

3.2.1 Archaic Culture History. In an extremely perceptive analysis of the Archaic period on the northern Colorado Plateau, Schroedl (1979:8-9) notes that the term Archaic was first used to define a class of archaeological remains found at the Lamoka site in New York. The term was then expanded to describe any preceramic culture in the eastern United States. Finally, Willey and Phillips (1958) elevated the term to its present meaning: a developmental stage in the prehistory of North America.

The Archaic stage is now viewed as an adaptive response to the warming trend that occurred at the end of the Pleistocene period, and to the loss of the Pleistocene megafauna and its replacement with modern faunal forms. Because of the necessity of readapting to the new post-Pleistocene conditions, Archaic lifeways are often described as employing a broad spectrum exploitation strategy.

As a continent-wide phenomenon, we see hunting and gathering societies intensively exploiting their local environments. These groups heavily exploited plant resources, and seeds were especially sought after. Shellfish were collected where available and fishing became important. Needless to say, no species of mammal was overlooked. As the ecological niches were systematically exploited for their resources and as the food base was broadened, there is a concomitant increase in tool diversity and specialization.

Archaic communities tend to be made up of small groups of related people living a semi-sedentary life style. However, group size can vary depending upon the type and quantity of the resources being exploited and upon competition for the resource. Restricted wandering also limits the quantity of cultural items that would reasonably be acquired or transported. This limitation can be compensated for by storing tools on site and returning to the same sites or locales year after year. Restricted wandering is a self-reinforcing system that discourages change.

The transition to an Archaic economy occurred early, the Late Pleistocene fauna becoming extinct by about 6000 B.C., and the economy persisting into the Historic period of the nineteenth century A.D., as represented by the culture of the Paiute Indians.

The Archaic of the Colorado Plateau is also referred to as the Desert culture or the Desert Archaic culture. The Desert culture is found throughout the American Southwest, Great Basin, northern Mexico, and the Colorado Plateau (Jennings and Norbeck 1964). The economy of the Desert culture was a specialized adaptation to the problem of living in a semiarid region. In these semiarid regions, where water is scarce and vegetation is sparse, human carrying capacity is low. The economic specializations practiced in this region were seed-gathering and the use of traps and snares to catch small animals, reptiles, and birds.

In the Great Basin the Desert culture is known from numerous stratified dry cave sites such as Danger Cave, Hogup Cave, Ventana Cave, Lovelock Shelter, and Leonard Shelter. On the Colorado Plateau, sites such as Cowboy Cave, Sudden Shelter, Joes Valley Alcove, Thorne Cave, and Deluge Shelter provide equally valuable information on the upland adaptations of the Desert culture. The dry rock shelters of the Great Basin have preserved a remarkable and perishable artifact inventory featuring a wide variety of implements made from wood, bark, and fiber. Items such as baskets, netting, matting, and sandles are present, and even duck decoys made from reeds have been recovered.

The prime characteristic of the Desert culture was the seasonal movement of its people to exploit ephemeral food resources. This pattern of seasonal movement was first described by Steward (1938). Archaeologically, Steward's model of seasonal explotiation has been tested in the Reese Valley of Nevada by Thomas (1973) and by Grady (1980) in the Piceance Basin of Colorado. In the Reese Valley, Thomas clearly demonstrated a pattern of riverine zone exploitation coupled with the utilization of the distant but complementary pinyon-juniper vegetation type. Grady's work in the Piceance Basin also demonstrated a pattern of seasonal resource use. In this case, however, the resources were distributed by marked altitudinal differences and the major integrating factor between the uplands and lowlands was the annual movement of the Basin's mule deer herd. Both patterns are typical of the Desert culture.

Northwest Colorado's Archaic stage may be viewed from two perspectives: the Northwestern Plains or the Great Basin. Both are applicable and materials representative of both geographic areas are present in the study area.

3.2.1.1 Northwestern Plains Sequence. The sequence presented below was initially developed by Mulloy (1958) and later modified by Frison (1978). Mulloy's original outline included "an early Prehistoric period that corresponds to the Paleo-Indian period". This period was followed by the Altithermal period, a Middle Prehistoric period that was divided into an early and late period, and a Late Prehistoric period that lasted until historic terms. When Frison applied the concept of an Archaic stage to the Northwestern Plains, he modified Mulloy's Altithermal cultural period and his Middle Prehistoric period. In Frison's outline, Mulloy's Altithermal is referred to as the Early Plains Archaic period, Mulloy's Early Middle Prehistoric period is referred to as the Middle Plains Archaic period, and Mulloy's Late Middle Prehistoric period is referred to as the Late Plains Archaic period. These periods are readily identifiable by distinctive diagnostic projectile point types.

As Frison notes (1978:4), it was once thought that the Altithermal period coincided with a cultural hiatus or abandonment of large portions of the west. The lack of sites on the Plains during the Altithermal tends to confirm this view. However, in the foothill zone and in the Front Range, Early Archaic sites and materials have been found. At the Wilbur Thomas rock shelter (Breternitz et al. 1971), evidence is present which indicates that peoples living in the mountains did, at least periodically, penetrate the Plains. Points associated with the Early Archaic period tend to be large and side-notched. The Early Archaic dates from 5000 B.C. to 3000 B.C.

Middle Archaic materials are quite plentiful in Colorado. This period is marked by the sudden appearance of McKean Complex points (i.e., McKean, Duncan, and Hanna points), particularly in areas that previously were devoid of Archaic materials. These points have lanceolate shapes, some have stems, and some are "corner-notched". All have indented bases.

The appearance of grinding slabs, sandstone manos, and roasting pits (Frison 1978:47) has been interpreted as indicating a heavier emphasis on plant resources. Frison agrees with Schroedl's view that Archaic peoples practiced "a carefully calculated scheduling of economic activities to coincide with food sources in a wide range of ecological areas from season to season." The Middle Archaic period dates between 3000 and 1000 B.C.

The appearance of large, corner-notched points marks the beginning of the Late Archaic period. Dart points with large corner notches, such as Pelican Lake points, are diagnostic of the period. In general there is a noticeable increase in numbers and sizes of sites, suggesting an increase in population size. The Late Archaic is dated between 1000 B.C. and A.D. 400.

3.2.1.2 Colorado Plateau Sequence. A different perspective is offered by Schroedl's (1976) work on the Colorado Plateau where he defined the Archaic stage as, "a stage of migratory hunting and gathering cultures following a seasonal pattern of efficient exploitation of a limited number of selected plant and animal species within a number of different ecozones" (1976:11). Analyzing materials from Sudden Shelter, Cowboy Cave, and Joes Valley Alcove, all located in Utah, Schroedl has identified four distinct Archaic phases for the Colorado Plateau. These are: the Black Knoll, the Castle Valley, the Green River, and the Dirty Devil.

The Black Knoll phase dates to between 6300 and 4200 B.C. In addition to being present at Sudden Shelter, Cowboy Cave, and Joes Valley Alcove, Schroedl feels this phase is also present at Hell's Midden and Deluge Shelter. The Black Knoll phase is subdivided into an Early Black Knoll phase and a Late Black Knoll phase. In the Early Black Knoll phase, Pinto series points are dominant; in the Late Black Knoll phase, Northern side-notched points appear.

Starting in 5200 B.C., according to Schroedl, coincident with the appearance of Northern side-notched points, there is a dramatic increase in population. Schroedl also notes a marked difference between the food remains of high elevation and low elevation sites. High elevation sites emphasize the use of artiodactyls and low elevation sites emphasize vegetation. This would indicate either a high degree of regional specialization or a system of annual seasonal rounds.

The Castle Valley phase dates to between 4200 and 2500 B.C., and, like the Black Knoll phase, it too can be divided into Early and Late phases. Between 4200 and 3000 B.C., there is either a clear decrease in population size or intensity of occupation. The Early Castle Valley phase is characterized by Rockerbase, Sudden, and Hawkin side-notched points. After 3000 B.C., population increases but does not reach earlier levels. This increase continues to ca. 2500 B.C., then falls off. In the Late Castle Valley phase, we have the appearance of slab-lined fire pits. Humbolt points and lanceolate series points became the dominant type. Schroedl also notes a decrease in annual precipitation (1976:64).

The Green River Phase dates to between 2500 and 1300 B.C. Gypsum points appear ca. 2500 B.C., and become the dominant type by 1800 B.C.; during the same period a new point type appears, the San Rafael side-notched. Schroedl (1976:66-68) argues that in the high plateau section, Gypsum and San Rafael points predominate, but in the northeastern portion of the Colorado Plateau, Plains influences are interjected. This distinction is attested to by the presence of Duncan, Hanna, and McKean (?) points in Level 12 at Deluge Shelter. By the end of the Green River Phase, in Level 10, Deluge Shelter, a number of points similar to the Elko series are present. The nature and extent of Plains influence at the end of the Green River phase are not known.

The Dirty Devil Phase dates from 1300 B.C to A.D. 500 and is considered to be the most tenuous of the four phases since there is a "break" in the radiocarbon dates between 1000 B.C. and A.D. 0. Elko series points at Deluge Shelter (Leach 1970) are placed in this phase. The introduction of the bow and arrow (Rose Spring and East Gate points) marks the end of this phase. However, there are no other distinctive changes at this time; in fact, the Gypsum point which appeared during the preceeding Green River phase, continues to survive up and into the succeeding Fremont period (Schroedl 1976:68-73).

3.2.2 Archaic Stage Lifeways. Since the environment exploited by Archaic peoples in northwest Colorado was not, in all probability, dramatically different from that of today, and since resources capable of supporting these people were and are unevenly distributed, mobility becomes a crucial factor in exploiting the area's resources.

It is likely that the drainage basin provided the basic annual territory of exploitation. Lowland marshes adjacent to the main drainages contain the first foods available for human consumption in the spring. It is here that the starch-rich rhizomes and corms of the rush, cattail, and reed are found. Once spring has set in, there is a short but intense burst of new growth suitable for consumption, but, when this initial burst of productivity is over, the lowlands are comparatively unproductive until fall.

High elevations, over 8,000 ft above sea level, are the centers of high consumable productivity during the summer. Here the short growing season produces an unexpected lushness of foods attractive to man and animals as well. This season is the time to hunt deer and to prepare food resources for winter. High country snows at the end of the season finally force both human and animals to seek food and shelter in the lower elevations of the basin, where new crops, particularly pinyon nuts and juniper berries are coming into season. The final move of the season occurs when man moves into the sheltered valleys for the winter. This pattern of complementary resource exploitation and seasonal movement seems to have had a long antiquity in the study area.

Although tools, industries, and material cultures of the Archaic stage will reflect a hunting and gathering life style, this pattern of moving from resource to resource will be conditioned by the local setting. Consequently, there will be some degree of variety within the assemblages. Assuming similar environmental conditions and similar activities, certain analogies can be drawn between the earlier Archaic hunters and gatherers and the later Ute occupants of the area. In the absence of any evidence of large settlements for either group, it is reasonable to assume that Archaic activities were centered at the band level and that small nuclear families or extended family groups probably spent most of the year alone. These small clusters of people probably coalesced into larger groups seasonally in order to exploit the same resources (i.e., pinyon forest resources) where successful exploitation required large numbers of people. Consequently, it is unlikely that there were individuals of great authority in leadership positions; rather leadership was by group consent (James and MacKay 1980:51).

### 3.2.3 The Archaic Stage in Northwest Colorado

To date, Schroedl's scheme has not been used in either the northwest Colorado study area or in that portion of it assignable to the Colorado Plateau. Yet as Reed and Nickens (1980:60) note,

> Of the phase sequences developed for west-central Colorado (cf. Buckles 1971; Hibbets et al. 1979; and Schroedl 1976), Schroedl's may prove the most useful in future studies, as it concerns archaeological data from the northeastern Colorado plateau (the same physiographic province as much of west-central Colorado), and employs a series of chronometric dates from excavated sites.

The same situation is valid in northwestern Colorado. Instead of using Schroedl's scheme, most workers have relied upon the Northwestern Plains approach as proposed by Frison (1978). This effect undoubtedly reflects the strong Northwestern Plains influence that is prevelant over much of the study area. In contrast to the Northwestern Plains approach is the work of Creasman (1981) who uses a Desert Archaic scheme in Douglas Creek. The Plains sequence (Early, Middle, and Late Archaic periods as described in Section 3.2.1.1) seems to be more commonly used as you move away from Douglas Creek and into the Wyoming Basin.

Creasman (1980) proposes a two-period scheme to cope with the Archaic period in Douglas Creek. These periods are Early Desert and Late Desert Archaic, and are based on artifact similarities from the district and from the surrounding areas. Creasman's use of the Desert Archaic is a valid approach in the study area, since at Deluge Shelter (Leach 1970) the Archaic remains show relatively close affinities with the Desert Archaic. Only in Level 12, which lies between Early and Middle Desert Archaic horizons, is there a change. In this level (Level 12), McKean Complex artifacts representative of the Plains Archaic traditions have been recovered. These artifacts are considered to be diagnostic of the Middle Plains Archaic Period (Frison 1978:46-56).

There are no sites from the Douglas Creek survey attributable to the Early Desert Archaic period. This lack is attributed to large-scale depositions of alluvium in the drainage basins. In other words, the sites may be there, but they are buried under massive layers of water-deposited soils. The Late Desert Archaic period is initiated by the appearance of Plains-oriented McKean Complex points and by the appearance of Great Basin-oriented Desert Culture Pinto points. As Creasman (1981:VI-3) points out, "The occurrence of these projectile points demonstrates that

Douglas Creek was receiving influence from both the Great Basin and Great Plains."

This multi-influence from differing sources produced a point type that exhibits similarities to both McKean and Pinto points. While the Pinto series is not well dated, the dates that are available indicate a temporal range of 3000 B.C. to 1700 B.C., a range similar to the 2730 B.C. to 1650 B.C. range for McKean points cited by Frison (1978:53). Creasman's Late Desert Archaic period is terminated around A.D. 375 with the appearance of the Fremont culture.

Late Desert Archaic sites tend to be open camps found on the flood plains of Douglas Creek. Sheltered camps are found on the edges of the flood plains and lithic sites are found in upland areas (Creasman 1981:VI-4). This settlement pattern suggests a pattern of movement to exploit a series of seasonally available resources. In other words, the settlement pattern is representative of a generalized pattern of hunting and gathering conditioned by local ecological conditions.

Madsen and Berry (1975:400) argue that between 5500 B.P. (3500 B.C.) and 3300 B.P. (1300 B.C.) Archaic peoples of the northeastern Great Basin shift from a marsh periphery settlement and exploitation pattern to an upland pattern. Creasman (1981:VI-5) notes that it is at this point in time that we have evidence of the "initial occupation of Douglas Creek".

Early Archaic finds are rare within the study area. However, Early Archaic finds (usually, but not always isolated projectile points) from Douglas Creek, Moon Lake, and Missouri Creek have been reported.

During the Middle Archaic, density of occupation varies from region to region within the study area. For example, the Archaic is poorly represented in any form in the Danforth Hills (Gordon et al. 1982), but in the Yampa Basin (Arthur and Collins 1981) occupation was fairly heavy. In fact, in the Yampa Basin, projectile points of the McKean Complex of the Northwestern Plains, the Apex Complex of the Colorado Front Range, and the Desert Culture of the Great Basin have been found and attributed to the Middle Archaic period (Arthur and Collins 1981). This would suggest that Middle Archaic peoples wandered widely while pursuing their hunting and gathering life style.

The appearance of corner-notched points marks the inception of the Late Archaic period. Despite the fact that the Late Archaic materials may be more abundant, the period is not much better known than the Middle Archaic period. Newkirk and Treat (1982:28) feel that Late Archaic materials show influence from Colorado's Front Range and from the Great Basin.

In general, open lithic sites and campsites are the most common site types attributable to the Archaic. However, with good, datable material to work with virtually any site type found in the study area could be attributed to the Archaic stage.

3.2.4 Evaluation of the Data Base

3.2.4.1 Quantity and Quality of the Research. Archaeological interest in northwestern Colorado is a recent phenomenon and is due primarily to the presence of oil-bearing shale, oil, natural gas, and coal, making this a prime area for energy development.

Prior to 1946, archaeological work in the area can only be described as sporadic. After World War II, interest in the area accelerated (Buckles 1971; Breternitz 1971; Leach 1965, 1966, 1967, and 1970; Lister 1951; Lister and Dick 1952; Wenger 1956). These investigations highlighted the importance of the area's archaeology and dealt with various themes. They demonstrated a considerable antiquity for occupancy of the region (Leach 1970), and that the Fremont culture was present and well established in the area. As Jennings (1982:3) points out:

> The principal motivation for collection of archaeological data shifted in 1969, from increasing knowledge with reference to specific archaeological problems appropriate to the region to the collection of a broad range of information for evaluation of the impacts of development on the archaeological data of the study area. Trends toward this orientation were discernible in the preceding period, but now this preservation approach holds full sway.

For example, in 1972 there were no site forms or isolated find forms on file for Rio Blanco County. As of 1983, 1,827 site forms are on file at the Colorado Preservation Office and the list is undoubtedly growing. The energy orientation of the archaeological work in the area is already attested to by the fact that there are at least 632 reports dealing with the study area that are directly attributable to energy interests and development. These reports deal with rights-of-way as well as mines, mine extensions, and well pads. A large portion of these reports is "negative" (i.e., no cultural resources are located).

On the other hand, there are a number of reports of major projects that provide a framework for identifying the basic cultural history and the resources of the study area. Work prior to 1975 is summarized in the regional Oil Shale Survey by Jennings (1975). On a more localized basis, there are various studies of the Douglas Creek area (Wenger 1956; Creasman et al.; 1977; Creasman 1981). In the Piceance Basin, major projects would include the oil shale lease tracts (Olsen et al. 1975;

Jennings 1975). Hurlbutt (1977) and Grady (1978) produced studies dealing with settlement patterns in the basin.

Six reports dealing with the White River (Moon Lake-Desderado Mine Project) are now available (Chandler and Nickens 1979a, 1979b, Anderson and Henss 1979). In the Danforth Hills, a major survey, the Northern Coal Mine survey, was reported on in 1979 (Anderson and Henss 1979) as well as a Class II cultural resource inventory of the region (Gordon et al. 1982). A Class III inventory now exists for the Texas-Missouri-Evacuation Creeks study (Gordon et al. 1981).

With the change in research direction towards preservation stimulated by energy-related interests, there has been heavy emphasis on the interpretation of surface finds regardless of affiliation and their location, and little effort has been expended on various thematic interests. Consequently, the surveys outlined above tend to be inclusive of all cultural materials found within a given area and are less concerned with the Archaic, Formative, or Protohistoric as topics of research. On the other hand, where deeply stratified sites with Archaic components have been recovered, excavation or testing has usually taken place.

Since most of these surveys have taken place in the past ten years (1972-1982),they all meet high standards of accuracy in recovery, recording, documentation, and curation.

3.2.4.2 Numbers and Condition of the Resources. One hundred and five sites and 28 isolated artifact finds are attributed to the Archaic period in general. Of the 105 sites, 28 are assigned to the general category "Archaic," 14 are attributed to the Early Archaic, 22 to the Middle Archaic, and 41 to the Late Archaic (see Table 1). Of the isolated finds, 15 are assigned to the broad category Archaic, none are assigned to the Early Archaic, nine are assigned to the Middle Archaic, and four are assigned to the Late Archaic. There is a shift in frequency through time with the Early Archaic having the fewest manifestations and the Late Archaic having the most. A number of sites with radiocarbon dates falling into the Archaic stage exist, but as Creasman points out (1981:VI-1), the dates are for the most part not associated with diagnostic artifacts (Tables 2-4). Site condition is discussed in Section Four.

Table 1. Archaic Site Frequency in the Study Area

| Site Type | Archaic | Early Archaic | Middle Archaic | Late Archaic |
|---|---|---|---|---|
| Campsite | 8 | 9 | 13 | 20 |
| Lithic Scatter | 15 | 3 | 7 | 14 |
| Rock Art | 3 | 1 | 1 | 4 |
| Rock Shelter | 0 | 1 | 1 | 1 |
| Burned Rock | 1 | 0 | 0 | 0 |
| Eagle Pits | 0 | 0 | 0 | 1 |
| Habitations | 1 | 0 | 0 | 0 |
| Lithic Concentration | 0 | 0 | 0 | 1 |
| Total, 105 sites | 28 | 14 | 22 | 41 |
| Total, I9 IFs | 15 | 0 | 9 | 4 |
| Total Sites and IFs | 43 | 14 | 31 | 45 |

For the Early Archaic period, there are nine radiocarbon dates from four sites (see Table 2).

Table 2. Early Archaic Radiocarbon Dates

| Site No. | Carbon-14 Years | Standard Deviation | Calendar Year (B.C.) | Reference | Origin | Lab Number |
|---|---|---|---|---|---|---|
| 5RB298 | 7545 | 205 | 5595 | Jones 1978 | LOPA | UGA 1698 |
| 5RT139 | 6430 | 180 | 4480 | Tucker 1981 | N/A | RL 1435 |
| 5RT139 | 5900 | 180 | 3950 | Tucker 1981 | N/A | RL 1434 |
| 5ME82 | 6150 | 190 | 4200 | R & N 1980 | N/A | RL 1221 |
| 5ME82 | 5930 | 180 | 3980 | R & N 1980 | N/A | RL 1223 |
| 5ME82 | 5130 | 170 | 3180 | R & N 1980 | N/A | RL 1220 |
| 5ME82 | 5070 | 160 | 3120 | R & N 1980 | N/A | RL 1219 |
| 5ME82 | 5050 | 160 | 3100 | R & N 1980 | N/A | RL 1217 |
| 5RB1008 | 5390 | 210 | 3440 | | N/A | RL 1147 |

R & N = Reed and Nickens 1980

Table 3. Middle Archaic Radiocarbon Dates

| Site No. | Carbon-14 Years | Standard Deviation | Calendar Year (B.C.) | Reference | Origin | Lab Number |
|---|---|---|---|---|---|---|
| 5RB298* | 4945 | 415 | 2995 | Jones 1978 | LOPA | UGA 1705 |
| 5ME82* | 4890 | 160 | 2940 | R & N 1980 | N/A | RL 1214 |
| 5RB670* | 4720 | 90 | 2770 | Creasman 1979 | LOPA | W 4244 |
| 5RB298* | 4605 | 500 | 2655 | Jones | LOPA | UGA 1716 |
| 5ME82* | 4430 | 150 | 2460 | R & N 1980 | N/A | RL 1216 |
| 5ME82* | 4140 | 150 | 2190 | R & N 1980 | N/A | RL 1213 |
| 5RB0 | 3750 | 300 | 1800 | | USGS | W 4192 |
| 5RB312 | 3690 | 130 | 1740 | | BLM-CD | R L776 |
| 5RB428 | 3700 | 550 | 1720 | Stevens 1981 | CRI | 0 |
| 5RB298* | 3620 | 540 | 1670 | Jones 1978 | LOPA | ULGA 1704 |
| 5RB312 | 3600 | 130 | 1650 | | BLM-CD | RL 77 |
| 5ME82* | 3340 | 130 | 1390 | R & N 1980 | N/A | RL 1215 |
| 5RB148 | 3150 | 150 | 1200 | | GRI | RL 0 |
| 5ME635 | 2970 | 220 | 1020 | | GRI | RL 0 |

* Sites with more than one Middle Archaic date.

For the Late Archaic, there are 44 dates from 21 sites (see Table 4 on the following page).

Table 4. Late Archaic Radiocarbon Dates

| Site No. | Carbon-14 Years | Standard Deviation | Calendar Year | Reference | Origin | Lab Number |
|---|---|---|---|---|---|---|
| 5GF126* | 2900 | 60 | 950 BC | | GRI | Beta 0 |
| 5GF126* | 2770 | 60 | 820 | | GRI | Beta 0 |
| 5ME635 | 2690 | 120 | 740 | | GRI | RL 0 |
| 5ME635 | 2660 | 710 | 710 | | GRI | RL 0 |
| 5MF510 | 2595 | 100 | 645 | J & D 1976 | LOPA | UGA 1355 |
| 5GF126* | 2590 | 70 | 640 | | GRI | Beta 0 |
| 5RB363 | 2570 | 80 | 620 | Creasman 1977 | LOPA | UGA 1496 |
| 5MF510 | 2560 | 65 | 610 | J & D 1976 | LOPA | UGA 1356 |
| 5GF129 | 2530 | 105 | 580 | | GRI | DIC 0 |
| 5RB298 | 2515 | 310 | 565 | Jones 1978 | LOPA | UGA 1702 |
| 5ME82 | 2510 | 120 | 560 | R & N 1980 | N/A | RL 1218 |
| 5GF126* | 2500 | 100 | 550 | | GRI | DIC 0 |
| 5MF607 | 2490 | 60 | 540 | I & R 1983 | LOPA | UGA 1852 |
| 5MF510 | 2480 | 125 | 530 | J & D 1976 | LOPA | UGA 1354 |
| 5ME82 | 2440 | 120 | 490 | R & N 1980 | N/A | RL 1222 |
| 5RB1872 | 2430 | 55 | 480 | | GRC | DIC 2262 |
| 5ME435 | 2365 | 75 | 415 | Arthur 1982 | LOPA | UGA 2738 |
| 5MF607 | 2330 | 110 | 380 | I & R 1983 | LOPA | UGA 1853 |
| 5MF607 | 2300 | 95 | 350 | I & R 1983 | LOPA | UGA 1851 |
| 5RB699 | 2255 | 55 | 305 | LaPoint 1981 | LOPA | UGA 3386 |
| 5ME435 | 2175 | 95 | 225 | Arthur 1982 | LOPA | UGA 2725 |
| 5MF607 | 2120 | 100 | 170 | I & R 1983 | LOPA | UGA 1855 |
| 5ME435 | 2110 | 60 | 160 | Arthur 1982 | LOPA | UGA 2731 |
| 5ME435 | 2045 | 65 | 95 | Arthur 1982 | LOPA | UGA 2736 |
| 5RB1872 | 2040 | 75 | 90 | | GRC | DIC 2263 |
| 5ME428 | 1980 | 120 | 30 | | GRI | RL 0 |
| 5ME435 | 1955 | 60 | 5 | Arthur 1982 | LOPA | UGA 2726 |
| 5RB2210 | 1950 | 70 | AD 0 | | GRI | BETA 0 |
| 5ME428 | 1910 | 120 | 40 | | GRI | RL 0 |
| 5RB699 | 1895 | 70 | 55 | LaPoint 1981 | LOPA | UGA 3382 |
| 5RB363 | 1875 | 75 | 75 | Creasman 1977 | LOPA | UGA 1495 |
| 5RB699 | 1845 | 90 | 105 | Creasman 1979 | LOPA | UGA 3384? |
| 5RB699 | 1825 | 60 | 125 | LaPoint 1981 | LOPA | UGA 3384? |
| 5RB704 | 1825 | 100 | 125 | Creasman 1977 | LOPA | UGA 1922 |
| 5GF127 | 1800 | 80 | 150 | | GRI | DIC 0 |
| 5RB715 | 1775 | 65 | 175 | Creasman 1977 | LOPA | UGA 1921 |

* Sites with asterisks have more than one date

J & D 1976 = Jennings and Daniels 1976
R & N 1980 = Reed and Nickens 1980
I & R 1983 = Ingmanson and Rodriguez 1983

Table 4. Late Archaic Radiocarbon Dates (Continued)

| Site No. | Carbon-14 Years | Standard Deviation | Calendar Year | Reference | Origin | Lab Number |
|---|---|---|---|---|---|---|
| 5RB699 | 1740 | 50 | 210 | Creasman 1979 | LOPA | W 4248 |
| 5GF122 | 1660 | 75 | 290 | | GRI | DIC 0 |
| 5RB699 | 1650 | 60 | 300 | LaPoint 1981 | LOPA | UGA 3383 |
| 5RB123 | 1620 | 195 | 330 | Jennings 1982 | LOPA | UGA 1046 |
| 5GF128 | 1610 | 60 | 340 | | GRI | BETA 0 |
| 5RB1460* | 1590 | 710 | 360 | K & G 1980 | G & K | UGA 0 |
| 5RB123 | 1575 | 195 | 375 | Jennings 1982 | LOPA | UGA 1045 |

* This site could be either Late Archaic or Early Fremont. There are no diagnostics.

K & G 1980 = Kranzush and Gordon 1980

### 3.2.5 Research Problems

3.2.5.1 Chronology. The overriding problem of the Archaic is the problem of dating. Although there are some dates available within the study area, there is also a heavy dependence on dates derived from outside the area. For example, the dates offered for the McKean complex are derived for the most part from sites found in northeastern Wyoming. A similar situation prevails for the Pinto series of points, whose dates are derived from Great Basin dates. Equally critical is the dependence on point typology as a dating criteria. There are literally hundreds of sites which cannot be dated since they do not have points. Additional dates would facilitate comparative dating based on artifacts other than points or on definable artifact clusters.

3.2.5.2 Continuous Occupation. The dated sequences of the DeBeque rock shelter (Reed and Nickens 1980) argue for continuous occupation of the study area. On the other hand, survey evidence tends to indicate an Early Archaic hiatus. As Creasman (1981) argues, the Early Archaic sites may be buried. This is not an argument based on who is right or wrong. It is an argument based on a lack of information to provide proper understanding of interregional variations and the process that can reduce site visibility. It is tempting, because of the number of surveys that have been conducted within the study area, to assume that we have a real grasp of the prehistoric dynamics of the region. Consequently, it is essential to keep in mind that the location of many of the surveys is more reflective of the subsurface geological interest rather than interest in resolving problems in the region's cultural dynamics.

3.2.5.3 Identification of Regional Sequences in Movements of Peoples. Dates are needed to establish regional sequences, to give substance to possible regional variations, and to establish times and rates of exchange of interregional movement of peoples and ideas from the Northwestern Plains and the Great Basin.

3.2.5.4 Processual Explanations. There is a pressing need to examine the problem of initial occupation of the study area. Does the Early Archaic represent the first occupation of much of the region? Obviously this question is closely tied to the problem of Paleo-Indian occupation of the area. Assuming there is both Paleo-Indian and Early Archaic occupation of the area, are similar areas occupied? Is there significant regional variation in terms of occupation? Perhaps the most intriguing problem is the problem dealing with the Archaic/Fremont interface. Was the Archaic replaced en masse by the Fremont or did the Fremont develop out of the Archaic?

3.2.5.5 Paleo-Environment. Paleo-environmental studies are needed for much of the study area to determine the nature and variations of environmental conditions within the study area. Any large-scale excavation should contain provisions for an environmental study incorporating modern climatic variation, as well as a complete paleo-environmental investigation.

3.2.6 Important Resources. Sites with the potential to produce a wide variety of artifact types, datable materials, environmental material substance data, and sites with long cultural sequences should be considered as being critical sites. Habitation sites and sites with rock art are also important.

3.2.7 Data Gaps. Data is needed to determine site locational preferences, site density, the nature of environmental adaptations, and to develop local chronologies. Geomorphological investigations to locate Early Archaic sites in Douglas Creek and other drainages in the study area would be of great value. Information is needed to determine the nature and degree of subregional variation and information is also needed to determine the nature and distribution of outside (plains, desert, and so forth) influences in northwestern Colorado.

3.2.8 Future Needs. There will be a continuing and perhaps growing need for additional dated sites, excavated sites with long stratified sequences that contain environmental and cultural data, and for data on the geographic distribution of all types of Archaic stage sites. There is a pressing need to perform surveys to fill the information and data gaps that now exist in large portions of the area if we are to develop an understanding of the distribution of past occupants in the study area.

## 3.3 The Formative Stage

The Formative stage in northwestern Colorado is marked by the appearance of horticulture and the establishment of a sedentary or semi-sedentary lifestyle. The cultural entity assigned to the Formative stage is referred to as the Fremont culture.

3.3.1 Fremont Culture History. The Fremont culture is characterized by the cultivation of maize, a sedentary or semi-sedentary life style, pit-houses and masonry dwellings, a distinctive rock art style, and a variety of ceramic gray wares. Despite the homogeneity implied by the term Fremont culture, it has been recognized that the Fremont culture is really a theme with many variations. In 1970, John Marwitt published his seminal work on Median Village and developed a detailed overview on Fremont culture regional variation, particularly as they exist in Utah. Of the five variants discussed, only two, the Uinta and the San Rafael Fremont, seem to occur in northwestern Colorado. However, their boundaries or distributions have yet to be defined. The two are differentiated primarily by ceramics and variation in architectural styles. Marwitt's diagnostic criteria for these variants and their phases is presented in Appendix B. Ceramics appear during this stage, the most common being Uintah and Emery Grey (see Appendix C). After A.D. 900, southwestern wares occur (Creasman 1981:VI-6).

The Uinta Fremont is divided into two sequential phases: Cub Creek (A.D. 600 (?) to A.D. 800 (?), and Whiterocks (A.D. 800 (?) to A.D. 950 (?). Schroedl and Hogan (1975), based on their work at Innocents Ridge, defined a "Book Cliff" phase that dates between A.D. 900 and A.D. 1200, following the Uinta Whiterocks phase. Whiterocks phase sites show architectural continuity with the shallow pit dwellings of the Cub Creek phase, and also exhibit wet-laid masonry and coursed adobe dwellings. Book Cliff phase sites tend to be located on high buttes or at canyon heads usually some distance from arable land. Schroedl and Hogan note that the dominant architectural feature is the oval or circular surface structure. They also note the absence of free-standing storage structures.

The San Rafael Fremont dates to between A.D. 700 (?) and A.D. 1200 (?) (Marwitt 1970). Marwitt (143-145) notes that:

> Open village sites in the San Rafael area are generally small, with no more than a dozen rooms in use at any one time (Gunnerson 1969: 150). Most, if not all, are located on high ridges, knolls, or buttes well above arable land. A few settlements may have been fortified, but this cannot be demonstrated in most cases. Small caves and rockshelters were heavily utilized, primarily for storage, but also for habitation. Most protected site, however, have only

flimsy brush shelters that suggest temporary or intermittent occupation probably associated with hunting and/or seasonal collecting.

It is, at this point in time, premature to try to assign the Fremont of northwestern Colorado to either variant of the Utah Fremont. As James and MacKay (1980:53) note:

> It is important to realize that the classifications, subdivisions, and phases defined for the Fremont constitute hypotheses, and, as such, are subject to test. It is certain that some or even all of the classifications within and definitions of Fremont and its variants will be modified or even rejected when additional relevant information is available. For this reason it is important that researchers working with or reading about Fremont culture be aware that the terminologies and divisions are by no means well established, and that caution should be used when working with the data so that the preliminary ordering of the extant information not be taken as fact.

The tenuous nature of the Fremont subdivisions is highlighted by Madsen's (1979:120) attempt to remove the name "Fremont" from the Uinta Basin horticulturalists and to refer to them as an "unnamed Plains-derived culture".

Three theories have been advanced to explain the origins of the Fremont culture. One theory suggests that the Fremont culture developed from the indigenous Archaic, incorporating characteristics of Puebloan culture (Aikens 1970; Jennings 1978; Leach 1967; Wormington 1955). Alternatively, the Fremont people were a distinct group with Southwest and Northwestern Plains affinities (Aikens 1967:198-208). According to the third theory, the Fremont areas were unoccupied before A.D. 400 and became populated by Puebloan peoples from the northern periphery, northern Arizona, and southeast Utah (Gunnerson 1969).

The nature of the demise of the Fremont culture is currently unknown. Did the Fremont peoples give up their horticultural and sedentary life style and shift to a life style we equate with the historical occupants of the area, or did they abandon the area in toto. We do not currently know if there is a "gap" or hiatus between the Fremont occupation of this area and the suceeding photohistoric stage. All we do know is that around A.D. 1200, the Fremont culture as an archaeological entity ceases to exist.

3.3.2 Formative Stage Lifeways. Subsistence was based on hunting and gathering and maize horticulture (Creasman 1981:VI-7). Corn, and possibly beans and squash were grown near the mouths of side canyons and on the margins of alluvial fans. Hunting played a major role in the Fremont subsistence scheme with deer being the most commonly exploited animal. In many ways the Fremont subsistence pattern is very similar to that of the Archaic period, the main difference being the addition of horticulture.

It is possible that the Fremont and Archaic lifestyles are in reality nothing more than differing sets of economic activities employed by the same people at different times of the year. It should be possible to reconstruct a cycle of annual economic activities that account for the Fremont element within and adjacent to the Basin (Grady 1980). In this case, spring planting of corn can be added to the lowland/spring quest for food, followed by the highland/summer deer harvest. Fall would find the Fremont peoples harvesting pinon nuts. Final fall movement into the valleys would permit harvest of the corn sown in the spring.

3.3.3 Formative Stage Sites in Northwestern Colorado. Our perception of the cultural pattern of the Formative stage (Fremont culture) in northwestern Colorado is based primarily on the work of Creasman (1981) in the Canyon Pintado Historical District at Douglas Creek where the frequency of Fremont sites is extremely high. However, Fremont material is also known from the Texas-Missouri-Evacuation Creeks study area (Gordon et al. 1981), the Blue Mountains area (Wenger 1956), the Little Snake Recreation area (LaPoint, personal communication, 1983), and from Dinosaur National Monument which served as the basis for defining the Uintah Fremont variant and particularly the Cub Creek phase (Breternitz 1970).

Formative stage sites were among the first types of sites recognized in northwest Colorado. In 1926, Jeancon visited the Skull Creek area after hearing reports from ranchers of the existence of "cliff dweller-like ruins" in the area. Jeancon did visit several groups of quarries in "Lizard" Canyon on Mills Creek (Jeancon 1927). Since Jeancon's early work, the presence and absence of Formative stage sites has been a central theme in northwest Colorado archaeological studies. In Wenger's (1956) report, a variety of site types attributable to the Formative stage were described. These include masonry granary sites, campsites, work shops, and caves. Wenger also reports the presence of pictograph sites, petroglyph sites, and sites with both pictographs and petroglyphs.

A file search (March 1983) at the Colorado Preservation Office produced the following site types attributable to the Formative stage (Fremont period). These categories include rock art, campsites, rock shelters, lithic scatters, granaries, cists, and isolated finds. Within all of the reports and files screened, there is a remarkable degree of consistency as to the main characteristics or diagnostics of the Formative stage. These include masonry structures of various kinds, the presence of cultigens, and ceramics. Architectural features include storage structures, adobe structures, and promontory structures.

Storage structures are usually one of two types. The first consists of wet-laid masonry in a beehive shape. The masonry consists of sandstone slabs and in some cases the floors are plastered. These structures can be either free-standing or built against a natural wall. Entrance is through the top.

The adobe storage structures are circular in shape and are made of turtle back construction bricks. These were then plastered over (Creasman 1981:111-14, 17).

Promontory structures were built on top of isolated rock outcrops and on benches. In all cases they are sited to yield commanding views of the surrounding countryside. Some of these structures were used for habitation, but for the most part their use is unknown (Creasman 1981:III-17,23). There are two types of promontory structure: curvilinear (which lacks definite corners) and rectangular structures (which exhibit corners). Construction often involved use of sandstone slabs and mud mortar.

In 1956 in his survey of the southern Blue Mountain and Douglas Creek, Wenger noted the presence of corn and gourds at a number of sites. For example, in the Blue Mountains area, ten sites out of 24 had evidence of corn, usually cobs, and in three of these sites, the corn cobs were stuck on sticks. In Douglas Creek, six sites out of 48 had evidence of corn cobs.

In 1981 Creasman reported that he located corn cob fragments from four sites (5RB705, 5RB707, 5RB717, and 5RB726). Creasman's cobs are eight row varieties, which is in contrast to Wenger's finds which are quite variable. "Twenty four percent of the cob collections had from six to eleven rows of kernals. Fifty percent of the cobs had from twelve to fourteen rows of kernals, and the remaining twenty-six percent had from fifteen to eighteen rows" (Wenger 1956:109).

Wenger also reports the presence of gourds at one site in the Blue Mountain area, while Creasman reports two fragments of gourds were encountered at 5RB705 in Douglas Creek. Creaseman (1981) and Grady (1978, 1980) also argue for the presence of "fields" that may have been used by the Fremont cultivators.

Two types of ceramics diagnostic of the Fremont (Uinta Grey and Emery Grey) are found in the study area and are described in Appendix C.

There are 56 dates from 28 sites for the Formative stage (see Table 5 on the following page). Again we have the problem noted earlier: there may be carbon dates from sites with no diagnostics.

Table 5. Formative Stage Radiocarbon Dates

| Site No. | Carbon-14 Years | Standard Deviation | Calendar Year (B.C.) | Reference | Origin | Lab Number |
|---|---|---|---|---|---|---|
| 5MF436* | 1545 | 65 | 405 | Arthur 1982 | LOPA | UGA 2747 |
| 5RB699* | 1470 | 70 | 480 | LaPoint 1981 | LOPA | UGA 3387 |
| 5RB715 | 1450 | 60 | 500 | Creasman 1977 | LOPA | UGA 1923 |
| 5MF435 | 1425 | 60 | 525 | Arthur 1982 | LOPA | UGA 2727 |
| 5RB363 | 1410 | 140 | 540 | Creasman 1977 | LOPA | UGA 1497 |
| 5RB707 | 1375 | 60 | 575 | Creasman 1977 | LOPA | UGA 1924 |
| 5MF436 | 1370 | 65 | 580 | Arthur 1982 | LOPA | UGA 2742 |
| 5GF128 | 1360 | 50 | 590 | | GRI | DIC 0 |
| 5ME0** | 1350 | 200 | 600 | Broeker 1956 | | L 167 |
| 5RB804 | 1350 | 60 | 600 | LaPoint 1981 | LOPA | UGA 3379 |
| 5MF436* | 1330 | 80 | 620 | Arthur 1982 | LOPA | UGA 2740 |
| 5GF134* | 1320 | 70 | 630 | | GRI | BETA 0 |
| 5RB726 | 1300 | 50 | 650 | Creasman 1979 | LOPA | W 4249 |
| 5RB690 | 1285 | 200 | 665 | Kranzush 1979 | G & K | UGA 2166 |
| 5ME420* | 1280 | 110 | 670 | | GRI | RL 0 |
| 5RB699* | 1280 | 70 | 670 | LaPoint 1981 | LOPA | UGA 3380 |
| 5GF134* | 1270 | 80 | 680 | | GRI | BETA 0 |
| 5MF1 | 1260 | 150 | 690 | Marwitt 1970 | UOU | RL 11 |
| 5 B0** | 1260 | 200 | 690 | | USGS | W 4194 |
| 5RB0** | 1250 | 200 | 700 | | USGS | W 4196 |
| 5GF134* | 1250 | 90 | 700 | | GRI | BETA 0 |
| 5MF435* | 1240 | 70 | 710 | Arthur 1982 | LOPA | UGA 2735 |
| 5RB699 | 1225 | 85 | 725 | Creasman 1977 | LOPA | UGA 1920 |
| 5RB699 | 1220 | 65 | 730 | LaPoint 1981 | LOPA | UGA 3385 |
| 5GF134 | 1214 | 440 | 736 | | GR | BETA 0 |
| 5GF129 | 1170 | 75 | 780 | | GRI | DIC 0 |
| 5RT139 | 1130 | 230 | 820 | Tucker 1981 | N/A | RL 1427 |
| 5RB699* | 1120 | 50 | 830 | Creasman 1979 | LOPA | W 4520 |
| 5ME0** | 1100 | 250 | 850 | R & S 1955 | | W 190 |
| 5ME3969 | 1100 | 50 | 850 | | GRI | BETA 0 |
| 5MF436* | 1090 | 85 | 860 | Arthur 1982 | LOPA | UGA 2745 |
| 5RB1873 | 1070 | 50 | 880 | | GRC | DIC 2264 |
| 5MF436* | 1055 | 70 | 895 | Arthur 1982 | LOPA | UGA 2746 |
| 5MF435* | 1065 | 60 | 895 | Arthur 1982 | LOPA | UGA 2728 |
| 5MF435* | 1055 | 60 | 895 | Arthur 1982 | LOPA | UGA 2729 |
| 5MF435* | 1045 | 60 | 905 | Arthur 1982 | LOPA | UGA 2733 |
| 5MF435* | 1030 | 60 | 920 | Arthur 1982 | LOPA | UGA 2739 |
| 5MF435* | 1010 | 60 | 940 | Arthur 1982 | LOPA | UGA 2734 |
| 5MF436* | 970 | 65 | 980 | Arthur 1982 | LOPA | UGA 2744 |

* Sites with more than one radiocarbon date.
** Sites with no reported site number
R & S 1955 = Reuben and Seuss 1955

Table 5. Formative Stage Radiocarbon Dates (Concluded)

| Site No. | Carbon-14 Years | Standard Deviation | Calendar Year (B.C.) | Reference | Origin | Lab Number |
|---|---|---|---|---|---|---|
| 5GF134* | 950 | 80 | 1000 | | GRI | BETA 0 |
| 5RB748 | 950 | 70 | 1000 | LaPoint 1981 | LOPA | UGA 3377 |
| 5RB2025 | 950 | 55 | 1000 | | GRI | BETA 0 |
| 5ME428 | 930 | 120 | 1020 | | GRI | RL 0 |
| 5ME435* | 895 | 75 | 1055 | Arthur 1982 | LOPA | UGA 2737 |
| 5RB2210 | 880 | 70 | 1070 | | GRI | BETA 0 |
| 5ME429 | 860 | 110 | 1090 | | GRI | RL 0 |
| 5RB699* | 850 | 65 | 1100 | Creasman 1979 | LOPA | UGA 2421 |
| 5GF134* | 830 | 70 | 1120 | | GRI | BETA 0 |
| 5GF134* | 820 | 70 | 1130 | | GRI | BETA 0 |
| 5MF379 | 820 | 200 | 1130 | C & G 1959 | DU | M 286 |
| 5RB699** | 740 | 85 | 1210 | Creasman 1979 | LOPA | UGA 2423 |
| 5RB699** | 725 | 60 | 1225 | Creasman 1979 | LOPA | UGA 2422 |
| 5RB817*** | 705 | 60 | 1245 | Gordon 1979 | G & K | UGA 2496 |
| 5GF134** | 680 | 65 | 1270 | | GRI | DIC 0 |
| 5MF607* | 680 | 60 | 1270 | I & R 1983 | LOPA | UGA 2003 |
| 5MF745* | 675 | 80 | 1275 | Arthur 1982 | LOPA | UGA 2749 |
| 5RB804* | 670 | 270 | 1280 | LaPoint 1981 | LOPA | UGA 3378 |

* Sites with more than one radiocarbon date.
** Dates could be Late Fremont or Early Late Prehistoric/ Protohistoric, but there are no diagnostics to aid in making a determination.
*** Assigned to both Late Fremont and Proto-Numic.

I & R 1959 = Ingmanson and Rodriguez 1983
C & G 1959 = Crane and Griffen 1959

In general Formative stage sites tend to be concentrated in relatively few areas, and these for the most part are restricted to certain portions of the study area (Douglas Creek, Missouri Creek, southern Blue Mountain, Little Snake Recreation Area, and Dinosaur National Monument). In fact in 1974, Calvin Jennings argued that the Cathedral Bluffs seemed to be the eastern boundary of the Formative stage of the Fremont culture. However, additional sites may occur in a wider area, but are not recognized. As Gordon et al. (1982:104) point out,

> The accuracy of identifying Fremont resources in isolated contexts is hampered by a usual lack of distinguishing features at such sites (e.g., architecture, horticulture, rock art), by the difficulties in differentiating Fremont from Post-

Fremont ceramics, the paucity of radiocarbon dates for these sites, and the frequent mixing and similarities of artifact tool kits utilized by the various cultural and temporal groups pursuing the nomadic or semi-nomadic Archaic subsistence strategies that such isolated resources usually represent.

The fact that Fremont materials are now being recognized in the Danforth Hills (Anderson 1979; Jennings and Sullivan 1977), the Sand Wash Basin (Stucky 1977), the Little Snake Recreation Area (LaPoint, personal communication, 1983), and the Piceance Basin (Grady 1980; Newkirk and Treat 1982) argues for a wider distribution than once thought. Since much of the study area has yet to be surveyed, the total distribution of Fremont activities has yet to be determined.

3.3.4 Evaluation of the Data Base

3.3.4.1 Quantity and Quality of the Research. Our basic understanding of the Fremont in northwest Colorado is based on the work of Breternitz (1970) at Dinosaur National Monument, Wenger's work in the southern Blue Mountains and Douglas Creek (1956), and the Laboratory of Public Archaeology's surveys for Canyon Pintado Archaeological District (Creasman 1981). The Breternitz and Anderson work included intensive survey coupled with excavation. This material has been supplemented with recent studies by Gordon and Kranzush, Inc. (Gordon et al. 1981; Gordon et al. 1982). These reports include areas that represent a small portion of the study area. Beyond these intensively studied areas, there are areas where Fremont material has been reported but has not been intensively studied. Consequently we have no real idea or feel for site density, site content, or site distribution beyond these intensively studied areas.

3.3.4.2 Number and Condition of the Resources. Review of 4,991 individual site forms and isolated artifact forms on file at the Colorado Preservation Office reveals that 95 (1.9%) of the entries are attributed to the Fremont period in general. Of the 95 Fremont entries, 33 are classified as rock art, 28 as campsites, 14 as isolated finds, ten as rock shelters, five as lithic scatters, two as granaries, one as a shelter, one as a pithouse, and one as a cist. Site condition is discussed in Section Four.

3.3.5 Research Problems. A series of major research problems can be posed for the Formative stage of northwest Colorado.

3.3.5.1 Chronological Problems. The date range of projectile points and other artifacts assigned to the Fremont period has yet to be resolved. Of even greater importance is the need for detailed dating within the Fremont period in order to determine points of origin, movement of peoples, and sources of influence. In terms of ceramics, what is the date range for the gray wares in the study area?

3.3.5.2 Settlement and Subsistence. Of particular interest is the mix or relative importance of cultigens vis-a-vis the hunted and gathered resources of the area. Equally important would be the seasonality of exploitation of the various potential resources, both cultigens and hunted and gathered. Since the presence of fields attributed to the Fremont has been reported in the study area, we need to know the locations, configurations, and yield potentials of these fields.

3.3.5.3 Definition of the Fremont in the Study Area. Is the Fremont in the study area an attenuated part of the Uinta or San Rafael variants, is it derived from the Plains, or is it a variant of its own? What is the relationship between the Fremont of northwestern Colorado and adjacent Utah?

3.3.5.4 Archaic/Fremont/Numic Transition. In conjuction with the problem of origins (i.e., Fremont or Plains), there is a lack of understanding about the shift from the Archaic stage to the Formative stage, and from the Formative stage to the Protohistoric stage. Is there a hiatus between the periods or stages or is there an unbroken succession?

3.3.6 Important Resources. Fremont sites are important if they have the potential to provide insights on the nature and distribution of both horticultural and hunting and gathering strategies in northwestern Colorado. They are also important if they have the potential to provide insights into climatic conditions of the period and of the region. Certainly the art sites are part of a larger human heritage because they are works of art and with detailed study may be able to provide insights into various aspects of the Fremont life style.

3.3.7 Data Gaps. The Formative stage is less well known in northwestern Colorado than it is in Utah. For example, there is limited data on the Fremont life ways, and no villages have been identified outside Dinosaur National Monument. The existence and expansion of cultural boundaries are not explained, and the factors which contributed to the collapse of the Fremont culture remain unrecognized.

Fremont stage data gaps throughout the region include inadequate information on the horticultural and non-horticultural subsistence base. Similarly, the dates for the appearance and disappearance dates for the Fremont occupation are unknown. Additional data gaps include lack of understanding about Fremont agricultural fields, burials, and hunting camps. Further study is needed to identify potential sites which may be buried in flood plains, and to determine the age and function of various sites.

3.3.8 Future Needs. As noted earlier, there is a pressing need to survey these large geographic blocks that are currently unsurveyed if we are to understand the distribution of Fremont culture in the area and if we are to determine whether or not the Fremont has a Plains origin. We will continue to need to locate and perform archaeological investigations at sites that contain data dealing with transitions from Archaic to Fremont and from Fremont to Protohistoric, as well as sites that can contribute to our understanding of Fremont subsistence patterns.

3.4 The Protohistoric Stage (A.D. 1200-1880).

3.4.1 The Protohistoric Stage Culture History. The post-Formative succeeds the Formative stage (Fremont culture) in northwest Colorado sometime between A.D. 1200 and A.D. 1300. In terms of life style, it represents a return to an Archaic subsistence pattern based on seasonal movement to exploit a variety of resources. The dating is supported by lexico-statistical studies that indicate that the Numic branch of Uto-Aztecan developed around A.D. 0 (2000 B.P.) in northern Mexico and southern California and spread northward and eastward, arriving in the Great Basin and in the Colorado Plateau around A.D. 1300.

The Protohistoric period marks the appearance of the ancestors of the historic Ute and most of what we know of these peoples tends to be derived from historic sources since few Ute sites have been excavated. As Jesse Jennings (1978:235) notes.

> The nonperishable material culture of the Utah Shoshoni speakers--Ute, Southern Paiute, Gosiute--is so scanty and nondistinctive that almost no archaeological evidence of the tribes or their lifeway can be gathered except through ethnographic and linguistic sources.

The same situation exists in Colorado where it is virtually impossible to distinguish archaeologically between Ute sites and sites attributed to other Shoshonean speakers. This has resulted in the use of terms such as "Shoshonean speakers," Numic speakers," and "Ute-Shoshone" being used interchangeably.

The journal of the expedition by Fathers Dominguez and Escalante provides historic documentation and observations that enrich the archaeological record in identification of Ute people in the region. Intent on establishing a new route to California and hoping to establish Christianity among the peoples to the north, the fathers left Santa Fe in July 1776 and returned five months later. Despite their failure to establish Christianity or to find a new route to California, they had recorded their observations of the people, tribes, flora and fauna, and the physiographic features of the lands they encountered.

Ute groups specifically mentioned in the journals include the Capote and Moache in the south, the Wimimuche of the Uncompahgre Plateau, the Tabeguache and Parimuche (Sabaquanas) of the Colorado River and White River, and the Yamparica Utes along the Yampa River in the north. They also noted in their journal that the Utes owned and were using horses. The acquisition of the horse in the 1680s permitted the Utes to move out onto the Plains to exploit the large herds of bison. With the Gold Rush of 1859 and the subsequent Anglo expansion into the state and eventually the study area, a conflict situation was created that led to the expulsion of the Ute in the 1880s.

Two Shoshonean groups, the Wind River Shoshone and the Comanche, occupied a section of northern Colorado before 1800. The Shoshoni remained in northwestern Colorado primarily above the Yampa River, but the Comanche began to move out onto the Plains about 1700 (Hughes 1977).

3.4.2 Protohistoric Stage Lifeways. The Late Prehistoric ancestors of the historic Ute had, in all probability, a life style similar to but not identical to that of the ethnographically-known Ute. The main difference, the use of the horse, enabled the White River and Uncompahgre Ute to move out onto the Plains to hunt bison, trade, and steal horses (Smith 1974:19).

With the horse, the historically-known Utes were able to travel farther and in larger groups than their ancestors or their nonhorse-mounted Utah neighbors. In general, however, the early Utes and their ancestors did not practice horticulture but instead hunted bison, deer, and antelope. Gathering of numerous types of wild plant foods on a seasonal basis, including pine nuts, was a major aspect of their mobile life style.

In all probability, they had some measure of band organization similar to that described by Steward (1938).

3.4.3 Protohistoric Stage in Northwestern Colorado. The presence of wickiups, trade beads, pottery, and equestrian (horse mounted figures) rock art is considered indicative of Ute or Shoshoni occupation. However, a number of different site types have also been attributed to the Ute. Kane (1973), working on the National Shale Reserve portion of the Piceance Basin has identified the following site types.

1. Campsite
2. Small summer camp
3. Temporary summer camp
4. Campsite/food processing

5. Food processing
6. Chipping station
7. Single family camp
8. Single family camp/work area
9. Temporary camp
10. Hunting camp
11. Camp
12. Summer base camp

Virtually all of the sites recorded in this project are assigned to "prehistoric, probably Ute" (Kane 1973). However, since the contract was terminated prior to report preparation, there are no criteria for defining these site types in the report, merely the site forms with the site types.

Daniels (1981), in surveying areas adjacent to Kane's (1973) survey (there is some overlap), has defined two basic site types: the open camp and the open lithic camp. The latter is subdivided into open lithic; open lithic/chipped stone scatter; lithic, groundstone scatter; lithic, chipped and groundstone scatter; and open lithic, chipped, and groundstone scatter.

In the Texas-Missouri-Evacuation Creeks study area (Gordon et al. 1981), several sites attributable to the Protohistoric period have been recorded. Many of these sites have petroglyphs depicting horse-mounted figures. In the Moon Lake project area north and west of Rangely, Colorado, horse petroglyphs, ceramics, and projectile points attest to the presence of Ute or Shoshoni peoples (Anderson and Henss, n.d.; Chandler and Nickens 1979a).

In Douglas Creek at the Dripping Brow site, Creasman (1981:IV-9) reports a Fremont occupation being followed by an unspecified group of people and then by Ute-Shoshoni groups after A.D. 1500. Whether the predecessors of the known Ute-Shoshoni at Dripping Brow were Ute-Shoshoni or whether they were Fremont peoples in transition, either to become Ute-Shoshoni or to become extinct, has yet to be resolved.

### 3.4.4 Evaluation of the Data Base

3.4.4.1 Quantity and Quality of the Research. The overall quantity, quality, and standards of the research performed in the area have been discussed in other sections of this report. Specific efforts to define the Ute archaeologically have been minimal. To date, only one major effort has been attempted (Buckles 1971), and it concentrated on the Ute of the Uncompahgre Plateau located well to the south of the study area. A similar effort is needed for northwestern Colorado if we are to define these cultures and to distinguish archaeologically between the Ute and Shoshonean occupants of the study area. While individual sites have been reported, no attempts have been made to define the nature, the contents, density or distribution of Protohistoric stage sites.

3.4.4.2 Number and Condition of the Resources. Review of 4,991 site forms and isolated find forms on file at the Colorado Preservation Office reveals 154 (3.09%) entries are attributed to the Protohistoric stage in general. Of the 123 sites, 24 are assigned to the Prehistoric period; 15 to the historic period; 68 are assigned to the "Ute"; and 16 are assigned to "Shoshoni." Of the 31 isolated finds, nine are classified as Prehistoric, 10 as Ute, and 12 are Shoshoni.

Table 6. Distribution of Protohistoric Sites by Period or Affiliation

| Site Type | Prehistoric | Historic | Ute | Shoshone |
|---|---|---|---|---|
| Rock Art | 2 | 1 | 14 | |
| Campsite | 3 | 6 | 12 | 2 |
| Rock Shelter | 3 | | 3 | |
| Lithic Scatter | 16 | 8 | 20 | 13 |
| Race Track | | | 1 | |
| Lithic Cave | | | 2 | |
| Wickiup | | 1 | 12 | |
| Other | | | 2 | |
| Tipi Ring | | | 1 | |
| Burned Rock | | | 1 | |
| Shelter | | | | 1 |
| Total Sites | 24 | 15 | 68 | 16 |
| Isolated Finds | 9 | 0 | 10 | 12 |
| TOTAL | 33 | 15 | 78 | 28 |

For the Protohistoric period, there are 11 radiocarbon dates from eight sites (Table 7).

Table 7. Protohistoric Radiocarbon Dates**

| Site No. | Carbon-14 Years | Standard Deviation | Calendar Year (B.C.) | Reference | Origin | Lab Number |
|---|---|---|---|---|---|---|
| 5GF134 | 620 | 45 | 1330 | | GRI | DIC 0 |
| 5RB748 | 520 | 75 | 1430 | LaPoint 1981 | LOPA | UGA 3377 |
| 5ME901 | 470 | 45 | 1480 | | GRI | DIC 0 |
| 5RB699* | 460 | 60 | 1490 | LaPoint 1981 | LOPA | UGA 3381 |
| 5MF373 | 400 | 150 | 1550 | C & G 1959 | DU | M 285 |
| 5MF436 | 375 | 375 | 1575 | Arthur 1982 | LOPA | UGA 2734 |
| 5RB699* | 355 | 65 | 1595 | Creasman 1979 | LOPA | UGA 2426 |
| 5GF130 | 340 | 270 | 1610 | | GRI | DIC 0 |
| 5MF435* | 335 | 65 | 1615 | Arthur 1982 | LOPA | UGA 2732 |
| 5MF435* | 300 | 85 | 1650 | Arthur 1982 | LOPA | UGA 2730 |
| 5RB699* | 265 | 75 | 1685 | LaPoint 1981 | LOPA | UGA 3388 |

* Sites with more than one radiocarbon date
** Dates in the 1200s are included in the Fremont section.
C & G 1959 = Crane and Griffen 1959

### 3.4.5 Research Problems

3.4.5.1 Chronology. Good chronological control at sites (i.e., a large number of dated sites) is needed in order to define the direction and rate of movement of Ute and Shoshoni peoples in the study area.

3.4.5.2 Ute/Shoshoni Sites. Because of a lack of concentrated excavation and detailed study, it is currently difficult, if not impossible, to distinguish Ute sites from Shoshoni sites in northwest Colorado. In 1942, Steward argued for utilization of the direct historical approach using historic and protohistoric sites along with historic information to reconstruct activities. Comparisons could then be made between activity sets at different sites in order to distinguish Ute sites from Shoshoni sites. Such an approach has yet to be tested in the study area.

3.4.5.3 Cultural Origins. Perhaps the most intriguing question this stage poses concerns the fate of the Fremont culture and its replacement by Numic-speaking Ute-Shoshoni groups. What happened to the Fremont? Did the Fremont peoples move out, and if so, where? Is it possible that Fremont peoples abandoned those practices recognized as being Fremont and adopted practices recognized as being Ute or Shoshoni?

3.4.6 Important Resources. Deeply stratified sites such as caves or rock shelters that contain diagnostic Protohistoric artifacts and floral and faunal remains in a datable context should be considered to be of major importance. A major effort should be made to identify the locations of any sites known to have been historically occupied with identifiable groups. These sites are of major importance in ethnohistorical studies and will be of unmeasureable value to the direct historical approach.

3.4.7 Data Gaps. There are several major data gaps. These gaps include the lack of data bearing on the Fremont/post-Formative transition, the lack of sufficient numbers of dated sites to facilitate studies of the movement of peoples, and the lack of adequate diagnostic data to enable us to distinguish between Ute and Shoshoni sites.

3.4.8 Future Needs. The most pressing need is to identify Protohistoric sites that have been documented as containing specific groups of peoples (both Ute and Shoshoni). There is also a pressing need to date large numbers of these sites in order to study movement of Numic-speaking peoples within the study area.

## 4.0 General Research Problems

In this section, the problems posed pertain to the entire region rather than to the specific cultural units already described.

4.1 Nature of Previous Work. Much of the work in the northwest study area has been conducted to meet the legal and permitting requirements associated with energy development. Consequently, areas of high survey activity are those areas of high energy potential. As a result we have townships that have as many as 110 sites and whole blocks of townships that have one or no recorded sites (Figures 6 and 7), resulting in unequal sampling of varied environmental areas and portions of the region and in the absence of survey data from major portions of the study area. As long as this disparity exists it will be difficult to ever develop an overview that reflects with any accuracy the cultural dynamics of the region. Considering the multiplicity of governmental agencies and private holdings involved, developing and financing a program to survey and evaluate the entire study area would be at best extremely difficult.

4.2 Research Design Model. In the following table (Table 8), major problem domains, research topics, research questions, and data requirements to resolve the questions are posed, although additional questions may be important in the region. As more data becomes available, old questions will be answered or modified and new questions will be raised.

4.3 Important Sites and Data Needs. In general, sites are needed that can supply data dealing with a variety of topics. Certainly sites with data on topics such as chronology, subsistence, culture change (diachronic processes), regional variations (synchronic distributions),and paleo-environmental data (see data requirements, Table 8) need to be preserved.

4.4 Threats to the Data Base. In parts of the study area, collecting and pothunting seems to be a major recreational activity. This is particularly noticeable in areas of easy access and along roads. During the past few years, energy development has led to an increase in population, and an increase in construction of facilities, housing, and roads that increase access into isolated areas. All of these factors-- population increase, development, and easier access--pose a continuing and growing threat to the resources.

4.4.1 Condition of Sites in the Study Area. The condition of sites in the study area has been determined by reviewing 4,991 site forms on file at the Colorado Preservation Office. Of the 4,991 sites and isolated artifacts forms on file, 1,347 are

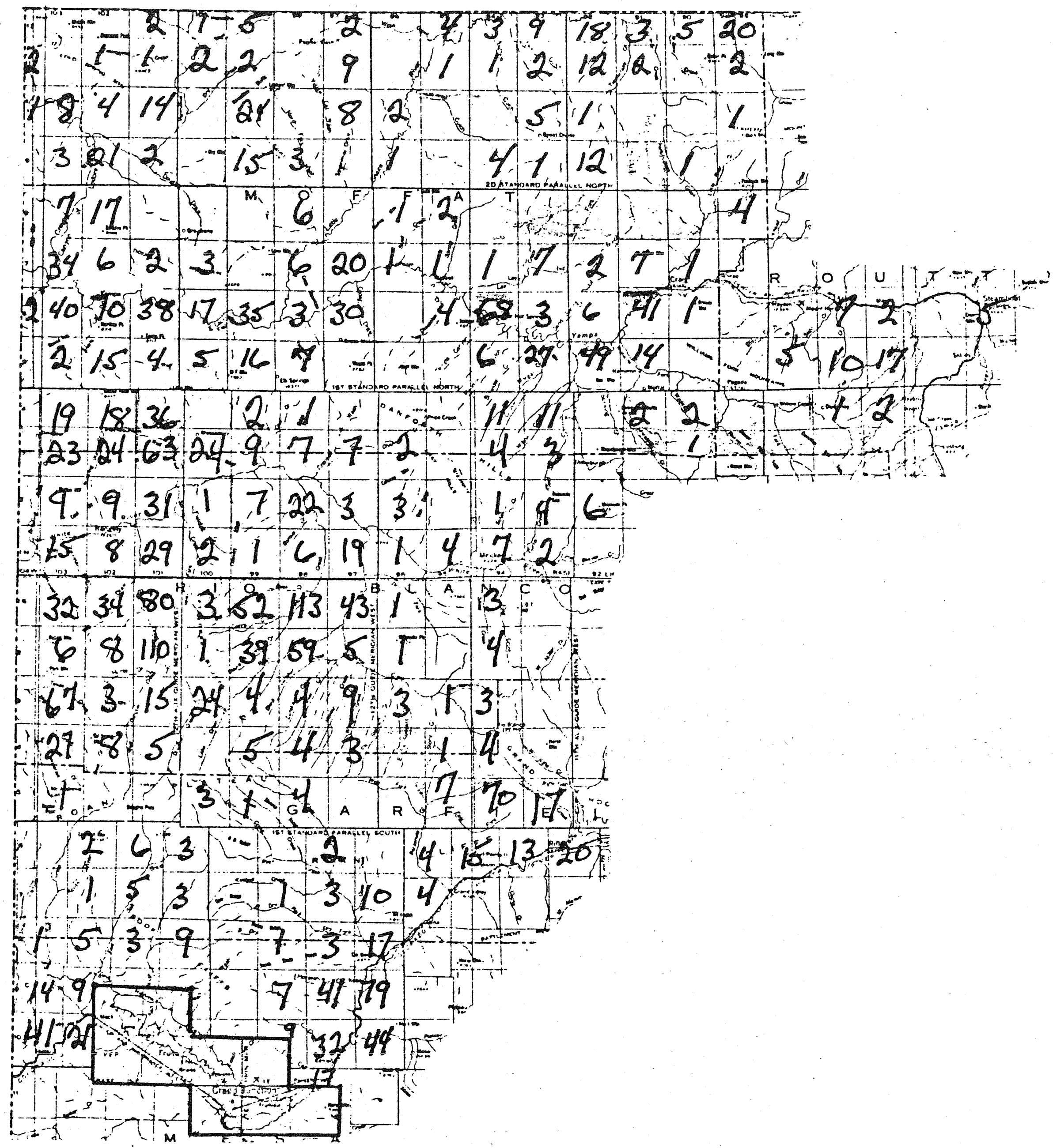


Figure 6. Site Frequency by Township in Northwest Colorado.

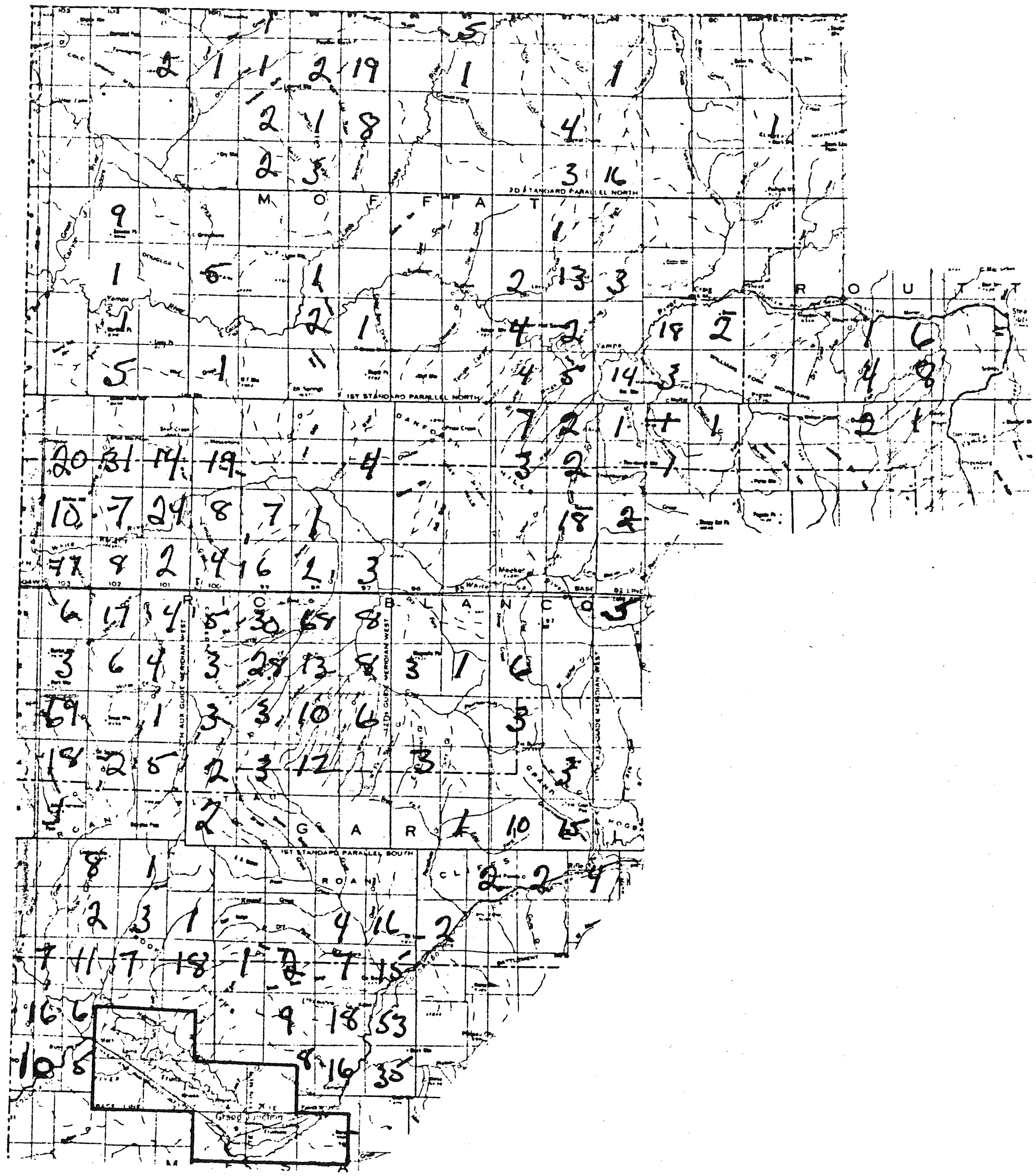



Figure 7. Isolated Find Frequency by Township in Northwest Colorado.

considered to be in pristine condition; 377 show evidence of pothunting or vandalism; 1,498 are considered to have been weathered or eroded to one extent or another; and 339 are thought to have been disturbed through various human-sponsored activities (e.g., road building, plowing, and so on). The number of resources that are considered pristine seems rather large; however, a large portion of this category (890 out of 1,347) is accounted for by isolated finds.

Table 8. Problem Domains and Data Requirements

| Problem Domain | Research Topics | Research Question | Data Requirements |
|---|---|---|---|
| Chronology | Projectile Points | What is the date range of Paleo-Indian points in the study area?<br>a. Clovis<br>b. Folsom<br>c. Various Plano types | Points should be in context with materials of datable nature in order to develop independent dating, i.e., kill sites with datable material, open sites with evidence of fire hearths, sites with subsurface deposits. |
| | | What is the date range of points usually assigned to the Archaic Period in the study area? | As above |
| | | What is the date range of points assigned to the Fremont, and other related artifacts in the study area? | As above |
| | | What is the date range of points assigned to the post-Archaic, Late Prehistoric, and Protohistoric periods? | As above |
| | | What are the other types of projectile points that occur in the study area, and what is their date range? | As above |
| | Ceramics | What is the earliest date for ceramics in the study area? | As above, excluding kill sites |
| | | What is the date range for the gray ware ceramics in the study area? | As above, excluding kill sites |
| | | What is the date range for the "supposed" Numic" brown wares? | As above, excluding kill Sites. |

Table 8. Problem Domains and Data Requirements (Continued)

| Problem Domain | Research Topics | Research Question | Data Requirements |
|---|---|---|---|
| Settlement and Subsistence | Paleo-Indian Occupation | What tool types and food resources, both plant and animal, occur with the fluted point tradition on the Colorado Plateau? | Preservation is critical; therefore, dry sheltered sites with subsurface deposits in areas where numerous point styles occur. This may be difficult since most Paleo-Indian sites tend to be open sites. |
| | | What tool types and food resources, both plant and animal, occur with the lanceolate points of the Plano complex? | As above. |
| | Archaic Occupation | How valid is Schroedl's Archaic scheme for northwestern Colorado? | Caves or rock shelters with good preservation; and long stratigraphic sequences in order to develop controlled comparable data. |
| | | What resources were being exploited by Archaic peoples in northwestern Colorado? | As above. |
| | Fremont Occupation | What plant and animal resources are associated with Fremont materials in the study area? | Caves or rock shelters with good preservation; open sites with associated resources. |

Table 8. Problem Domains and Data Requirements (Continued)

| Problem Domain | Research Topics | Research Question | Data Requirements |
|---|---|---|---|
| | | What tool types are associated with diagnostic Fremont artifacts? | Diagnostic Fremont artifacts or datable materials in association with tools associated with various types of food preparation. |
| | | Where and what are the basic configurations of Fremont horticultural fields? | Fields and distribution studies of fields and habitation sites. |
| | | What is the basic Fremont village or social unit since villages are not present in northwest Colorado. | Clusters of habitations that represent a village. |
| | Numic Occupation | Same as for Fremont excluding fields. | |
| Cultural Relationships | Archaic/ Fremont Transition | Do diagnostic Fremont artifacts follow Archaic diagnostic artifacts in an unbroken succession. | Deeply stratified sites such as rock shelters or caves. |
| | | Do diagnostic Fremont and Archaic artifacts occur in direct association with each other? | As above. |
| | | Do diagnostic Fremont artifacts follow diagnostic Archaic artifacts in a broken (hiatus) succession? | As above. |

Table 8. Problem Domains and Data Requirements (Continued)

| Problem Domain | Research Topics | Research Question | Data Requirements |
|---|---|---|---|
| | Fremont/ Numic Transition | Same as for Fremont/Archaic transition. | Same as for Fremont/Archaic |
| | Anasazi influence | What sorts of Anasazi influences are found in the study area? | Presence or absence of dated materials attributable to areas of culture. |
| Demography | Archaic Population Fluctuations | During periods when high populations are hypothesized to exist (e.g., ca. 1500, 3500, 6500 B.P.) elsewhere, i.e., the Great Basin, does site frequency a. increase, b. decrease, c. remain constant?; or does intensity of site occupation a. increase, b. decrease, c. remain constant? | Data on site frequency and site density shifts or changes through time. |
| | Archaic Population Fluctuations | During periods where low population is hypothesized to exist (e.g., ca. 2500 B.P. and 5500 B.P.) elsewhere, i.e., the Great Basin, does site frequency a. increase, b. decrease, c. remain constant?; or does intensity of site occupation, a. increase, b. decrease, c. remain constant? | As above. |
| | Archaic Boundaries | Are cultural boundaries present in the Early Archaic, Middle Archaic, or both periods in northwest Colorado? | Unbiased distribution studies of Archaic sites and materials. |

Table 8. Problem Domains and Data Requirements (Continued)

| Problem Domain | Research Topics | Research Question | Data Requirements |
|---|---|---|---|
| | Fremont Boundaries | What are the cultural and geographical boundaries of the Fremont culture in northwest Colorado. | Unbiased distribution studies of Fremont sites and materials. |
| Environments | Colorado Plateau Environments | What is the nature of the evidence for environmental fluctuation in northwest Colorado for the past 10,000 years? | Excavation of non-archaeo-logical sites to: a) acquire environmental data, and b) acquire datable material. |
| | | What is the date range of these fluctuations? | As above. |
| | | How does this correlate with the Great Basin and Plains environmental conditions? | Other sequences - literature. |
| Technology and Material Culture | Lithic Materials | Since trade and management of peoples can be inferred from the distribution of materials used by prehistoric peoples, what raw materials were used in making stone tools? | Lithic/debitage analysis |
| | | What were the sources of the raw materials? | Regional survey to locate quarry sites and/or lithic sources. |
| Data Recovery Techniques | Survey Results (Surface) | Since frequent field patterns were located on aerial photographs (Grady 1980), can other surface features be located through remote sensing techniques? | Aerial survey/test at variety of scales and emul-sions plus ground truth. |

Table 8. Problem Domains and Data Requirements (Concluded)

| Problem Domain | Research Topics | Research Questions | Data Requirements |
|---|---|---|---|
| Data Recovery Techniques | Survey Results (Subsurface) | Can archaeological features (subsurface) be located through the use of aerial remote services techniques? | As above. |
| | Environmental | Can current land forms or environments (washes, terraces, etc.) be located through the use of aerial remote service techniques in order to facilitate archaeological survey and location studies? | As above. |
| | Site Location | Are there better means of predicting buried sites in the various drainages of the area, or are all surface sites without buried components? If not, are there locational or other variables determining the presence of buried cultural deposits? | As above, as well as surface survey and subsurface testing. |

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## APPENDIX A

LIST OF RADIOCARBON DATES AVAILABLE FOR NORTHWESTERN COLORADO

(Supplied courtesy Calvin H. Jennings)

RADIOCARBON DATES FOR NORTHWESTERN COLORADO

| Site Number | Carbon-14 Year | Standard Deviation | Calendar Year | Reference | Origin | Lab Sample Number |
|---|---|---|---|---|---|---|
| 5GF122 | 1660 | 75 | 290 | | GRI | DIC 0 |
| 5GF126 | 2500 | 100 | 550 BC | | GRI | DIC 0 |
| 5GF126 | 2590 | 70 | 640 BC | | GRI | BETA 0 |
| 5GF126 | 2770 | 60 | 820 BC | | GRI | BETA 0 |
| 5GF126 | 2900 | 60 | 950 BC | | GRI | BETA 0 |
| 5GF127 | 1800 | 80 | 150 | | GRI | DIC 0 |
| 5GF128 | 0 | 0 | 1950 | | GRI | BETA 0 |
| 5GF128 | 1360 | 50 | 590 | | GRI | DIC 0 |
| 5GF128 | 1610 | 60 | 340 | | GRI | BETA 0 |
| 5GF129 | 1170 | 75 | 780 | | GRI | DIC 0 |
| 5GF129 | 2530 | 105 | 580 BC | | GRI | DIC 0 |
| 5GF130 | 340 | 270 | 1610 | | GRI | DIC 0 |
| 5GF134 | 620 | 45 | 1330 | | GRI | DIC 0 |
| 5GF134 | 680 | 65 | 1270 | | GRI | DIC 0 |
| 5GF134 | 820 | 70 | 1130 | | GRI | BETA 0 |
| 5GF134 | 830 | 70 | 1120 | | GRI | BETA 0 |
| 5GF134 | 950 | 80 | 1000 | | GRI | BETA 0 |
| 5GF134 | 1214 | 440 | 736 | | GRI | BETA 0 |
| 5GF134 | 1250 | 90 | 700 | | GRI | BETA 0 |
| 5GF134 | 1270 | 80 | 680 | | GRI | BETA 0 |
| 5GF134 | 1320 | 70 | 630 | | GRI | BETA 0 |

## RADIOCARBON DATES FOR NORTHWESTERN COLORADO (Continued)

| Site Number | Carbon-14 Year | Standard Deviation | Calendar Year | Reference | Origin | Lab Sample Number |
|---|---|---|---|---|---|---|
| 5ME0 | 1100 | 250 | 850 | R & S 1955* | | W 190 |
| 5ME0 | 1350 | 200 | 600 | B 1956** | | L 167 |
| 5ME82 | 2440 | 120 | 490 BC | R & N 1980*** | NA | RL 1222 |
| 5ME82 | 2510 | 120 | 560 BC | R & N 1980 | NA | RL 1218 |
| 5ME82 | 3340 | 130 | 1390 BC | R & N 1980 | NA | RL 1215 |
| 5ME82 | 4140 | 150 | 2190 BC | R & N 1980 | NA | RL 1213 |
| 5ME82 | 4430 | 150 | 2460 BC | R & N 1980 | NA | RL 1216 |
| 5ME82 | 4890 | 160 | 2940 BC | R & N 1980 | NA | RL 1214 |
| 5ME82 | 5050 | 160 | 3100 BC | R & N 1980 | NA | RL 1217 |
| 5ME82 | 5070 | 160 | 3120 BC | R & N 1980 | NA | RL 1219 |
| 5ME82 | 5130 | 170 | 3180 BC | R & N 1980 | NA | RL 1220 |
| 5ME82 | 5930 | 180 | 3980 BC | R & N 1980 | NA | RL 1223 |
| 5ME82 | 6150 | 190 | 4200 BC | R & N 1980 | NA | RL 1221 |
| 5ME428 | 930 | 120 | 1020 | | GRI | RL 0 |
| 5ME428 | 1910 | 120 | 40 | | GRI | RL 0 |
| 5ME428 | 1980 | 120 | 30 BC | | GRI | RL 0 |
| 5ME429 | 860 | 110 | 1090 | | GRI | RL 0 |
| 5ME429 | 1280 | 110 | 670 | | GRI | RL 0 |
| 5ME635 | 2660 | 130 | 710 BC | | GRI | RL 0 |

* Reuben & Seuss 1955
** Broeker et al. 1956
***Reed & Nickens 1980

RADIOCARBON DATES FOR NORTHWESTERN COLORADO

| Site Number | Carbon-14 Year | Standard Deviation | Calendar Year | Reference | Origin | Lab Sample Number |
|---|---|---|---|---|---|---|
| 5ME635 | 2690 | 120 | 740 BC | | GRI | RL 0 |
| 5ME635 | 2970 | 220 | 1020 BC | | GRI | RL 0 |
| 5ME901 | 470 | 45 | 1480 | | GRI | DIC 0 |
| 5ME3969 | 1100 | 50 | 850 | | GRI | BETA 0 |
| 5MF1 | 1260 | 150 | 690 | Marwitt 1970 | U UTAH | RL 11 |
| 5MF373 | 400 | 150 | 1550 | C & G 1959* | DU | M 285 |
| 5MF379 | 820 | 200 | 1130 | C & G 1959 | DU | M 286 |
| 5MF435 | 300 | 85 | 1650 | Arthur 1982 | LOPA | UGA 2730 |
| 5MF435 | 335 | 65 | 1615 | Arthur 1982 | LOPA | UGA 2732 |
| 5MF435 | 895 | 75 | 1055 | Arthur 1982 | LOPA | UGA 2737 |
| 5MF435 | 1010 | 60 | 940 | Arthur 1982 | LOPA | UGA 2734 |
| 5MF435 | 1030 | 60 | 920 | Arthur 1982 | LOPA | UGA 2739 |
| 5MF435 | 1045 | 60 | 905 | Arthur 1982 | LOPA | UGA 2733 |
| 5MF435 | 1055 | 60 | 895 | Arthur 1982 | LOPA | UGA 2729 |
| 5MF435 | 1065 | 60 | 895 | Arthur 1982 | LOPA | UGA 2728 |
| 5MF435 | 1240 | 70 | 710 | Arthur 1982 | LOPA | UGA 2735 |
| 5MF435 | 1425 | 60 | 525 | Arthur 1982 | LOPA | UGA 2727 |
| 5MF435 | 1955 | 60 | 5 BC | Arthur 1982 | LOPA | UGA 2726 |
| 5MF435 | 2045 | 65 | 95 BC | Arthur 1982 | LOPA | UGA 2736 |
| 5MF435 | 2110 | 60 | 160 BC | Arthur 1982 | LOPA | UGA 2731 |
| 5MF435 | 2175 | 95 | 225 BC | Arthur 1982 | LOPA | UGA 2725 |

* Crane & Griffen 1959

| Site Number | Carbon-14 Year | Standard Deviation | Calendar Year | Reference* | Origin | Lab Sample Number |
|---|---|---|---|---|---|---|
| 5MF435 | 2365 | 75 | 415 BC | Arthur 1982 | LOPA | UGA 2738 |
| 5MF436 | 0 | 0 | 1950 | ARTHUR 1982 | LOPA | UGA 2741 |
| 5MF436 | 375 | 90 | 1575 | ARTHUR 1982 | LOPA | UGA 2734 |
| 5MF436 | 970 | 65 | 980 | ARTHUR 1982 | LOPA | UGA 2744 |
| 5MF436 | 1055 | 70 | 895 | ARTHUR 1982 | LOPA | UGA 2746 |
| 5MF436 | 1090 | 85 | 860 | ARTHUR 1982 | LOPA | UGA 2745 |
| 5MF436 | 1330 | 80 | 620 | ARTHUR 1982 | LOPA | UGA 2740 |
| 5MF436 | 1370 | 65 | 580 | ARTHUR 1982 | LOPA | UGA 2742 |
| 5MF436 | 1545 | 65 | 405 | ARTHUR 1982 | LOPA | UGA 2747 |
| 5MF460 | 0 | 0 | 1950 | Arthur 1982 | LOPA | UGA 2748 |
| 5MF510 | 2480 | 125 | 530 BC | J & D 1976* | LOPA | UGA 1354 |
| 5MF510 | 2560 | 65 | 610 BC | J & D 1976 | LOPA | UGA 1356 |
| 5MF510 | 2595 | 100 | 645 BC | J & D 1976 | LOPA | UGA 1355 |
| 5MF566 | 0 | 0 | 1950 | J & D 1976 | LOPA | UGA 1353 |
| 5MF607 | 680 | 60 | 1270 | I & R 1983** | LOPA | UGA 2003 |
| 5MF607 | 2120 | 100 | 170 BC | I & R 1983 | LOPA | UGA 1855 |
| 5MF607 | 2300 | 95 | 350 BC | I & R 1983 | LOPA | UGA 1851 |
| 5MF607 | 2330 | 110 | 380 BC | I & R 1983 | LOPA | UGA 1853 |
| 5MF607 | 3490 | 60 | 540 BC | I & R 1983 | LOPA | UGA 1852 |

* Jennings & Daniels 1976
** Ingmanson & Rodriguez 1983

RADIOCARBON DATES FOR NORTHWESTERN COLORADO (Continued)

| Site Number | Carbon-14 Year | Standard Deviation | Calendar Year | Reference | Origin | Lab Sample Number |
|---|---|---|---|---|---|---|
| 4MF745 | 675 | 80 | 1275 | Arthur 1982 | LOPA | UGA 2749 |
| 5RB0 | 1250 | 200 | 700 | | USGS | W 4196 |
| 5RB0 | 1260 | 200 | 690 | | USGS | W 4194 |
| 5RB0 | 3750 | 300 | 1800 BC | | USGS | W 4192 |
| 5RB123 | 1575 | 195 | 375 | J 1982* | LOPA | UGA 1045 |
| 5RB123 | 1620 | 195 | 330 | J 1982 | LOPA | UGA 1046 |
| 5RB148 | 3150 | 150 | 1200 BC | | GRI | RL 0 |
| 5RB298 | 2515 | 310 | 565 BC | Jones 1978 | LOPA | UGA 1702 |
| 5RB298 | 3620 | 540 | 1670 BC | Jones 1978 | LOPA | UGA 1704 |
| 5RB298 | 4605 | 500 | 2655 BC | Jones 1978 | LOPA | UGA 1716 |
| 5RB298 | 4945 | 415 | 2995 BC | Jones 1978 | LOPA | UGA 1705 |
| 5RB298 | 7545 | 205 | 5595 BC | Jones 1978 | LOPA | UGA 1698 |
| 5RB312 | 3600 | 130 | 1650 BC | | BLM-CD | RL 777 |
| 5RB312 | 3690 | 130 | 1740 BC | | BLM-CD | RL 776 |
| 5RB363 | 1410 | 140 | 540 | C 1977** | LOPA | UGA 1497 |
| 5RB363 | 1875 | 75 | 75 | C 1977 | LOPA | UGA 1495 |
| 5RB363 | 2570 | 80 | 620 BC | C 1977 | LOPA | UGA 1496 |
| 5RB428 | 3700 | 550 | 1720 BC | S 1981*** | CRI | 0 |

* Jennings 1982
** Creaseman et al. 1977
*** Stevens 1981

RADIOCARBON DATES FOR NORTHWESTERN COLORADO (Continued)

| Site Number | Carbon-14 Year | Standard Deviation | Calendar Year | Reference | Origin | Lab Sample Number |
|---|---|---|---|---|---|---|
| 5RB670 | 4720 | 90 | 2770 BC | C 1979* | LOPA | W 4244 |
| 5RB690 | 1285 | 200 | 665 | K 1979** | G & K | UGA 2166 |
| 5RB699 | 265 | 75 | 1685 | L 1981*** | LOPA | UGA 3388 |
| 5RB699 | 355 | 65 | 1595 | C 1979 | LOPA | UGA 2426 |
| 5RB699 | 460 | 60 | 1490 | L 1981 | LOPA | UGA 3381 |
| 5RB699 | 725 | 60 | 1225 | C 1979 | LOPA | UGA 2422 |
| 5RB699 | 740 | 85 | 1210 | C 1979 | LOPA | UGA 2423 |
| 5RB699 | 850 | 65 | 1100 | C 1979 | LOPA | UGA 2421 |
| 5RB699 | 1120 | 50 | 830 | C 1979 | LOPA | W 4520 |
| 5RB699 | 1220 | 65 | 730 | L 1981 | LOPA | UGA 3385 |
| 5RB699 | 1225 | 85 | 725 | C 1977 | LOPA | UGA 1920 |
| 5RB699 | 1280 | 70 | 670 | L 1981 | LOPA | UGA 3380 |
| 5RB699 | 1470 | 70 | 480 | L 1981 | LOPA | UGA 3387 |
| 5RB699 | 1650 | 60 | 300 | L 1981 | LOPA | UGA 3383 |
| 5RB699 | 1740 | 50 | 210 | C 1979 | LOPA | W 4248 |
| 5RB699 | 1825 | 60 | 125 | L 1981 | LOPA | UGA 3384 |
| 5RB699 | 1845 | 90 | 105 | C 1979 | LOPA | UGA 3384 |
| 5RB699 | 1895 | 70 | 55 | L 1981 | LOPA | UGA 3382 |
| 5RB699 | 2255 | 55 | 305 BC | L 1981 | LOPA | UGA 3386 |

* Creaseman 1979
** Kranzush 1979
*** LaPoint et al. 1981

RADIOCARBON DATES FOR NORTHWESTERN COLORADO (Continued)

| Site Number | Carbon-14 Year | Standard Deviation | Calendar Year | Reference* | Origin | Lab Sample Number |
|---|---|---|---|---|---|---|
| 5RB704 | 1825 | 100 | 125 | C 1977* | LOPA | UGA 1922 |
| 5RB707 | 1375 | 60 | 575 | C 1977 | LOPA | UGA 1924 |
| 5RB715 | 1450 | 60 | 500 | C 1977 | LOPA | UGA 1923 |
| 5RB715 | 1775 | 65 | 175 | C 1977 | LOPA | UGA 1921 |
| 5RB726 | 1300 | 50 | 650 | C 1979** | LOPA | W 4249 |
| 5RB726 | 1760 | 275 | 190 | C 1979 | LOPA | UGA 2424 |
| 5RB726 | 9190 | 130 | 7240 BC | C 1979 | LOPA | W 4264 |
| 5RB748 | 520 | 75 | 1430 | L 1981*** | LOPA | UGA 3377 |
| 5RB748 | 950 | 70 | 1000 | L 1981 | LOPA | UGA 3377 |
| 5RB804 | 670 | 270 | 1280 | L 1981 | LOPA | UGA 3378 |
| 5RB804 | 1350 | 60 | 600 | L 1981 | LOPA | UGA 3379 |
| 5RB817 | 705 | 60 | 1245 | G 1979**** | G & K | UGA 2496 |
| 5RB1008 | 5390 | 210 | 3440 BC | | NA | RL 1147 |

* Creaseman et al. 1977
** Creaseman 1979
*** LaPoint 1981
**** Gordon et al. 1979

RADIOCARBON DATES FOR NORTHWESTERN COLORADO (Concluded)

| Site Number | Carbon-14 Year | Standard Deviation | Calendar Year | Reference | Origin | Lab Sample Number |
|---|---|---|---|---|---|---|
| 5RB1460 | 1590 | 710 | 360 | K & G 1980* | G & K | UGA 0 |
| 5RB1872 | 2040 | 75 | 90 BC | | GRC | DIC 2263 |
| 5RB1872 | 2430 | 55 | 480 BC | | GRC | DIC 2262 |
| 5RB1873 | 1070 | 50 | 880 | | GRC | DIC 2264 |
| 5RB2025 | 950 | 55 | 1000 | | GRI | BETA 0 |
| 5RB2210 | 880 | 70 | 1070 | | GRI | BETA 0 |
| 5RB2212 | 1950 | 70 | 0 | | GRI | BETA 0 |
| 5RT139 | 0 | 0 | 1950 | Tucker 1981 | NA | RL 1430 |
| 5RT139 | 0 | 0 | 1950 | Tucker 1981 | NA | RL 1426 |
| 5RT139 | 0 | 0 | 1950 | Tucker 1981 | NA | RL 1432 |
| 5RT139 | 0 | 0 | 1950 | Tucker 1981 | NA | RL 1428 |
| 5RT139 | 0 | 0 | 1950 | Tucker 1981 | NA | RL 1431 |
| 5RT139 | 0 | 0 | 1950 | Tucker 1981 | NA | RL 1429 |
| 5RT139 | 1130 | 230 | 820 | Tucker 1981 | NA | RL 1427 |
| 5RT139 | 5900 | 180 | 3950 BC | Tucker 1981 | NA | RL 1434 |
| 5RT139 | 6430 | 180 | 4480 BC | Tucker 1981 | NA | RL 1435 |

* Gordon & Kranzush 1980

# APPENDIX B

## UINTA AND SAN RAFAEL VARIANTS

## THE UINTA FREMONT

The Uinta Fremont is defined by Marwitt (1970:141-142) as follows:

| | |
|---|---|
| Dating | A.D. 650 to 950 |
| Named for | The Uinta Basin of northeastern Utah |
| Excavated Sites | Caldwell Village (Ambler 1969); Boundary Village (Leach 1966); Deluge Shelter (Leach 1967); Mantle's Cave (Burgh and Scoggin 1948); Whiterocks Village, the Goodrich Site, Felter Hill, and Flat top Butte (Shields 1967); Wholeplace Village, Wagon Run, Fremont Playhouse, McLeod site, Burnt House Village, Dam site, Cub Creek village, and Ford site (Breternitz 1970). |
| Diagnostic Attributes | Domestic architecture: Shallow, saucer-shaped pit dwellings or surface structures with randomly placed postholes and off-center firebasins (Leach 1966, Type 1) or with four-post roof supports and clay-rimmed firepits; freestanding granaries are absent, with the possible exception of Wholeplace Village. |
| Ceramics: | Uinta Gray pottery dominates to the virtual exclusion of all other types. Small quantities of intrusive pottery are present, including a very few sherds of non-Fremont types (all from Caldwell Village). Surface-manipulated varieties of basic grayware are rare, and are absent altogether in the eastern part of the area and in sites with the earliest carbon-14 dates. |
| Flaked Stone | Projectile points include a variety of corner and side-notched forms similar to those found in the Great Salt Lake variant. Triangular and ovoid blades are also similar to their counterparts farther west. The only really distinctive flaked stone artifacts in this variant are large, shouldered blades, or "Fremont blades" (Ambler 1967). |
| Groundstone | The only distinctive feature of the Uinta Fremont groundstone complex is total absence of the "Utah type" metate, which is reported from all other Fremont variants. |
| Other | Absence of the unfired clay anthropomorphic figurine complex--well developed in all other variants--is a conspicuous negative hallmark of Uinta Fremont. Use of gilsonite asphaltum for pottery repair is known from the Uinta Basin, but this probably reflects the singular availability of gilsonite in this area. |

The Cub Creek Phase (Marwitt 1970:142).

| | |
|---|---|
| Date | A.D. 650 (?) to 800 (?) |
| Named for | The Cub Creek locality of northeastern Utah, where the major concentration of Cub Creek phase sites is located. |
| Spatial Distribution | The Uinta Basin of northeastern Utah. |
| Excavated Sites | Boundary Village (Leach 1966); Goodrich, Felter Hill, and Flattop Butte (Shields 1967); Wholeplace Village, Wagon Run, Fremont Playhouse, and Dam site (Breternitz 1970). |
| Diagnostic Attributes | Domestic architecture: no surface masonry or coursed-adobe structures. |
| Ceramics | Uinta Gray constitutes 100% of the locally made pottery. Surface-manipulated varieties of the basic ware are not present. Trade ware is absent, except for occasional intrusive sherds from other Fremont variants. Bowl forms are absent. |
| Other | Other traits are not phase diagnostics. |

The Whiterocks Phase (Marwitt 1970:142).

| | |
|---|---|
| Dates | A.D. 800 (?) to 950 (?) |
| Named for | The Whiterocks Ute Reservation, where type site is located. |
| Spatial Distribution | The Uinta Basin of northeastern Utah. |
| Excavated Sites | Whiterocks Village (Shields 1967); Caldwell Village (Ambler 1966). |
| Diagnostic Attributes | Domestic architecture: wetlaid masonry dwellings and coursed-adobe dwellings are present at Whiterocks Village; presence of surface structures at Caldwell Village is problematical owing to postoccupational disturbance; circular surface and shallow pit dwellings are retained from the Cub Creek phase. |
| Ceramics | Uinta Gray pottery remains the overwhelming dominant type. Surface-manipulated varieties (pinched, punched, incised, and appliqued) of the basic grayware are common: bowl vessel forms are present. Fremont trade pottery, particularly Emery Gray ;(San |

| | |
|---|---|
| | Rafael Fremont) and Great Salt Lake Gray (Great Salt Lake Fremont) is fairly common. A few sherds of Anasazi trade pottery are present at Caldwell Village. |
| Other | Other traits are not phase diagnostic. |

## THE SAN RAFAEL FREMONT

The San Rafael is defined by Marwitt (1970:143) as follows:

| | |
|---|---|
| Dates | A.D. 700 (?) to 1200 (?) |
| Named for | The San Rafael Swell, a prominant geologic feature located roughly in the center of the area. |
| Excavated Sites | Turner-Look (Wormington 1955); Fremont River sites (Morss 1931); Nine Mile Canyon (Gillin 1938); other sites, including Emery, have been tested (Gunnerson 1957, 1969). |
| Diagnostic Attributes | Domestic architecture: wet-laid and dry-laid masonry, slab-lined pit structures. |
| Ceramics | Emery Gray pottery is the dominant type. Surface manipulation including pinched, punched, incised, appliqued, and corrugated varieties of the basic grayware are common. Painted pottery is present, but may not have been locally made. Anasazi (Mesa Verde and Kayenta) trade pottery is relatively more common than in any other variant. |
| Flaked Stone | Projectile points exhibit a wide range of variation, and no firm diagnostic types can be distinguished at present. Serrated scrapers are common, but their diagnostic value is uncertain. Side and end scrapers are rare in contrast to other varieties. |
| Other | No other diagnostics can be distinguished at present. |

# APPENDIX C

GRAY WARE COMMON IN THE STUDY AREA

(After Madsen 1977)

## UINTA GRAY

### Time and Place of Manufacture and Use

Period: Cub Creek phase and Whiterocks phase of Uinta Fremont.

Dates: About A.D. 650-950.

Range: The core area for this type is the Uinta Basin, although the distribution extends southward to the Turner-Look site, westward to the Hinckley Farm and Seamon's Mound, and northward to the Bear River sites.

Type Site: Caldwell Village (Ambler 1966); Whiterocks Village (Shields 1967); Boundary Village (Leach 1966).

### Description

Construction: Coiled

Finishing and Thinning: Scraped. Unsmoothed but flattened coils are sometimes visible on the interior surface.

Firing Method and Temperature: Reducing atmosphere. Occasionally some sherds are light orange-brown in color due to partial oxidiation. Refiring tests indicate that Uinta Gray was originally fired between 625 to 725 degrees C $\pm$ 25 degrees C (Mean 690 degrees C).

Core

Clay: Alluvial or sedimentary presumably from the Uinta Basin.

Color: Predominantly medium (5YR 5/2) to dark (5YR 4/1; 7.5YR 3-4/0) gray; occasionally light brown or buff (10YR 6/2).

Temper: Almost exclusively angular, crushed calcite (white and light pink, up to 40% of sherd composition); occasionally some quartz particles or crushed igneous rock are present (usually in quantities of less that 5% of sherd composition). Calcite particles are frequently visible on vessel or sherd surfaces.

Texture: Predominantly medium; occasionally coarse; temper particle ranges from 0.3-2.0 mm in size.

Mean Apparent Porosity: 7.2%. Range 5.6-13.7%.

Thickness: Average 6 mm., Range 3-8 mm.

Carbon Streak: None

Surface

Color: Largely medium (5YR 5/2) to dark (5YR 4/1; 7.5YR 3-4/0) gray; occasionally light brown or buff (10YR 6/2).

Firing Clouds: Occasionally present.

Sooting: Yes

Finish: Usually rough and scraped with slight undulations. Smoother sherds appear to have been rubbed with a sherd or smooth stone.

Slip: None

Weathering: No information available.

Shapes and Sizes

Jars predominate, although bowls sometimes occur. Jars may be globular or slightly concoidal in shape with vertical necks or slightly out-curved, wide-mouthed openings.
Rims: Round, sometimes square.

Decorations

Painted: Absent

Manipulated: Sometimes incised, appliques, punched, or modeled decoration is present. See Varieties and Deviations.

Probable Function: Cooking and storage.

Other Characteristics: No Information available.

Bases for Description

Caldwell Village collection (nearly 5,000 sherds); Whiterocks Village (over 5,000 sherds); Boundary Village (300 sherds); and smaller numbers of sherds from other sites in the Uinta Fremont, as well as the Great Salt Lake area.

Bibliographical Data

Synonyms: Turner Gray, Cisco Variety (Lister, Ambler, and Lister 1960); Turner Gray, Variety 1 (Wormington 1955).

References

Lister 1951; Wormington 1955; Gunnerson 1956; Gunnerson 1957; Lister, Ambler, and Lister 1960; Ambler 1966; Gunnerson 1969; Madsen 1970; Marwitt 1970; Madsen 1972.

Derivation and Affiliations

The derivation of Uinta Gray is not known. It is sometimes found in Great Salt Lake Fremont sites in association with Great Salt Lake Gray and Promontory Gray. It is also occasionally recovered with Emery Gray, as at the Turner-Look site.

Varieties and Deviations:

An appliqued variety generally has "coffee bean" attachments encircling the vessel neck or shoulders. Appliqued bands and elongated vertical clay pellets are sometimes applied to vessel necks. Appliques designs are often further decorated by punching and incising.

An incised variety is characterized by shallow, parallel, and occasionally concentric incised lines on vessel necks or shoulders.

A punched variety includes small indentations produced with a stick-like implement or thumbnail and is usually restricted to the shoulder or neck area.

A modeled variety contains small protusions or bulges on vessel necks or shoulders.

Comparison With Other Types

Uinta Gray and Promontory Gray often resemble each other because of a calcite temper. A distinction can usually be made on the basis of general temper size and vessel construction. Promontory Gray generally has a coarse texture (greater than 1.2 mm in particle size) and is made by the paddle and anvil technique (producing a heavily undulated surface).

General Remarks

Fremont pottery in the Uinta Variant is almost exclusively limited to Uinta Gray which is found in percentages greater than 90% in sites excavated in this area. Uinta Gray from the Uinta Variant almost always contains tempering particles less than .7 mm in diameter, while pottery classified as Uinta Gray from the Great Salt Lake Variant frequently has calcite temper measuring up to 1.0 mm in size. Although Uinta Gray ceramics from the Great Salt Lake area resemble Promontory Gray in temper composition, this similarity only appears to be based on the availability of calcite in the area, not on a Plains derivation of the the use of calcite tempering.

## EMERY GRAY

Time and Place of Manufacture and Use

Period: No phases have been defined for the San Rafael Fremont.

Dates: About A.D. 700-1200 (?).

Range: The core area for Emery Gray extends from Harris Wash in the south to Ivie Creek in the north. While this type is found thoughout the San Rafael Fremont Variant, it reaches westward to Ephraim and Sevier, and northward to Nephi. Percentages in these western regions, however, are small.

Type Site: Poplar Knob (Taylor 1957); Snake Rock (Aiken 1967); Old Woman (Taylor 1957).

Description

Construction: Coiled

Finishing and Thinning: Scraped.

Firing Method and Temperature: Reducing atmosphere. This type was originally fired between 775 - 875 degrees C ± 25 degrees C (Mean 805 degrees C).

Core

Clay: Alluvial or sedimentary presumably from the vicinity of the San Rafael drainages.

Color: Usually light (10YR 7/1) to medium (5YR 4-6/1) gray; occasionally dark gray (10YR 3/1).

Temper: Angular crushed fragments of gray basalt (20-40%) and quartz (10-25%); some mica occasionally present. Inclusions range from 0.1-1.5 mm in size and constitute 40-50% of the vessel wall.

Texture: Generally medium; occasionally fine or coarse; particle size averages 0.3 mm in diameter.

Mean Apparent Porosity: 6.7%. Range 2-8 mm.

Carbon Streak: Rare but present in a few cases.

Surface

Color: Usually light (10YR 7/1) to medium (5YR 4-6/1) gray; occasionally dark gray (10 YR 3/1).

Firing Clouds: Occasionally present.

Sooting: Yes

Finish: Smoothed and occasionally polished. Striations are frequently present.

Slip: None, although a fugitive red wash is sometimes present on vessel exteriors. See Varieties and Deviations.

Weathering: No information available.

Shapes and Sizes

Jars predominate, but some bowls and pitchers are present. Jars tend to be globular with rounded bases and flaring vertical or (rarely) bulging necks. Loop handles always appear on vertical rim jars. Jars with wide mouths and flaring rims are found with and without handles. Both vertical rim and flaring rim jars generally measure from 15-25cm in diameter and 15-30 cm in height. Bowls usually range from 12-30 cm in diameter.

Rims: Round; square; a small out-curved lip is occasionally present.

Decorations

Painted: Absent

Manipulated: Occasional applique, punched, incised, or modeled treatment. See Varieties and Deviations.

Probable Function: Cooking and storage.

Other Characteristics: No Information available.

Bases for Description

Poplar Knob collection (nearly 2,500 sherds); Old Woman Site (nearly 3,000 sherds); Snake Rock (nearly 11,000 sherds); small percentages from Pharo Village, Ephraim, and Nephi.

Bibliographical Data

Synonyms: Turner Gray, Variety II (Wormington 1955); Turner Gray, Emery Variety (Lister, Ambler,and Lister 1960); Plain Gray, Type C (Gillin 1941); Escalante Gray (Gunnerson 1969).

References

Wormington 1955; Taylor 1957; Gunnerson 1969; Lister, Ambler, and Lister 1960; Ambler 1966; Gunnerson 1969; Madsen 1970; Marwitt 1970; Madsen 1972.

Derivation and Affiliations

The derivation of Emery Gray is not known. It is frequently found with Sevier Gray and Ivie Creek Black-on-White. Occasionally it is found with Uinta Gray (as at the Turner-Look site)

Varieties and Deviations:

An appliqued variety occasionally occurs and usually consists of attached clay pellets, which are located on vessel necks or shoulders and often punched or incised.

A punched variety contains punctuations produced by a stick-like implement or thumbnail and usually occurs on the neck or shoulder area.

An incised variety is characterized by shallow, parallel, and occasionally concentric incised lines on vessel necks or shoulders.

A fugitive red variety, in which the vessel exterior is coated with an unfired hematite wash, also occurs. A corrugated vareity is rare.

Comparison with other Types

Both Emery Gray and Sevier Gray are tempered with crushed basalt and are the only Fremont types containing that material. Sevier Gray is usually tempered with dark basalt and little or no quartz. Emery Gray, on the other hand, geneally contains gray basalt with high percentages of quartz. Inclusions in Emery Gray are almost always fine (0.1-0.3 mm) to medium (0.3-0.6 mm), whereas Sevier Gray is generally characterized by coarse (0.6-2.0 mm) particles.

General Remarks

Emery Gray is the dominant ceramic type in the San Rafael Fremont area.