Chapter 7
THE FORMATIVE ERA

INTRODUCTION

The Formative era refers to the extended period when corn was a major subsistence focus in some portions of western Colorado, roughly between 400 B.C. and A.D. 1300 (Jett 1991; Stiger and Larson 1992). Certainly, not all inhabitants of western Colorado were engaged in horticultural practices during this era; the mountains comprising the eastern portion of the Northern Colorado Basin were unsuited for horticulture, as growing seasons were too short for corn, beans, and squash. Because the unit of discussion is an era, however, both horticultural and nonhorticultural groups that occupied the study area between 400 B.C. and A.D. 1300 will be examined herein.

Horticultural groups occupied the Colorado Plateau. These groups often constructed substantial habitation structures and made, or obtained in trade, high-quality pottery. Groups most reliant upon cultigens used two-hand manos to increase grinding efficiency. The remains of horticultural groups are not evenly distributed across the Colorado Plateau. Site file data from OAHP show two major clusters of Formative-era structures, cultigens, ceramics, two-hand manos, and rock art: one in western Rio Blanco and Moffat counties, and one in the lower San Miguel and Dolores river drainages in western Montrose County (Figures 7-1 - 7-6). A third, less distinct cluster occurs south of Grand Junction in the vicinity of Glade Park. The Formative sites in Glade Park and in northwestern Colorado are attributed to the Fremont tradition. The cultural affiliation of the southern Formative-era sites is less clear; some may be Fremont, but most are attributed to the Gateway tradition, thought to be an indigenous horticultural unit. A few undisputed Anasazi sites occur along the southern boundary of the study area.

The nonhorticultural inhabitants of the higher elevations of the Colorado Plateau and of the mountains are discussed in the section on the Aspen tradition. The Aspen tradition is a new construct, provided as reference for hunting and gathering groups contemporaneous with the Formative era that evince certain technological and subsistence innovations that can be used to differentiate them from Archaic and post-Formative-era groups.

ANASAZI TRADITION

Introduction

Evidence of Anasazi occupation of the study area consists of substantial habitation structures, Anasazi pottery, and Anasazi rock art styles. When the boundary between the Northern and Southern Colorado Basin study areas was drawn, an attempt was made to include all structural habitation sites affiliated with the Anasazi tradition in the Southern Colorado Basin. Distributions of artifacts diagnostic of the Anasazi tradition were not considered in study unit definition because Anasazi pottery was known to extend far beyond the Anasazi homeland; Anasazi pottery, for example, is found in small quantities throughout western Colorado and into Wyoming.

According to the OAHP database, eight sites that recorders attribute to the Anasazi and that have possible architecture occur within the Northern Colorado Basin study area. These sites indicate that the effort to exclude Anasazi habitation structures from the Northern Colorado Basin was not entirely successful. No attempt is made to fully describe the Anasazi tradition to account

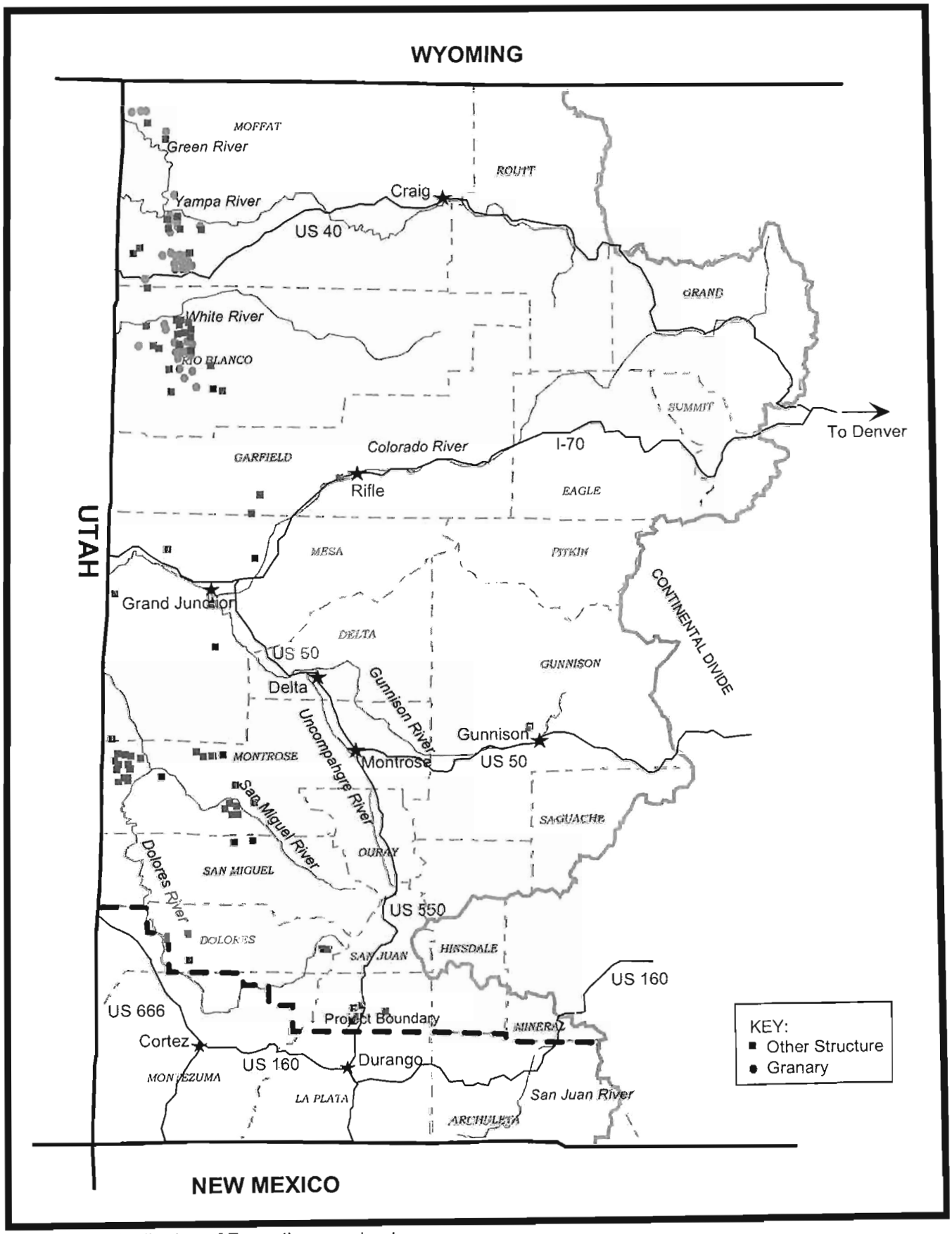

Figure 7-1. Distribution of Formative-era structures.

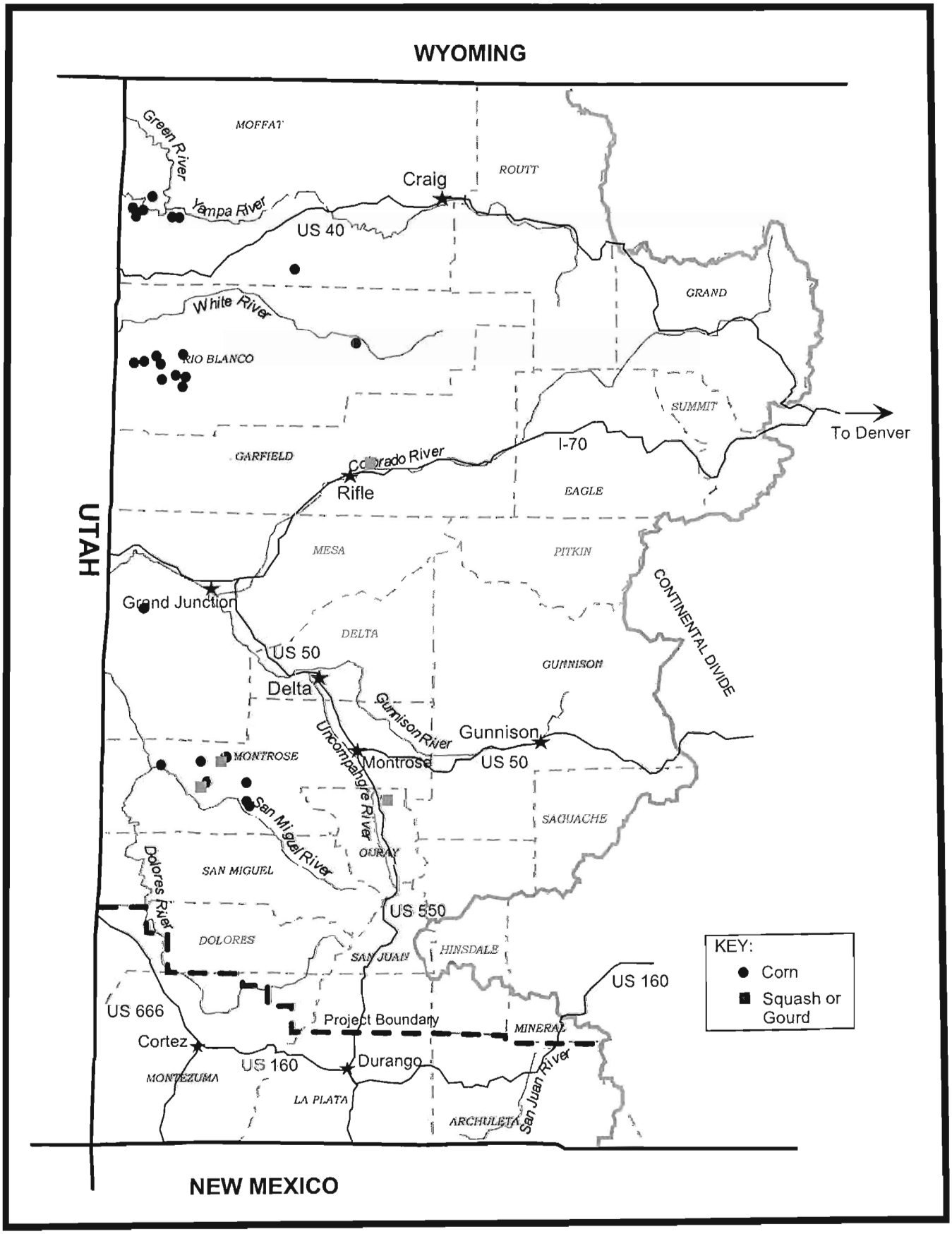

Figure 7-2. Distribution of sites with cultigens.

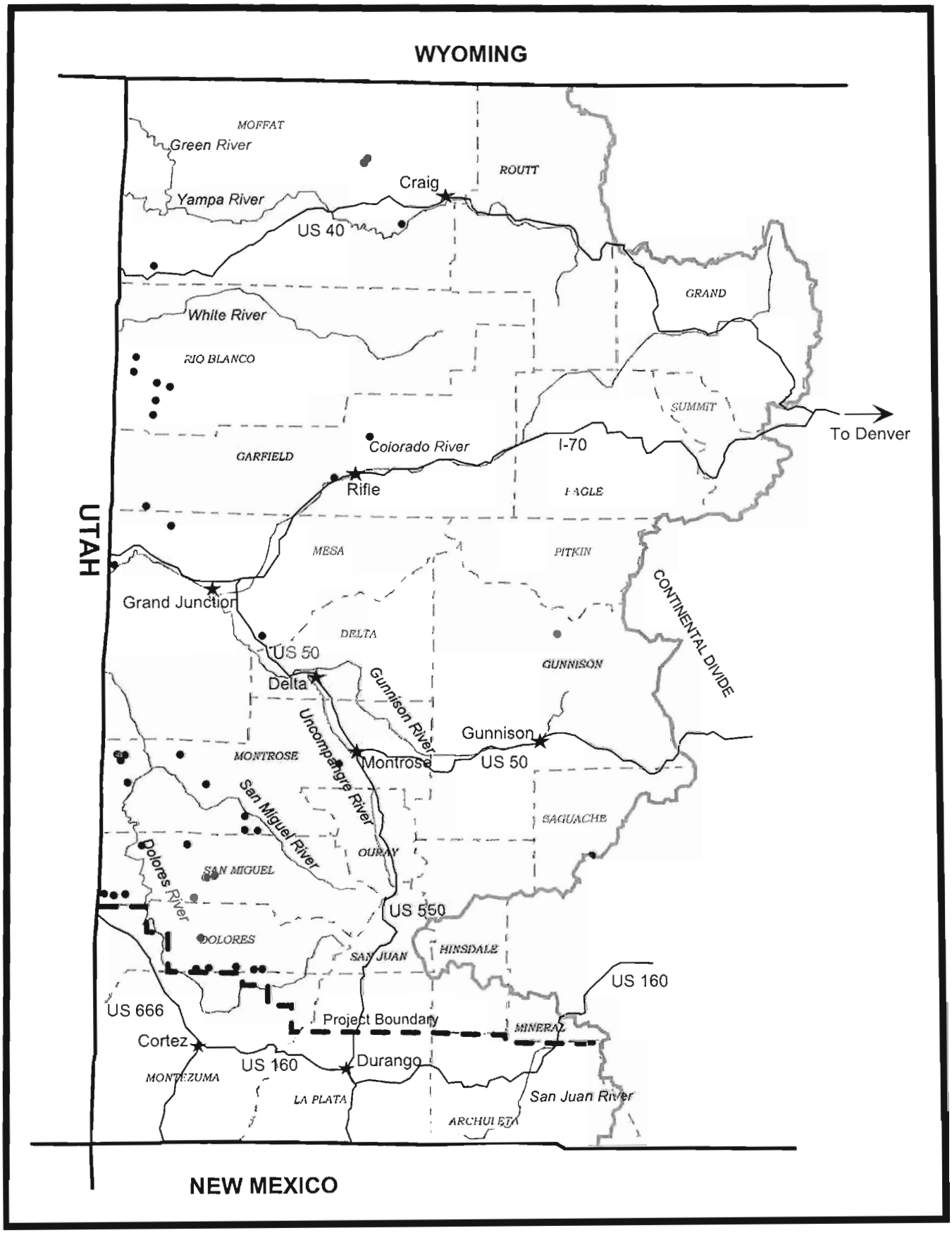

Figure 7-3. Distribution of sites with Anasazi ceramics.

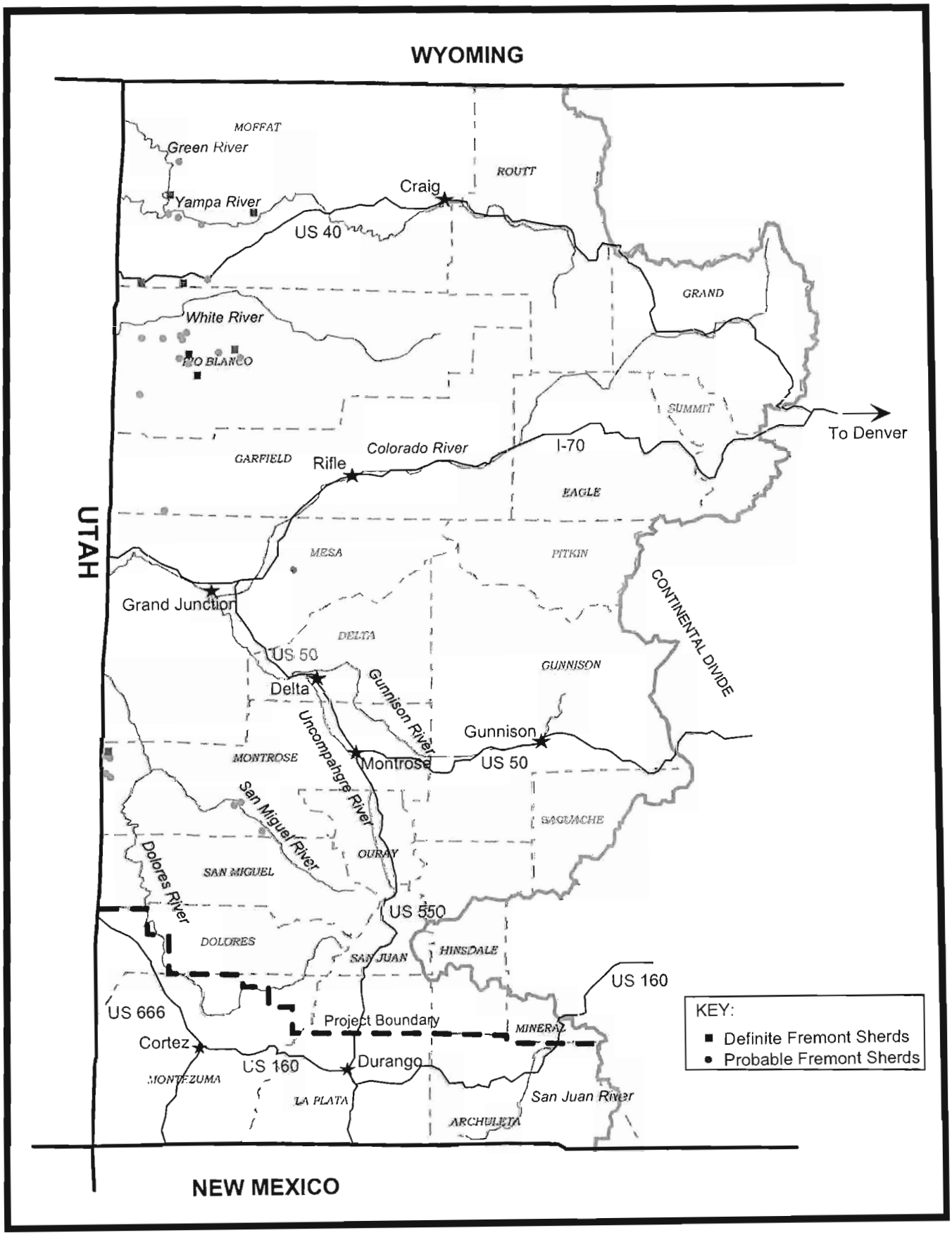

Figure 7-4. Distribution of sites with Fremont ceramics.

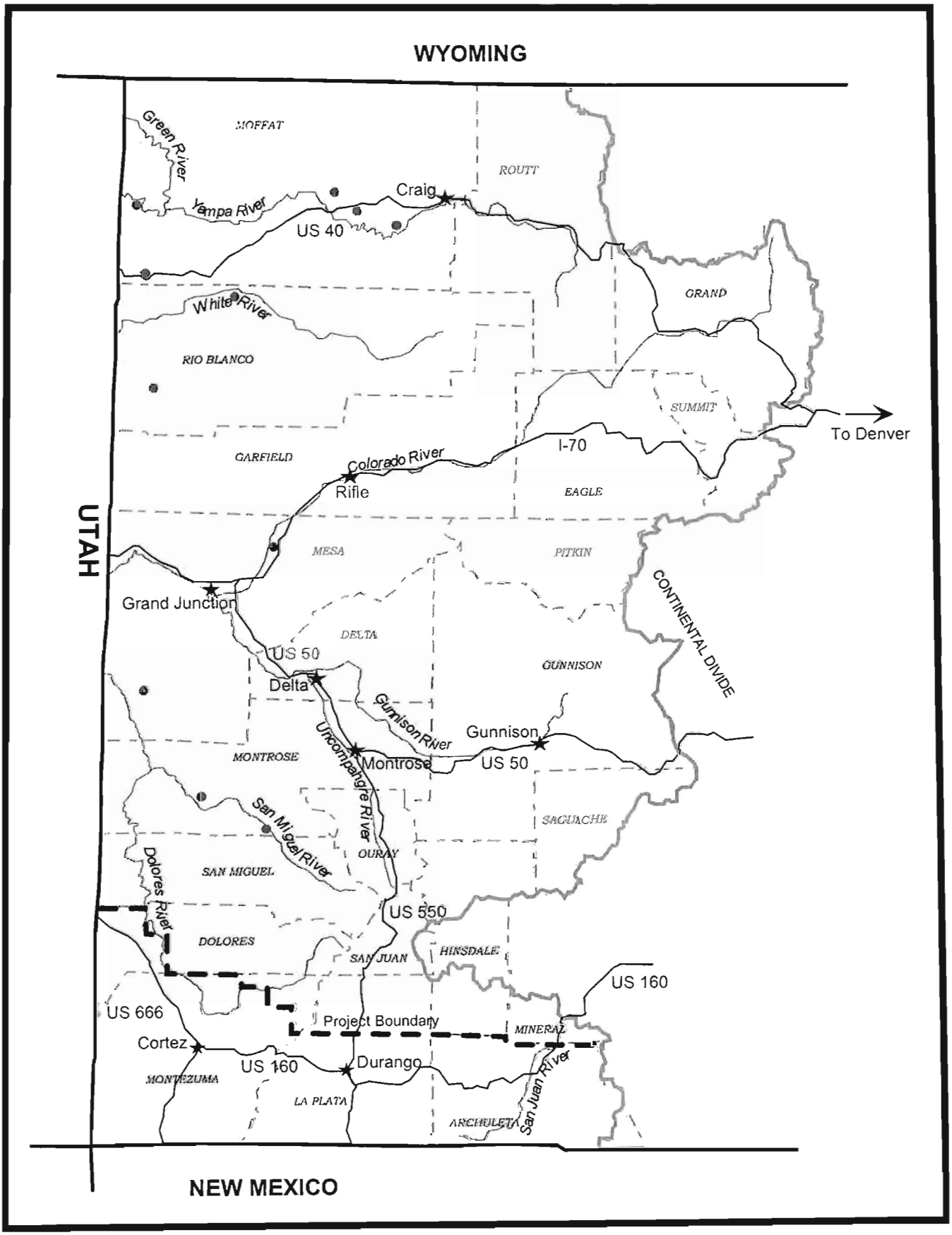

Figure 7-5. Distribution of sites with two-hand manos.

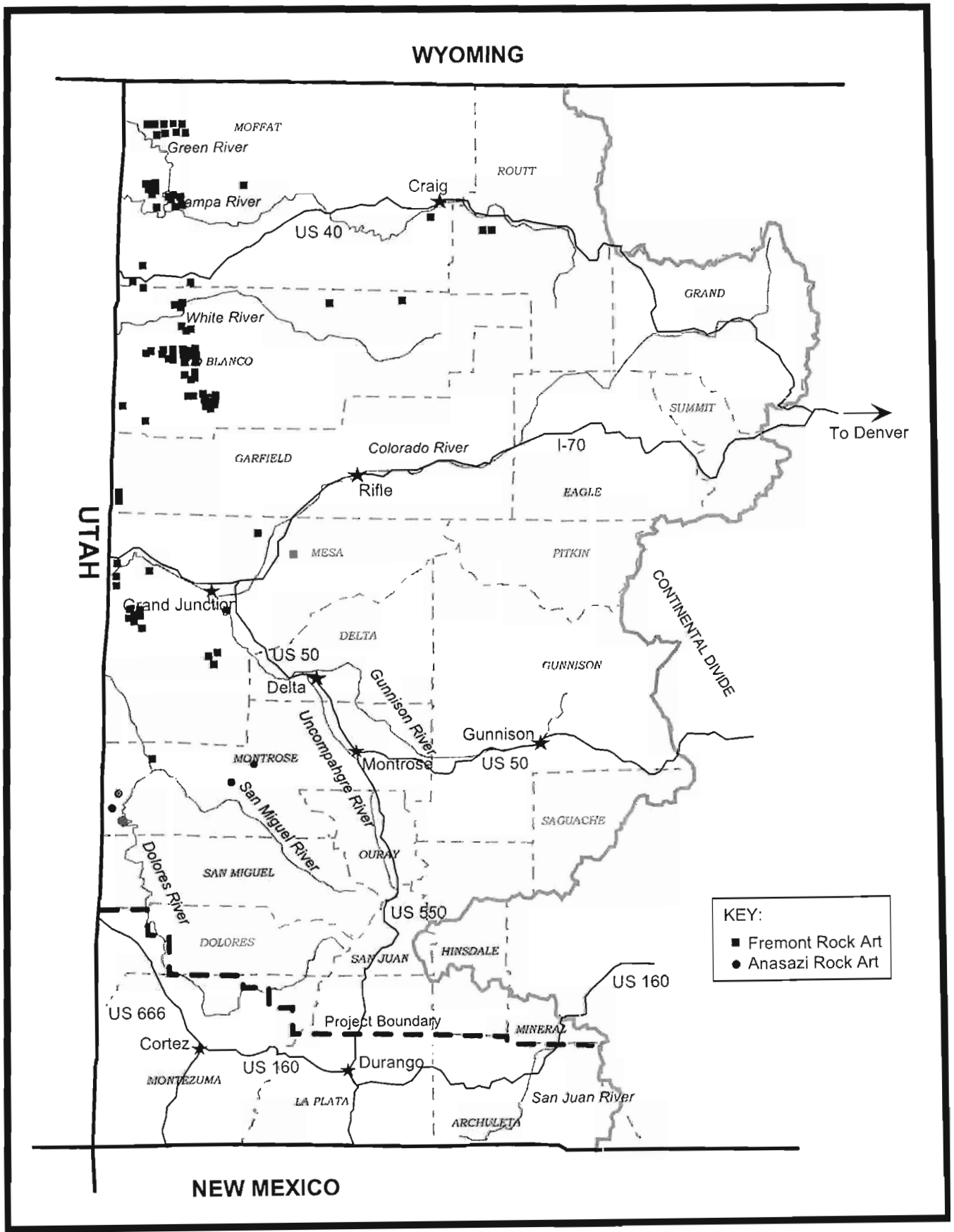

Figure 7-6. Distribution of rock art assigned by site recorders to Fremont and Anasazi traditions.

for these sites; the reader is referred to the prehistoric context document prepared for the Southern Colorado Basin for detailed information on the Anasazi. One or more of the following attributes characterizes the Anasazi sites in the project area.

- Distinctive gray ware, white ware, red ware, and polychrome ceramic traditions after the Basketmaker II period.
- Early pit structures with considerable homogeneity of intramural features, such as antechambers, wingwalls, and sipapus.
- Universal use of kivas for social integration and possibly for ceremonial functions.
- Complex late residential sites, with kivas and rectangular room blocks, sometimes representing multistoried structures.
- Highly patterned residential site layout, with room blocks north of pit structures and middens south of pit structures.
- Water control structures such as canals, reservoirs, check dams, and terraces.
- Complex intraregional relations, with Chaco outliers, Chaco roads, and hierarchical distribution of site types of varying complexity.

Five of the eight structural Anasazi sites in the Northern Colorado Basin are in La Plata County, and three are in Dolores County. Of the architectural sites in La Plata County, three are attributed to the Basketmaker II period, and two are classified as Basketmaker III. The Dolores County sites are attributed to the Pueblo I and II periods. These eight sites are in relatively high elevation zones and probably represent frontier outliers associated with exploitation of mountainous resources.

One structural site, the Tamarron site (5LP326) has been excavated. Situated in the Animas Valley north Rockwood, the Tamarron site revealed a habitation structure similar to those investigated by Morris and Burgh (1954) at Talus Village a few kilometers to the south. The floor was shallowly excavated into a hillslope, and the superstructure consisted of cribbed logs (Reed and Kainer 1978). Floor features included rock-filled basins and slab-lined cists, one of which contained a human burial. Burned fragments of a second human burial were scattered on the floor of the structure. A few corn pollen grains were found. Plant macrofossils consisted of wild or ruderal species. Faunal remains included trout, mule deer, bighorn sheep, marmot, and cottontail bones. Although chronometric dating was unsuccessful, similarities between the Tamarron site and Talus Village clearly indicate Basketmaker II affiliation.

Site 5DL896 in the West Dolores River valley may also be a Basketmaker II site. This apparently nonstructural, aceramic site was excavated by Nickens and Associates in 1987. The site's primary component was chronometrically dated between A.D. 130 and 430, coeval with the Basketmaker II period (Reed and McDonald 1988). Numerous corner-notched arrow points were found that were similar to arrow points found at the Tamarron site. A crusher and a notched bone artifact recovered at the site provided evidence of Anasazi affiliation. No evidence of cultigens was found. Numerous elk, deer, and porcupine bones were recovered; these, in addition to the numerous arrow points, indicated emphasis upon hunting.

Relatively low densities of nonstructural sites with Anasazi ceramics have been found in the San Juan National Forest and other mountainous areas in the southern portion of the study area (e.g., McDonald 1998; Zier 1977). These sites are generally attributed to hunting and gathering activities by either the Anasazi or by other peoples that obtained Anasazi ceramics by either trading or raiding. Duke (1998) suggests that the nature of mountain utilization by the Anasazi may have changed through time. According to Duke, the Anasazi may have directly utilized the mountains

during the Pueblo I period, possibly in response to environmental stress in the lower elevations. Direct utilization may have been replaced by material exchange with indigenous, nonhorticultural mountain peoples during the Pueblo II period, as a result of increased Anasazi sedentism (Duke 1998:9.9). The nature of cultural contact along the northern frontier of the Anasazi homeland is an important research topic.

Cole (1987, 1990) has examined the distribution Anasazi rock art in west-central Colorado. According to Cole (1990), Anasazi rock art is found over a broad area on the Colorado Plateau south of the Colorado River. Five rock art sites are attributed to the San Juan Anthropomorphic style, a style believed to date between 100 B.C. and A.D. 700 (Cole 1987:127). One of these sites is on the lower Gunnison River, and the others are in the San Miguel and Dolores canyons. Rock art at Tabeguache Cave I is attributed to the San Juan Anthropomorphic style (Cole 1987). Cole (1987:131) evidently sees an intermingling of San Juan and Uncompahgre complex styles and suggests cultural relation between the makers of the two styles. Cole (1987) attributes eight sites in west-central Colorado to the Abajo-LaSal Anasazi Rock Art style. This style, dated between A.D. 600 and 1200 and common in east-central Utah, was evidently produced in southwestern Mesa County and western Montrose County. Cole (1987:133) perceives the Abajo-LaSal Anasazi Rock Art style as somewhat distinctive from other Anasazi styles, reflecting the degree of other regional differences in material culture. She believes, however, that a separate cultural development is not evidenced by rock art data, and suggests instead that west-central Colorado had "limited or peripheral Anasazi developments" that began with the Basketmaker II period (Cole 1987:145).

In summary, the regional database suggests that Anasazi artifacts are widely but sparsely distributed across the Colorado Plateau portion of the Northern Colorado Basin. Rock art panels with Anasazi rock art styles are uncommon but evident south of the Colorado River. Although Cole, among others, interprets the presence of Anasazi rock art as evidence of Anasazi occupation, other interpretations are also tenable, as is discussed below in the section on the Gateway tradition. Undoubtedly Anasazi structural habitations are rare and are restricted to the vicinity of the study area's southern boundary. Because the cultural affiliation of Formative-era structural sites in the area well north of the Anasazi homeland, as traditionally perceived, remains a topic of debate, a model of Anasazi settlement of the region is presented below.

Anasazi Occupation of West-Central Colorado

The concept of a "peripheral" Anasazi culture characterizing the northern frontier of the Anasazi homeland developed prior to the definition of the Fremont culture. With the definition of the Fremont, the concept largely disappeared except in east-central Utah and west-central Colorado, where sites could not be readily attributed to either the Fremont or the Anasazi (e.g., Pierson 1981). Because there are Anasazi artifacts and rock art styles in west-central Colorado, it may be hypothesized that the Anasazi tradition extended farther to the north than commonly thought.

The Anasazi may have settled west-central Colorado during the Pueblo II period, which dates between A.D. 900 and 1100. In the Four Corners region, this was a period of settlement of moderate and low elevation areas, as the climatic conditions compelling a Pueblo I period settlement of the region's higher elevations ameliorated. Many areas of the Southwest show an increase in site quantities during the Pueblo II period, which may indicate increased populations, more intense use of field houses in areas distant from primary residences, or both (see Reed 1998). Anasazi settlement of west-central Colorado, then, may have been driven by a need to maximize use of areas with great horticultural potential, even outside the traditional Anasazi homeland. This may have occurred primarily in tenth century. According to Mark Varien of the Crow Canyon

Archaeological Center (personal communication 1999), southwestern Colorado is characterized by a relative paucity of tree-ring dates for the period between A.D. 890 and the late 900s, possibly indicating large-scale group movements. This model of Anasazi immigration to west-central Colorado has the following test implications.

- Sites in west-central Colorado yielding corn that date either prior to A.D. 900 or after A.D. 1100 will not evidence Anasazi architecture or other cultural elements that cannot be explained by trade.
- Architecture typical of the Pueblo II period should be evident in west-central Colorado.
- Anasazi rock art should be present in west-central Colorado.
- Regional architectural sites should evince a reliance on horticulture at levels similar to those at Pueblo II period sites in the conventional Anasazi homeland.
- West-central Colorado Formative-era sites should yield almost exclusively Pueblo II period Anasazi ceramics.
- Human skeletal remains from west-central Colorado should evidence more genetic similarities with Anasazi populations than with Fremont or other populations.

Regional archaeological data support some, but not all, of these test implications. Most of the Formative-era sites in the study area that have ceramics yield exclusively Anasazi ceramics. Anasazi ceramics are generally found in relatively low frequencies, however, and there is no evidence of pottery manufacture in the region. The predominance of Anasazi ceramics comprises the most compelling evidence for Anasazi use of the region. Anasazi rock art is also documented in the study area. Cole (1990) has recognized Basketmaker and Pueblo styles in the region. Regional data strongly suggest that Anasazi occupation of the area was restricted to the Pueblo II period. Although there is evidence of early appearance of corn in west-central Colorado, at times coincident with the Basketmaker II and III and Pueblo I periods, architectural styles characterizing these periods in the southwestern corner of the state are absent in the study area. Pueblos and pit structures typical of the Pueblo III period are also absent. Regional data fail to support other test implications, however. Typical Pueblo II architectural structures are absent. Cottonwood Pueblo and Tabeguache Pueblo are among a small number of sites with rectangular masonry rooms, but the layout of the structures is atypical of the Pueblo II period (Figure 7-7). Cottonwood Pueblo has a substantial masonry wall that encloses a large plaza, which is uncommon at Pueblo II sites. Most importantly, however, the west-central Colorado sites consistently lack kivas, which are almost universally found at primary residential sites in the Four Corners region. Limited regional data also suggest important subsistence differences between the west-central Colorado Formative-era structural sites and typical Pueblo II sites. Crane (1977) suggests that Weimer Ranch settlements evidenced relatively minor emphasis upon horticulture. Although data do not permit comparison of the percentages that corn comprised of the diets of the regional occupants, the differences seem significant. Too few data are available on west-central Colorado skeletal populations to permit comparisons to other populations.

In short, it appears that the archaeological evidence from west-central Colorado does not support the existence of a bona fide Anasazi occupation. The degree of cultural continuity characterizing Anasazi culture over broad areas of the American Southwest makes it untenable to maintain that a diluted form of Anasazi culture existed such a short distance from the Anasazi homeland, especially considering similarities in environments.

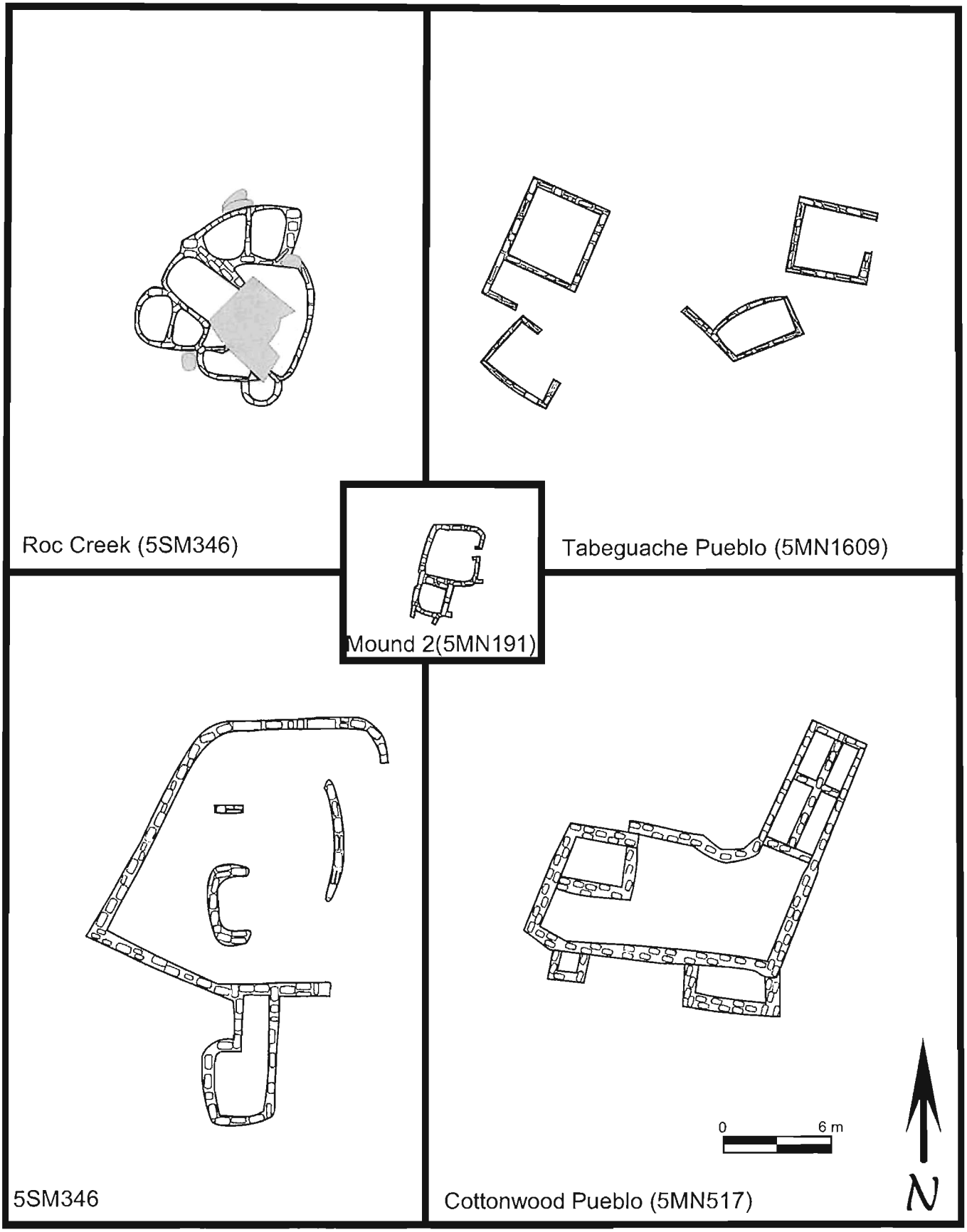

Figure 7-7. Examples of substantial structures in western Montrose and San Miguel counties. All are drawn at the same scale.

FREMONT TRADITION

Much of central and northern Utah, as well as adjacent portions of western Colorado, was the locus of the Fremont tradition. Initially perceived to represent as much internal cultural homogeneity as the Anasazi, further archaeological research has established that the Fremont unit was characterized by considerable variation, leading to the recognition of regional variants, such as the Uinta, San Rafael, Great Salt Lake, Sevier, and Parowan Fremont (Marwitt 1970). The degree of variation led some archaeologists to reject the Fremont tradition. Madsen (1979) considered the subsistence strategies of the groups commonly referred to as the Fremont and suggested that the traditional Fremont concept be dropped in favor of three archaeological units: Fremont, Sevier, and an unnamed Plains-derived culture of the Uinta Basin. The concept of the Fremont has endured however, though variation has become one of its defining characteristics. In its present usage, the Fremont provides reference for groups north of the Anasazi homeland that relied on horticulture to greatly varying degrees and that shared the following four attributes, as defined by Madsen (1989:9-11):

- One-rod-and-bundle basketry construction
- Moccasins constructed from the hock of a deer or mountain sheep
- Artistic representations, as either clay figurines or rock art motifs, of trapezoidal anthropomorphs with elaborate ornamentation
- A distinct coiled pottery tradition

As Madsen (1989) notes, these attributes often do not occur together within a single component. Basketry and moccasins are perishable and are seldom found on open sites. Elaborate, trapezoidal figurines are uncommon, and associations between rock art figures with Fremont characteristics and archaeological deposits are difficult to establish. This leaves pottery as a particularly important diagnostic element, especially at open sites. The criteria here for assigning sites to the Fremont tradition vary by region. In regions where Fremont affiliation is uncontested, such as in northwestern Colorado, group assignments are more freely made, because the implications of classification error are less substantial. In areas such as western Montrose County, however, where cultural affiliation of Formative-era sites is debated, higher standards are implemented for unit assignments. Open sites in western Montrose County must either yield Fremont pottery types or consist of rock art motifs widely accepted as Fremont.

Evidence of the Fremont tradition is concentrated in three noncontiguous areas in western Colorado. The largest of these, where the evidence is the most tenable, is in the Douglas Creek/Dinosaur area in western Rio Blanco and Moffat counties. The extent of Fremont occupation can be estimated by inspection of Figure 7-4, which depicts the distribution of Fremont ceramics, as indicated by the OAHP database. A second area where Fremont components appear concentrated is in the Glade Park area, southwest of the city of Grand Junction, on the northern end of the Uncompahgre Plateau. The Little Dolores River drains this area. The distribution of the Fremont in the Glade Park area is primarily defined by distributions of Fremont rock art styles. The third area of possible Fremont occupation is in western Montrose County, where several sites with possible Fremont sherds have been found, including one site with possible Fremont pit structures. Because the nature of Fremont occupation appears so variable between the three areas, ensuing discussions of the Fremont occupation of the Northern Colorado Basin are segregated by area.

Quality of the Database

Western Montrose County

The archaeological excavation database for Fremont sites in western Montrose County is meager and of particularly poor quality. Sites dating to the Formative era with substantial architecture, pottery, and evidence of cultigens are relatively uncommon in the region. Several have been excavated by professional archaeologists, however, but most of these investigations occurred in the 1930s and early 1940s, when research objectives were different and before many now-commonplace specialized studies were developed. Other important Formative-era structural sites were investigated in the 1970s by Metropolitan State College under the direction of Dr. Jiri Vondracek. The results of these investigations are generally poorly reported, and many analytical methods are suspect. The only bright spot in the project is Cathy Crane's Master's thesis from Eastern New Mexico University, a brief version of which was published in *Southwestern Lore*, which provided the project's only written record (Crane 1977, 1978). The overall poor quality of archaeological excavation data has greatly limited our understanding of the region's structural Formative-era sites.

Sites with ceramics and masonry are relatively rare in west-central Colorado, so they tend to be highly visible and well known to the local population. Locals have brought many of these sites to the attention of professional archaeologists, which has led to the excavation of a substantial number of these sites by archaeologists. Unfortunately, as discussed above, many of the professional excavations were poorly conducted or poorly reported. Local familiarity with structural sites has also led to vandalism at many of the sites. The ability to clarify many of the questions regarding the horticulturists of western Montrose County through future, controlled excavations has been seriously undermined.

Glade Park Area

The Fremont database for the Glade Park area consists almost entirely of rock art. Excavations in the vicinity have yet to produce unequivocal evidence of Fremont occupation, though radiocarbon dates coeval with the Fremont tradition have been obtained and components with corn have been identified (Wormington and Lister 1956). The Fremont rock art styles are adequately recorded and appear to be properly interpreted as Fremont. Many of the anthropomorphs are characterized by lobed heads, elaborate ornamentation, and trapezoidal bodies (e.g., Greubel et al. 1998), characteristics of Fremont styles. Schaafsma (1971) and Cole (1987, 1990) have published interpretations of the Fremont rock art of Glade Park.

Douglas Creek/Dinosaur Area

The quality of the database for the Fremont tradition in the Douglas Creek/Dinosaur area is considerably better than it is for western Montrose County, and is considerably larger than either the western Montrose County or the Glade Park area database. The OAHP database lists more than 300 Fremont sites in Rio Blanco and Moffat counties, including 25 with Fremont ceramic types. As discussed below, eight excavated sites have yielded chronometric dates contemporaneous with the Formative era in association with artifacts diagnostic of the Fremont tradition. These eight Fremont components have been subjected to between 15 m^2 and 77 m^2 of excavation, suggesting that investigations have generally been extensive enough to adequately characterize the Fremont components. The eight sites have been excavated since 1980, and thus have been subjected to most modern analytic techniques. The quality of reporting is variable, but adequate.

Fremont-Tradition Sites

Western Montrose County

Evidence of a Fremont occupation in western Montrose County is scant and ambiguous. Fremont rock art has not been identified in the area (Cole 1990), and no trapezoidal figurines with elaborate ornamentation have been documented. One-rod-and-bundle basketry has been found at Tabeguache and Dolores caves (Hurst 1940, 1942, 1947), but low numbers of highly portable artifacts can be dismissed as trade items, especially when other diagnostic artifacts are absent. Huscher and Huscher (1943:67) report that they saw a "Fremont River (variant) moccasin" with a one-piece upper and with dewclaws intact in a private collection from the Dolores River drainage. Fremont ceramics are reported at several sites (see Figure 7-4), but in some cases, identifications should be viewed with skepticism.

Two excavated sites have yielded ceramics attributed to the Fremont. Crane (1978:79) reports finding Emery Corrugated and Emery Gray sherds at the Roc Creek site (5MN367) in western Montrose County during an excavation project by Metropolitan State College. The site consisted of eight contiguous, oval masonry rooms built around a large boulder. Pottery temper consisted of crushed igneous rock. Because the temper material was similar to that of the Mesa Verde region, Crane (1977:79) questioned the utility of the artifacts in determining cultural affiliation. Madsen (1977) writes that corrugated Emery Gray ceramics are rare; this, coupled with the discovery of corrugated Anasazi sherds at other sites in the area, implies that the corrugated sherds at Roc Creek may be Anasazi. The classification of the plain gray sherds from the site is also moot because they were not, apparently, classified by a trained ceramist and are not adequately described in the literature. SDSU and CC archaeologists reportedly recovered Fremont ceramics at site 5MN191, the Paradox 1 site, where pit structures and surface structures were found (Kasper 1977). Unfortunately, these artifacts were never described in print because an accidental fire destroyed them (McMahon 1997).

The authors of this context are reluctant to accept the Roc Creek site as Fremont because of serious questions about the ceramic classifications and because the site's architecture is atypical of Fremont architecture. The Paradox 1 site, however, may represent a Fremont occupation, and as such, is the only excavated Fremont site recognized in the study area. Coombs Cave (42GR383), recently excavated across the state line in Utah, has apparently yielded Fremont ceramics, corn, beans, squash, and gourds, and evidence of agricultural terraces (Fawcett 1996); it, too, may represent a Fremont occupation.

The Paradox 1 site covers much of the top of a knoll referred to as Wray Mounds. Jeancon and Roberts first investigated the site in 1924, focusing on several noncontiguous, rectangular surface structures in the northern portion of the site (McMahon 1997). The structures were interpreted as Anasazi "summer homes," or in today's terminology, as field houses, based on architecture and on the discovery of pottery similar to that found on Anasazi sites in the southernmost portion of the state. Woodbury and Woodbury (1932) conducted further excavations at masonry surface rooms atop Wray Mounds in 1931. At least one investigated structure was comprised of contiguous rectangular rooms. Ceramic artifacts recovered in the surface structures were Pueblo I and II period Anasazi varieties. In 1970, SDSU and CC personnel, under the direction of Lois K. Lippold, excavated five blocks at the site in the general area as the Woodburys' excavations. One excavation block was in a midden. Architecture was revealed in three excavation blocks. In one excavation block, designated Unit 1, a pit structure was found that was apparently overlain by a later surface masonry structure. Two pit structure habitations were found in each of two other excavation blocks, designated Units 2 and 3. In Unit 2, a tunnel connected the two pit structures. Multiple surface storage structures were found just west of the pit structures in

Unit 2. SDSU and CC archaeologists interpreted the masonry surface structure in Unit 1 as a Pueblo I-II period Anasazi room block with two or more rooms, situated over a Basketmaker III pit structure (Kasper 1977). The surface structure apparently yielded Anasazi ceramics, whereas the two pit structures in Excavation Unit 2 yielded Fremont ceramics (Kasper 1977). As mentioned above, this cannot be substantiated because the artifacts and most of the associated literature have been destroyed. The temporal relationship between the various pit structures and the surface structures cannot be determined, though the superimposition of one surface structure over a pit structure indicates that at least one pit structure precedes the surface structure.

Few architectural details are available for the pit structures. McMahon's (1997) report on the site, however, includes several photographs recently obtained from Larry Leach of San Diego State University. Although the photographs are not labeled with provenience information, more than one pit structure is apparently represented. Based on observation of these photographs, it appears that the pit structures are circular, between 3 and 5 m in diameter; have clay-lined central hearths; and subfloor storage features. In some cases, the base of the wall is lined with vertical sandstone slabs. The slabs were reportedly covered by adobe or plaster (Kasper 1977). Wall height appears to exceed 1 m in some pit structures. Internal roof supports, presumably posts, are also reported (Kasper 1977).

Because thorough descriptions and maps are unavailable for the pit structures, it is difficult to compare and contrast their attributes to those of other excavated structures. The architectural details discernible from the photographs, however, suggest more similarity with San Rafael Fremont pit structures than with Anasazi pit structures. The Paradox 1 pit structures appear to lack antechambers and wing walls, unlike Basketmaker III and some later Anasazi habitation structures. Unlike Pueblo I pit structures, the Paradox 1 examples are round and lack wing walls, ventilator tunnels, and benches. The structures clearly lack Pueblo II and III period kiva attributes. Residential pit structures dating to the Pueblo II and III periods not classified as kivas generally evidence considerable variation, but often retain some of the aforementioned Anasazi pit structure characteristics (Reed 1998). The absence of Anasazi pit structure attributes and the prevalence of clay-lined central hearths and slab-lined wall bases best supports affinity with the Fremont culture (see Jennings 1978; Marwitt 1970).

The available data on the Paradox 1 site suggest that two components are present. The Fremont component, consisting of pit structure habitations, is the earliest. Assuming that the ceramics purported to be Fremont are correctly classified, the Fremont component probably dates sometime between A.D. 700 and 1200 (Madsen 1977). The site's later component, represented by rectangular masonry surface rooms, of which one is superimposed over a pit structure, apparently yielded Pueblo I or II Anasazi ceramics. Because Pueblo II ceramic assemblages commonly comprise considerable quantities of plain gray, which may be mistaken for indication of an early Anasazi occupation, and may have small frequencies of earlier pottery types, it is likely that a Pueblo II period occupation is represented, dating sometime between A.D. 900 and 1100. A tree-ring specimen submitted to the University of Arizona Laboratory of Tree-ring Research permits refinement of the chronology of the later component. The specimen, apparently from Mound 2, yielded a tree-ring date of A.D. 725-1024 v, indicating site occupation a few years after A.D. 1024 (see McMahon 1997). This suggests that the Fremont component dates sometime between A.D. 700 and 1000. The site's later component is considered *not* to be Fremont, because of the lack of evidence of Fremont ceramics and other artifacts identified by Madsen (1989) as diagnostic of the Fremont culture. As discussed below, the later component is attributed to the Gateway tradition.

Glade Park

Although ample evidence of Formative-era occupation is present in the Glade Park area, Fremont affiliation is clearly evident only at rock art sites. Cole (1987) has identified 12 Fremont rock art sites in the Glade Park area and states that all but one represent the Classic Vernal style. The Sieber Canyon rock art style has also been identified in the Glade Park area (Conner and Ott 1978), but it is considered by Cole (1987) to represent a local variation of the Classic Vernal style.

The cultural affiliation of other types of sites is more difficult to determine. Archaeological inventories in the Glade Park area have found sites with Uinta Side-notched and Bull Creek projectile points — types generally attributed to the Fremont — as well as sites with the less diagnostic Rosegate point series (Conner and Langdon 1987). Sites with masonry architecture, interpreted as habitations and granaries and attributed to the Fremont, have also been found in the Glade Park area on archaeological surveys (Greubel et al. 1998). Fremont ceramics, however, appear to be absent. Excavations, though few, have not yielded unequivocal evidence of Fremont site affiliation. Fremont ceramics, pit structures, or elaborate clay figurines have not been discovered, though Formative-era components, some with corn, have been investigated (Wormington and Lister 1956).

In summary, the Glade Park area has Formative-era components, some of which evidence horticultural practices. Granaries and masonry habitation structures are present in low quantities but have not been investigated and are not clearly attributable to the Fremont tradition. Low quantities of Fremont-style projectile point are known, but Fremont ceramics are extremely scarce or absent. Because Fremont rock art styles are known from the Glade Park area, it appears most likely that local Formative-era components are associated with the Fremont tradition.

Douglas Creek/Dinosaur Area

Approximately 300 sites recorded in western Moffat and Rio Blanco counties have been attributed to the Fremont tradition. Site file data suggest that only 25 or so have yielded Fremont ceramics, so some classifications are clearly more tenable than others. Sites types recorded in the Douglas Creek/Dinosaur area include rock art, open and sheltered artifact scatters, and open and sheltered architectural sites. Most of the sheltered architectural sites represent granaries. These structures are masonry or, less frequently, jacal or adobe (Wenger 1956; Baker 1997). Open architectural sites are relatively uncommon and include substantial masonry structures, such as the Texas Creek Overlook site, 5RB2435 (Creasman and Scott 1987). Baker (1992a, 1995, 1998a, 1998b) has reported rather tenuous ephemeral brush structures at excavated open sites. No undoubted Fremont pithouses have been excavated in the Douglas Creek/Dinosaur area. Baker (1998a) tentatively identified a pit structure at the Rim Rock Hamlet Promontory site (5RB2792), but the authors here believe that the feature's attributes are not sufficiently patterned to indicate an undoubted pithouse. Truesdale (1993a) reported finding a Fremont pithouse in a 1 x 1 m test unit at site 5MF2645 in Dinosaur National Monument, but here, too, the reported evidence is not entirely convincing. Creasman (1981) found vertical slab features at site 5RB685 in the Douglas Creek area that were thought to possibly represent a pit structure, but the site has not been excavated. Personnel from the University of Colorado excavated several Fremont pit structures a few kilometers to the west in the Utah portion of Dinosaur National Monument, so it is certainly plausible that Fremont pit structures are present in the study area (Breternitz 1970). Rock art sites are relatively common and contain styles similar to both the Uinta and the San Rafael Fremont variants (Cole 1987).

Eight sites have been excavated in the Douglas Creek/Dinosaur area that have yielded both chronometric dates and artifacts diagnostic of the Fremont tradition (Table 7-1). These include rockshelters such as Duffy Shelter (5MF435), Burke Rockshelter (5RB123), and White Rockshelters (5RB2829); and open sites such as Sky Aerie Promontory Charnel site (5RB104), Texas Creek Overlook (5RB2435), Rim Rock Hamlet Promontory (5RB2792), and Sandshadow Shelter (5RB2958).

Table 7-1. Dated Components with Diagnostic Fremont Artifacts.

Site No.	Radiocarbon Calibrated Range	Diagnostic Artifacts	Reference
5MF435	A.D. 542 – 689 A.D. 659–974	Uinta Gray sherds; Rosegate, Desert Side-notched, Uinta Side-notched, and Elko Corner-notched points	Arthur et al. 1981
5RB104	A.D. 885–1035 A.D. 895–1115 A.D. 880–1170 A.D. 790–1010	Douglas Arch Gray sherds; Rosegate and Desert Side-notched points	Baker 1998b
5RB123	A.D. 148–688 A.D. 5–786	Salt Lake Gray sherds	Zier and Jepson 1991
5RB2275	A.D. 898–1256	Unidentified gray sherds; Desert Side-notched, Rosegate, and Cottonwood Triangular points	McPherson 1983
5RB2435	A.D. 1414–1631	Uinta Gray sherds and Cottonwood Triangular points	Creasman and Scott 1987
5RB2792	A.D. 25–450 A.D. 615–875 A.D. 885–1035 A.D. 875–1010 A.D. 875–1025	Douglas Arch Gray sherds and Rosegate points	Baker 1998a
5RB2829	A.D. 782–1012 A.D. 609–1014 A.D. 667–1026 A.D. 718–1011 A.D. 885–1249	Unidentified gray sherds and Rosegate points	Hauck 1993
5RB2958	A.D. 1041–1291 A.D. 665–1011 A.D. 785–1162 A.D. 437–666 A.D. 544–776 A.D. 639–968 A.D. 1295–1611	Unidentified gray sherds and Rosegate points	Baker 1995

Particularly Important Sites

Western Montrose County

Sufficient evidence exists to attribute a single site in western Montrose County to the Fremont tradition. This is the privately owned Paradox 1 site (5MN191). Although the site has a long history of archaeological investigations and other cultural impacts, it is likely to retain important buried cultural deposits, especially in the form of additional pit structures. Controlled,

state-of-the-art investigation of such deposits is likely to provide important insight into Fremont variability and may explain the existence of an apparently isolated outpost so far from the Fremont homeland.

Glade Park

Because no undoubtedly Fremont sites have been excavated in the Glade Park area, sites of highest concern include unexcavated sites potentially associated with the Fremont tradition. Sites with possible masonry habitation structures are likely to yield the richest and most diverse artifact samples, and so are most likely to yield diagnostic artifacts in well-dated contexts. Structural sites possibly affiliated with the Fremont occupation include 5ME11328, 5ME11352, and 5ME11355 (Greubel et al. 1998). The 12 Fremont rock art sites described by Cole (1987) in the Glade Park area are also important resources, as they comprise firm evidence of Fremont use of the area. These sites include one unrecorded site and sites 5ME10, 5ME13, 5ME458, 5ME465, 5ME529, 5ME538, 5ME540, 5ME677, 5ME724, 5ME792, and 5ME5174.

Douglas Creek/Dinosaur Area

The eight excavated sites listed in Table 7-1 are particularly important sites in the Douglas Creek/Dinosaur area because they have yielded artifacts clearly diagnostic of the Fremont tradition in contexts that have been chronometrically dated. Most probably retain intact cultural deposits suitable for future investigation. The Texas Creek Overlook site (5RB2435) is, perhaps, the most important site of all, because it is one of few sites in the region representing the very late Fremont occupation of the region. Moreover, the report describing the excavations at the site synthesized the small volume of data from other regional sites indicative of a very late Fremont occupation of the area, and helped to gain acceptance of the concept that the Fremont occupation extended beyond the thirteenth century (Creasman and Scott 1987). The Sky Aerie Promontory Charnel site (5RB104) is also particularly important because it has yielded significant information on Fremont human remains. One individual from the site had a hole drilled in a tooth well before death, which represents one of few incidents of prehistoric dentistry (Baker 1998b). Most of the human bones at the site were disarticulated, and three skulls were clustered about a hearth. In his draft report, Baker (1998b) suggests that the human remains were cannibalized. Although not all of the experts who examined the skeletons concur with Baker's conclusion, the site's data should inspire further review of Fremont skeletal populations.

Sites yielding Fremont ceramics should also be regarded as particularly important sites. Fremont ceramics constitute the strongest evidence of Fremont affiliation. Furthermore, the range of variation of Fremont ceramics is not well understood. Hauck (1993) has defined a new Fremont ceramic type, called Douglas Creek Gray, that is characterized by sand temper. Douglas Creek Gray has appeared at several sites in the region (Baker 1998a; Hauck 1993). Other archaeologists and ceramists should evaluate this new type.

Modeling the Fremont Occupation

Space/Time Systematics

Perhaps no other archaeological unit has inspired so much criticism as the Fremont. These criticisms arose in response to the realization that the Fremont tradition was characterized by far more variation than intended when the unit was first defined, which greatly diminished the unit's utility. To better describe the range of variation, regional variants have been defined, such as Marwitt's (1970) Great Salt Lake, Uinta, San Rafael, Sevier, and Parowan Fremont units. Although such variants have been widely used, they too have been subjected to substantive

criticism (Madsen 1980). Concerned that even these relatively broad archaeological units might obscure variation in the archaeological record, Simms (1994) has cautioned archaeologists about the shortcomings of archaeological units. In spite of Simms' caveats, however, archaeological units, such as the Fremont and its geographical subdivisions, remain useful for communication about the archaeological record, to both other professionals and to the general public. Synthetic efforts rely on archaeological units to reference cultural change and continuity.

Investigation of the Fremont tradition in the Northern Colorado Basin has the potential to permit analysis and refinement of Fremont archaeological units. Colorado represents the periphery of the area once inhabited by the Fremont, and appears, for the most part, to have been unintensively occupied. Such adaptations represent an important aspect of Fremont behaviors, which can contribute to our understanding about Fremont and the utility of extant archaeological units.

Western Montrose County

With a sample of one excavated but poorly reported Fremont site in western Montrose County, it is premature to evaluate the utility of specific Fremont archaeological units.

Glade Park

Because so few data are available about the Fremont of the Glade Park area, little can be said about the utility of archaeological units. It is likely that data from Fremont components in the Glade Park area will provide insight into the usefulness of units such as the Uinta and the San Rafael Fremont in peripheral areas. The Glade Park area is geographically closest to the area occupied by the San Rafael variant, but rock art styles seem to evidence closest affinity with the Uinta variant (Cole 1987).

Douglas Creek/Dinosaur Area

The Douglas Creek Fremont:

Data collected at Fremont sites in the Canyon Pintado study area along Douglas Creek suggested to Creasman (1981) that the local Fremont adaptations were substantially different from those of the Vernal or San Rafael area. These differences pertain to settlement patterns, subsistence, and rock art. Creasman noted a lack of Fremont village sites in the Douglas Creek area; residential sites were thought to represent singular dwellings. Habitation sites occurred primarily near the mouths of side canyons and often consisted of dry-laid masonry. Middens, when present, were small, suggesting short-term occupations. Relatively few ceramic sites were observed in the Douglas Creek area, further supporting short-term occupation. Beehive-shaped masonry or jacal granaries situated beneath small overhang were commonly found in the Douglas Creek area. The Fremont of the Douglas Creek area were thought to have relied more on hunting and gathering and less on horticulture than the Fremont groups to the west and southwest. Creasman also noted that the Fremont rock art in Canyon Pintado seemed to represent a local stylistic development, which was more similar to San Rafael Fremont rock art than to the Classic Vernal style of the Uinta Fremont. Based on these observed differences, Creasman (1981) defined the Douglas Creek Fremont as a local variant of the Fremont tradition.

Recent Fremont investigations permit assessment of Creasman's Douglas Creek Fremont archaeological unit. These works support Creasman's contention that the study area was primarily occupied on a short-term basis, as evidenced by low quantities of sites with ceramics and the absence of aggregated settlements. With the exception of the very late Fremont Texas Creek Overlook site (Creasman and Scott 1987), recently excavated Fremont habitations have consisted

of possible ephemeral brush habitation structures (see Baker 1995, 1998a). Cole (1990:333) seems to agree with Creasman that the rock art of the Canyon Pintado area is different from the Classic Vernal style, supporting definition of the regional variant. Spangler (1995:476), however, asserts that the Douglas Creek Fremont settlement patterns, subsistence practices, and rock art styles are identical to those represented by sites in Utah's Nine Mine Canyon, roughly 110 km (68 mi.) to the west. Spangler does not go so far as to suggest cultural continuity between the Douglas Creek Fremont and the Fremont of the Nine Mile Canyon area, but does suggest similarity in cultural content due to similarity in environmental conditions.

The Douglas Creek Fremont unit appears to have some validity. Because the Fremont culture is regarded as representing a great deal of variability, definition of such units to reflect local adaptations to differing environmental situations will further the understanding of the Fremont tradition. As Spangler (1995) points out, the settlement and subsistence practices and the architecture of the Douglas Creek Fremont are probably not unique. These attributes are probably similar to Fremont sites in Nine Mile Canyon and other areas where conditions were not ideal for intensive reliance on horticulture and population aggregation. Some aspects, however, of the Douglas Creek Fremont may be unique. Steve Baker and F. Richard Hauck have excavated several sites in western Rio Blanco County that have yielded sand-tempered gray ware ceramics (Baker 1995, 1998a; Hauck 1993, 1997). These ceramics, classified into the newly defined Douglas Creek Gray type, appear to be restricted to Rio Blanco County, though this may simply reflect the distribution of recent investigations. The Douglas Creek and the Dinosaur National Monument areas have both yielded evidence of horticultural Fremont occupations dating more recently than A.D. 1300, which may indicate that the general area was the last refuge of peoples attempting to maintain the Fremont lifeway. Whether the Fremont of Colorado's portion of Dinosaur National Monument should be included in the Douglas Creek Fremont unit must be determined by additional studies of rock art, architecture, and distributions of sand-tempered gray ware ceramics. Because the Douglas Creek area may have its own ceramic type and may represent the last homeland of the Fremont, retention of the Douglas Creek Fremont unit seems appropriate.

Phases:

In his recent overview of the archaeology of the Uinta Basin, Spangler (1995) provided a new period sequence that may be useful for the regional expression of the Fremont tradition. Spangler rejected conventional Uinta Basin Fremont phases, such as the Cub Creek and Whiterock phases (Breternitz 1970; Marwitt 1970), because recently obtained chronometric dates indicate that the temporal spans originally suggested for these phases were erroneous. Spangler also rejected the Cliff Creek phase because the single site attributed to the phase did not yield Fremont ceramics, evidence of corn, or other materials commonly associated with the Fremont tradition (Tucker 1986).

Spangler's (1995) phase sequence is comprised of three new periods, termed the Early Fremont, the Uinta Fremont, and the Late Fremont. The Early Fremont period dates between approximately A.D. 1 and 550 and refers to a Basketmaker II-like adaptation. Corn was grown, semipermanent structures were inhabited, and the bow and arrow were used. Ceramics, however, were absent. Because of the hypothesized importance of hunting and gathering during the Early Fremont period, Spangler regards the period as representative of an Archaic lifeway.

The period between A.D. 550 to 1050 is designated the Uinta Fremont period (Spangler 1995). Fremont occupation of the Uinta Basin was most intensive during this period. Substantial residential architecture, corn horticulture, production of gray ware pottery, and human aggregation into small hamlets characterize the Uinta Fremont period, though some degree of hunting and gathering continued (Spangler 1995:479).

The Late Fremont period dates between A.D. 1050 and 1300 (Spangler 1995). He regards this period as largely hypothetical because of the dearth of chronometric dates. No substantial residential sites have been dated to this period in the Uinta Basin, suggesting that horticulture may have been abandoned in favor of hunting and gathering.

Spangler's cultural sequence has its strengths and weaknesses. Because it is a sequence of periods, instead of phases, it can be defined without regard for cultural content, and can be constructed with a relatively small database. The periods, however, appear to reflect cultural developments in the archaeological record, and thus have particular utility. The preceramic Early Fremont period, representing initial horticultural adaptations, has parallels in areas such as Emery County, Utah, where such early Fremont adaptations have been designated the Confluence phase (Greubel 1996), and at the Steinaker Gap site north of Vernal, Utah (Talbot and Richens 1996). At least two sites in the present study area have also yielded corn in contexts dated to the first few centuries A.D., so similar sites may be represented there, too (Figure 7-8). Because sites such as Steinaker Gap show similarities with Fremont culture in spite of being aceramic, the authors are, at this point, inclined to attribute such early horticultural components to the Formative, rather than the Archaic era. Furthermore, it is easier to classify components based on the mere presence or absence of materials such as corn, rather than try to determine the percentage that corn comprised of the diet of various prehistoric peoples. As Spangler suggests, the Uinta Fremont period in the Northern Colorado Basin represents a time of relative reliance on horticulture and the habitation of substantial architectural structures. The Late Fremont period sites in the study area appear to lack substantial architecture, as indicated by Spangler.

Although Spangler's period framework appears useful, the nomenclature is unwieldy. Creasman and Scott's (1987) position is accepted here, with minor reservations, that the Fremont occupation of northwestern Colorado can be traced much later than A.D. 1300 — possibly as late as 1600. A period is needed to reference the Fremont occupation between A.D. 1300 and 1600. Because of the paucity of sites dated to this very late period, and the absence of similar dates in the core area of Fremont occupation, this period is regarded as somewhat tentative; therefore, the authors are disinclined to simply extend Spangler's Late Fremont period an additional 300 years. The very late Fremont occupation should, therefore, be regarded as its own period, which can be subjected to further review. The recognition of a period even later than Spangler's Late Fremont period requires renaming of Spangler's period. The Uinta Basin Fremont period moniker seems inappropriate because subsequent and possibly antecedent periods are no more or no less representative of the Fremont tradition of the Uinta Basin. The authors, therefore, propose that one period be added to Spangler's scheme, and that the periods be named as follows:

Early Fremont period:	A.D. 1 – 550
Scoggin period:	A.D. 550 – 1050
Wenger period:	A.D. 1050 – 1300
Texas Creek Overlook period:	A.D. 1300 – 1600

This period sequence is based upon the following assumptions.

- Components with corn that date between A.D. 1 and 550 reflect continuity with the Fremont tradition.
- Sites dating between A.D. 1050 and 1300 will lack substantial residential architecture.
- Additional Fremont components will be found in the study area that date between A.D. 1300 and 1600.

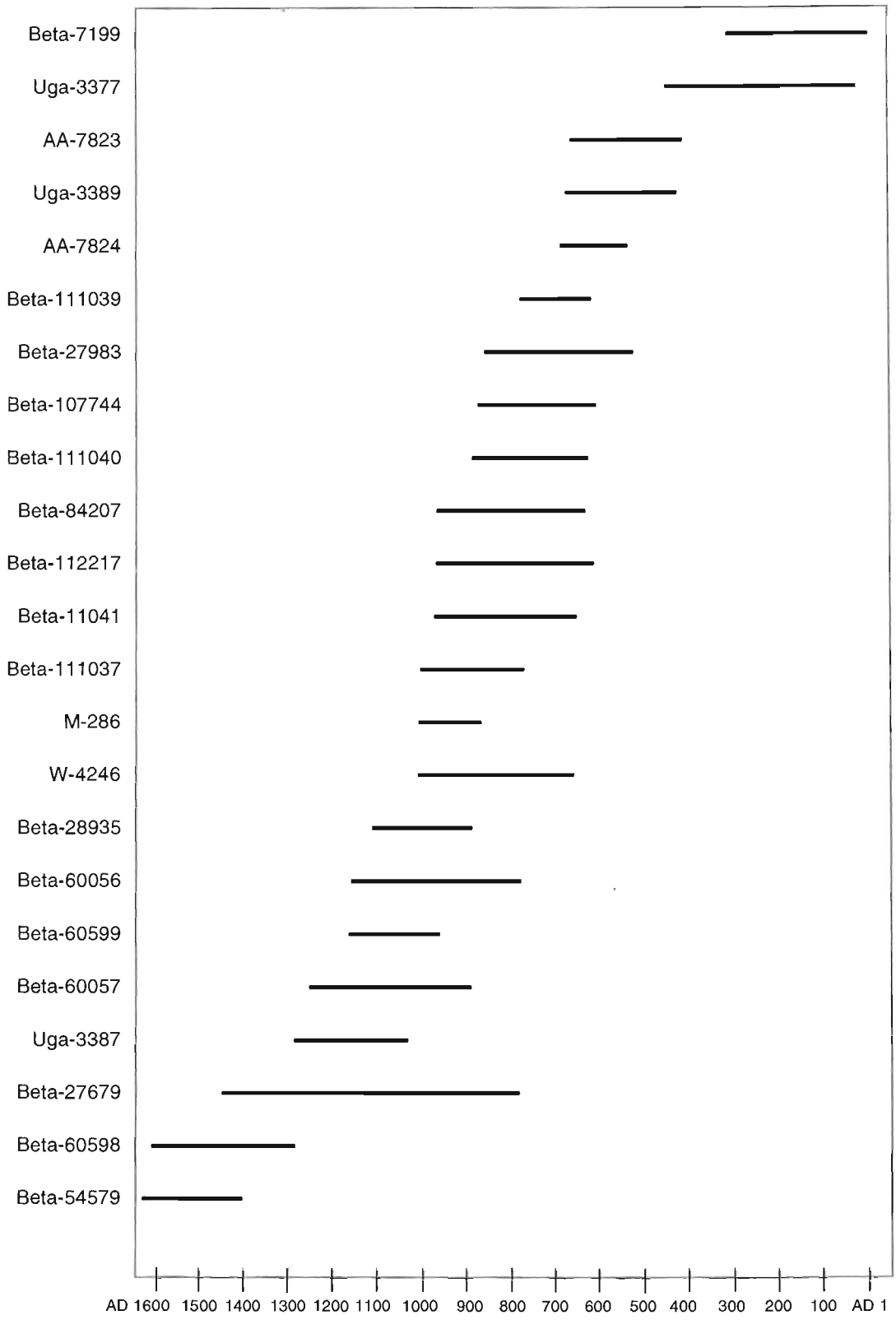

Figure 7-8. Calibrated ranges of Formative-era sites yielding cultigens in Rio Blanco and Moffat counties.

Settlement Patterns

As discussed above, Fremont sites appear to cluster in two, or perhaps, three areas in western Colorado. Fremont sites in all areas are concentrated in the lower elevation zones, as would be expected for peoples incorporating horticulture into their subsistence system. Of the Fremont sites with recorded elevations in the OAHP files, nearly all occur between 1372 m (4500 ft) and 2134 m (7000 ft). If Fremont sites were randomly distributed, they would tend to occur in frequencies proportional to the percentages for nonsite points (Table 7-2).

Table 7-2. Elevations of Fremont Sites.

Elevation Zone (m)	Elevation Zone (ft)	Percent of Area	Percent of Fremont Sites and IFs
Less than 1524	Less than 5000	1	2
1524 – 1828	5000 – 5999	8	56
1829 – 2133	6000 – 6999	28	34
Above 2134	Above 7000	62	8

Western Montrose County

The paucity of sites in western Montrose County that are herein attributed to the Fremont precludes much analysis of settlement patterns. The following two settlement models, however, are amenable for study.

Gilman's Model of Pit Structure Use:

Because the sample of excavated Fremont sites in western Montrose County comprises one site, and its classification is tentative, modeling within most research domains is not feasible. An apparently isolated Fremont site (Paradox 1, 5MN191) with multiple pithouses has implications for settlement patterns, however. Gilman (1987) has examined ethnographic use of pit structures and has identified common elements of settlement and subsistence systems. She found that pit structure use frequently indicated a biseasonal settlement pattern by peoples with a relatively low dependence on agriculture (Gilman 1987:560). With excellent insulation qualities and considerable capacity for resource storage, pit structures represent cold season habitations. Gilman's observations have the following test implications for the Paradox 1 site.

- Fremont components should yield cultigens, but wild plant and animal resources should be well represented.
- As winter habitations, the Fremont components should evince anticipated long-term occupation. The components should, therefore, be characterized by formalized and substantial middens and storage structures, large site size, ornaments, nonlocal artifacts, and other attributes of anticipated long-term habitation (Kent 1992; Reed 1998).
- Faunal remains should be thoroughly processed.
- Faunal fetal remains should indicate winter occupation.

Data excavated at the Paradox 1 site tends to support the test implications listed above, though floral and direct seasonality data are unavailable. As would be expected of a site where the occupants anticipated a lengthy stay, discrete middens are present at the site. Whether these

middens are associated with the Fremont or the other Formative-era component cannot presently be determined, however. Substantial storage structures are clearly associated with the Fremont pithouses. Some of these are small subfloor features, but most are large, round masonry surface structures. The capacity of these features is great and would surely support a population for months. Long-term site occupation is also indicated by the faunal assemblages. Kasper (1977) writes that animal bone was relatively abundant, and that large quantities were splintered long bones, evidently processed to extract grease and marrow. Grease would be highly desired at a winter occupation because of peoples' high caloric requirements and because game animals lose body fat over the winter months. With substantial structures, storage features, and possibly middens, winter habitation appears likely and Gilman's settlement model is supported.

Salt Procurement Model:

With present data, the settlement patterns evident in the Paradox Valley during the Formative era are enigmatic. Occupation of the western portion of the valley was relatively intense; Woodbury and Woodbury (1932), for example, recorded 16 "pueblo" ruins in the valley. Moreover, the western end of the valley was apparently the locus of a Fremont pit structure village — the only one identified in western Montrose County, and one of very few in the entire region. Perhaps Formative-era peoples perceived the western end of the valley to be particularly good for farming. It seems more likely, however, that the apparent uniqueness of the settlement pattern is due to the presence a more valuable natural resource — salt. Salt crops out of the Paradox Member of the Hermosa Formation in the Paradox Valley and other nearby salt anticlines, and may also be brought to the surface at local saline springs (Nancy Lamm, personal communication to A. D. Reed, 1998). The availability of salt suggested to Kasper (1977) that it might have been an important trade item. Salt in quantities sufficient to mine or collect tends to be rare on the landscape in most areas, and is uniformly highly desired by people. The proverbial salt mines are archaeological realities in many parts of the world, with great implications for prehistoric exchange systems. The authors join Kasper in speculating that the Fremont component at the Paradox 1 site was established in an area beyond the traditional homeland to control or to exploit local salt resources. This hypothesis has the following test implications.

- Outside the Paradox Valley or similar settings where salt may occur naturally in a manner where it can be collected with prehistoric technology, Fremont sites will be absent in the archaeological record of western Montrose County.
- The material culture of the Paradox 1 site should reflect salt collection or storage.

The key to testing the hypothesis about salt procurement lies in the archaeological deposits of the Fremont component at the Paradox 1 site. The very limited excavation data available for the component makes no mention of mining tools such as digging sticks or an abundance of containers suitable for salt storage. Numerous storage structures with large capacities are associated with the Fremont pithouses, but the excavators did not scrutinize their function.

Glade Park

In a recent cultural resource inventory just west of Glade Park and nearby uplands, Greubel et al. (1998) found that Fremont sites cluster along the Little Dolores River canyon. Fremont sites are also known to occur along major tributaries to the Little Dolores River, such as in Sieber Canyon. Both rock art sites and sites with substantial architectural features are concentrated in the valley settings. According to Greubel et al. (1998), the structural sites tend to occur on benches and ridges above the valley floor. Masonry surface rooms and possible pit structures are present,

and some have associated scatters of burned adobe. The structural sites recorded so far lack ceramic artifacts, making determination of cultural affiliation difficult. The occurrence of Fremont rock art in similar settings nearby suggests, however, that the structural sites may be Fremont. That the sites are related to a horticultural unit is suggested by the recovery of a two-hand mano at site 5ME11328 (Greubel et al. 1998). No clear evidence of Fremont utilization of the upland settings was found in the cited inventory, suggesting that Fremont use was concentrated in well-watered areas with high potential for horticulture.

The structural sites found in the Glade Park area appear to represent short-term occupations. The three possibly Fremont structural sites recently recorded by Greubel et al. (1998) were characterized by low numbers of structures, small samples of surface artifacts, no surface ceramics, and no discrete middens. As Kent (1992) points out, sites where the occupants anticipated and realized long-term habitation tend to have formal middens, large site size, and rich and diverse artifact assemblages.

Douglas Creek/Dinosaur Area

Sites in the Douglas Creek/Dinosaur area possibly attributed to the Fremont occupation include ceramic and aceramic open artifact scatters, possible habitation structures, rock art sites, and storage structures. Sites dedicated to storage range from Mantle's Cave (5MF1), where scores of masonry and earthen cists occur in a large alcove (Burgh and Scoggin 1948), to small, isolated overhangs that may contain a single masonry or jacal granary. Storage structures tend to be widely scattered and are seldom clearly associated with habitation sites (Baker 1997). Habitation sites with substantial architecture tend to cluster along major drainages, such as Douglas Creek, and their tributary canyons (see Creasman and Scott 1987). Sites with ephemeral brush structures and nonstructural sites may tend to be more widely dispersed (e.g., Baker 1995).

There seems to be considerable agreement among archaeologists that the Fremont occupation of the Douglas Creek/Dinosaur area of western Colorado was generally by small groups on a short-term basis, with habitation structures restricted to very localized areas. With the possible exception of the Texas Creek Overlook site (Creasman and Scott 1987), structural sites tend to lack well-developed middens, suggesting short anticipated occupation (Creasman 1981; Kent 1992). Ceramics occur in relatively low frequencies, further suggesting high mobility (Spangler 1995:571). Masonry structures usually consist of only one or two structures, and do not appear to represent the degree of aggregation suggested by some of the larger village sites in northwestern Utah, such as Caldwell Village, where more than 20 pit structures were documented (Jennings 1978). Sites with substantial architecture cluster along Douglas Creek and its major tributaries but are absent in nearby areas such as the Texas-Missouri-Evacuation creeks area, the area near Dragon Road southwest of Rangely, and along the White River valley (Gordon et al. 1983; Baker 1992a). Substantial architecture may also be absent in the Colorado portion of Dinosaur National Monument, though Truesdale (1993a) reported finding a possible pit structure in a small test unit.

That the Douglas Creek/Dinosaur area was utilized on a short-term basis by the Fremont is further illustrated by the percentage of nonstructural sites that can be attributed to the Formative era. In Spangler's (1995:517) compilation of radiocarbon dates and associated data from Formative-era sites in northwestern Colorado, roughly twice as many sites lack evidence of pottery, corn, or structures than evince these attributes of horticultural adaptations. This pattern may indicate major reliance upon the hunting and gathering of wild resources (Spangler 1995).

Simms' Model of Fremont Settlement/Subsistence:

The co-occurrence of low numbers of structural sites, which are often associated with ceramics and evidence of horticulture, and nonstructural sites, those with no evidence of corn production or ceramic use, may also indicate that the Fremont engaged in one of the three settlement/subsistence adaptive strategies hypothesized by Simms (1986). As cited by Talbot and Wilde (1989:15), Simms' three Fremont strategies include "(1) localized foraging to supplement horticultural production; (2) a variable strategy represented by periodic shifts between sedentary and mobile settlement; and (3) groups of distinct horticulturists and hunters occupying the same territory." These three models may be evaluated when the following implications are considered.

Localized foraging to supplement horticultural production

- Sites with substantial architecture, evidence of corn, and ceramics should be contemporaneous with sites lacking these attributes.
- Sites associated with a horticultural lifestyle should yield the same types of projectile points as sites associated with wild resource procurement.
- Human skeletal samples from the two sets of sites should reveal similar ratios of stable carbon isotopes.

Periodic shifts between sedentary and mobile settlements

- Sites with substantial architecture, evidence of corn, and ceramics should date to different periods than sites without these attributes.
- Shifts in settlement patterns should be related to periods of paleoenvironmental change.
- The two sets of sites should yield the same types of projectile points or other diagnostic artifacts.
- Human skeletal samples from the two sets of sites may reveal different ratios of stable carbon isotopes, with skeletons from structural habitation sites yielding higher ratios of ^{4}C than skeletons from ephemeral sites. As Coltrain (1993) points out, however, stable carbon isotope studies are poorly suited for identifying short-term fluctuations in diet, because adult bone collagen changes composition very slowly.

Occupation of the same region by distinct horticultural and nonhorticultural groups.

- Sites with substantial architecture, evidence of corn, and ceramics should be contemporaneous with sites lacking these attributes.
- The two sets of sites should yield different diagnostic artifacts.
- Human skeletal populations from nonhorticultural sites should clearly evidence lower ratios of ^{4}C than skeletons from horticultural sites, indicating long-term differences in diet.

Because the sample of excavated sites is small, it is difficult to evaluate which of Simms' settlement models best describes Formative-era data from northwestern Colorado. No stable isotope studies have been completed on human remains from the study area to provide insight into the ratios that ^{3}C and ^{4}C plants comprised of Formative-era diets. Differences in projectile point types cannot be established; both groups yield Rosegate series points. The sample of Uinta Side-

notched and other common Fremont projectile point types is too small to determine whether they are solely diagnostic of the Fremont. The radiocarbon data presented by Spangler (1995:517) seem to indicate that horticultural sites and nonhorticultural sites are contemporaneous, and that dates for both groups are interspersed throughout the temporal continuum. Because the data suggest that sites from the horticultural and nonhorticultural groups are contemporaneous and yield similar projectile point types, Simms' model of horticultural groups augmenting their diets through frequent wild and plant procurement forays may be most tenable. If so, the model is likely to be applied only in the general area where Fremont rock art and ceramics occur, where affiliation with the Fremont tradition can be ascribed with some degree of confidence.

Grady's Annual Round Model:

Grady (1980:247) has proposed that the Fremont utilized various elevation zones on a cyclical, seasonal basis. According to Grady's model, the Fremont spent winters in lowland valleys. Corn was planted in or near the lowland valleys in the spring, during which time wild plants and animals in lowland settings were exploited. Fremont peoples would then follow large game into the highlands with the arrival of summer to hunt and gather. With the arrival of fall, groups would collect pinyon nuts and would then return to the lowland valley habitations to harvest corn. Grady's model has the following implications.

- Lowland habitation sites, presumably occupied all winter and a portion of spring, should evince the characteristics of anticipated long-term habitation sites, as described by Kent (1992).
- Pinyon nuts, which could be collected in large volumes and which are suitable for storage, were presumably used for winter subsistence. Pinyon nuts should commonly occur in lowland storage features and in macrobotanical samples.
- Lowland sites should yield faunal data indicative of winter habitation.
- Sites in both highland and lowland settings should yield similar types of projectile points, though frequencies may vary.

Present archaeological data from the Douglas Creek/Dinosaur area do not support Grady's model. Few, if any, sites in Colorado's highlands can be attributed to the Fremont. Although the hypothesized upland Fremont adaptations were highly mobile, small quantities of Fremont ceramics might be expected at highland Fremont sites. Ute sites occasionally yield ceramics in high-altitude settings, in spite of the high degree of mobility ascribed to their lifeway. Fremont ceramics are rare or absent in components above 2164 m (7100 ft), as indicated in the OAHP database (see also Figure 7-4). Fremont rock art is also uncommon in Colorado's highland settings (see Schaafsma 1971). Without diagnostic rock art styles or ceramics, it is difficult to argue for Fremont affiliation of highland sites. It is possible that both upland and lowland sites may have similar projectile points, but projectile points are seldom useful to distinguish contemporaneous groups occupying the same general area.

Too few faunal and floral data indicative of seasonality of site occupation have been recovered to permit assessment of winter habitation of structural sites in valley settings. Other evidence suggests, however, that the structural Fremont sites in the Douglas Creek/Dinosaur area were not winter habitations. As discussed above, the structural Fremont sites in northwestern Colorado are characterized by small size, few structures, and insubstantial middens, contrary to what would be expected for sites where a lengthy (winter-long) stay was anticipated (Kent 1992). Furthermore, Gilman's (1987) work suggests that pit structures were commonly constructed for

winter habitation by peoples engaged in at least a biseasonal settlement pattern. Such pit structure habitations occur elsewhere in the Uinta Basin and probably served as winter residences. If pithouse villages in northeastern Utah served for winter habitation, most of the structural sites of the study area probably served for short-term habitation during the spring, summer, or fall.

Macrobotanical data from local Fremont sites also do not support Grady's model. No pinyon nuts have been recovered in macrobotanical samples from structural Fremont sites in the study area. Additionally, granaries often yield evidence of corn but not pinyon nuts.

Problems with Grady's cyclical settlement model may be one of scale. Grady (1980) developed his model with data generated from the Piceance Basin, which is a considerable distance east of that portion of Moffat and Rio Blanco counties where Fremont ceramics, rock art, and substantial structures occur. For the reasons discussed above, it seems unlikely that Fremont use of the Piceance Basin will be identified. It is plausible — indeed, likely — that Fremont settlement patterns were seasonally cyclical. The presence of Fremont pit structures suggests that groups were relatively mobile, employing at least biseasonal settlement patterns (Gilman 1987). Floral and faunal resource potential in the western United States varies seasonally by elevation zone, and virtually all ethnographic and archaeological settlement models for peoples engaged in hunting and gathering indicate seasonal movement between elevation zones to take advantage of maturing resources. The Fremont, however, may have had more restricted annual territories than groups that made no attempt at horticulture, because they were somewhat tethered to cultivated fields and storage facilities. The pithouse villages in the Uinta Basin may have served as winter habitations, and the sites in the Douglas Creek/Dinosaur area of western Colorado may have served as field houses in support of horticulture and for hunting and gathering.

Subsistence

Western Montrose County

Little subsistence data are available for the Fremont occupation of western Montrose County. It is likely that corn was raised and that wild resources were gathered. Kasper's (1977) analysis of faunal remains from the Paradox 1 site indicates that wild animal resources were important.

Glade Park

Excavations at Luster Cave in west-central Utah, and Roth and Little Park Caves near the Little Dolores River have revealed evidence of corn (Wormington and Lister 1956). Faunal remains were also recovered from these sites, but few data were reported. The recovery of corn remains at multiple sites situated near valley bottoms where horticulture might have been possible suggests that Formative-era people of the Glade Park area practiced horticulture. It is likely that hunting and gathering were also practiced. Though undemonstrated, these horticultural sites may be affiliated with the Fremont tradition.

Douglas Creek/Dinosaur Area

Although the subsistence practices of the Douglas Creek/Dinosaur area Fremont may have changed through time or may have varied by location, they can be generally characterized as having incorporated corn horticulture with hunting and gathering. The relative importance of horticulture versus hunting and gathering cannot be adequately evaluated with present data because local human skeletal populations have not been subjected to stable carbon isotope analyses. Coltrain (1993) has established that human populations at large pithouse villages in the Uinta Basin

may have relied considerably on corn. She subjected four skeletons recovered at Caldwell Village in northwestern Utah to stable carbon isotope analysis, and concluded that approximately 75 percent of the diet consisted of ^{4}C plants. Plants with a ^{4}C pathway include corn, though some native edible plants also are similarly classified, suggesting a diet similar to that identified by stable carbon isotope studies at Anasazi sites in southwestern Colorado (Coltrain 1993). Whether the Fremont peoples in the Douglas Creek/Dinosaur area were engaged in subsistence practices like those of Caldwell Village is unclear. If the Fremont sites of the Douglas Creek/Dinosaur area represent warm-season occupation by peoples who spent winters in pithouse villages in Utah, then both sets of sites simply represent components of a single subsistence/settlement system. If the Douglas Creek/Dinosaur area Fremont were largely independent of Fremont groups inhabiting pithouse villages in Utah, then it is possible that local groups were less dependent on horticulture.

Several archaeologists imply that Fremont subsistence practices of northwestern Colorado essentially represent a continuation of Archaic subsistence practices, with horticulture simply added alongside hunting and gathering to augment the diet (e.g., Creasman 1981; Hauck 1994). This interpretation suggests that the local Fremont were highly mobile, like Archaic-era groups, and so were not "tethered" to their fields. Coltrain has shown, however, that casual corn cultivation is exceedingly risky. Coltrain (1996:121) points out that corn production requires considerable effort; fields must be prepared, corn must be planted, fields must be irrigated, and weeds and pests must be controlled. She states that numerous experimental studies conducted in the Southwest have shown that untended corn patches seldom survive to harvest, and that those that do survive generally have much lower yields than tended crops (Coltrain 1996:121). Archaeological evidence from the Douglas Creek/Dinosaur area clearly demonstrate that corn production was integrated into Fremont subsistence practices. Corn pollen and macrofossils occur at both architectural and nonstructural sites, apparently throughout the Formative era (Spangler 1995:517). A considerable number of granaries, many with corncobs, have been found in the area, as well as alcoves with numerous storage cists. It seems most likely that the Douglas Creek/Dinosaur area Fremont were less mobile than their Archaic era antecedents, were tethered to their fields during much of the growing season, and hunted and gathered when they could during the growing season.

Palynological, macrobotanical, and archaeofaunal data from excavated Fremont contexts provide some insight into the types of plants and animals consumed. Of the eight chronometrically dated components that yielded Fremont diagnostic artifacts (Table 7-1), floral and faunal data clearly associated with four of the components could be identified. Evidence of corn was found at the Sky Aerie Promontory Charnel site (5RB104), the Texas Creek Overlook site (5RB2435), and the Rim Rock Hamlet Promontory site (5RB2792). Wild plant resources from these sites and the Sandshadow site (5RB2958) are dominated by Cheno-Ams, but prickly pear, nipple cactus, ground cherry, sunflower, Indian ricegrass, and grass remains were also found. Faunal remains recovered at these sites include jackrabbit, cottontail, squirrel, mule deer, and bison. When all Formative-era sites from Rio Blanco and Moffat counties are considered, sagebrush, saltbush, Umbelliferae, pinyon, and cattail can be added to the list of economic flora, and pronghorn and bighorn sheep can be added to the faunal list.

Baker's Cannibalism Hypothesis:

Archaeological excavations at the Sky Aerie Promontory Charnel site (5RB104) revealed the remains of nine disarticulated humans. There was no evidence of intentional burial, though the bones were evidently subjected to considerable postmortem disturbances by recent looters and possibly by post-Fremont aboriginal site occupants (Baker 1998b). Not all bone contexts were disturbed; three skulls were found atop a hearth and were capped by clay. Some human bones

found at the site were burned. Because of the unusual bone distributions, Baker solicited the opinions of Sylvia Carnero and Timothy White at the University of California at Berkeley and Christy Turner of Arizona State University. All have expertise in prehistoric cannibalism. Carnero and White inspected the remains for cut marks, perimortem fracture, loss of spongy bone, anatomically patterned burning, and pot polish, all attributes of prehistoric cannibalism. They concluded that one cranium evinced anatomically patterned burning, but that none of the other attributes of cannibalism were evident in the human bone sample (Baker 1998b:6-30). That the three skulls were found capped by clay above the hearth and not removed for consumption was also cited as additional evidence against cannibalism. Turner found evidence of considerable perimortem bone damage in the Sky Aerie collection, but observed that such damage was unlike that common to Mexican or Anasazi cannibalized remains (Baker 1998b:6-33).

Baker (1998b) believes that the postmortem bone damage has obscured evidence that would support the interpretation of cannibalism. He suggests that the low frequency of cut marks and evidence of chopping on the human bones is actually similar to frequencies observed among samples of animal bones that were undoubtedly processed by prehistoric peoples. Furthermore, Baker notes that the Sky Aerie site yielded far fewer large animal bones than expected, and suggests that the site occupants relied on human flesh to make up the difference (Baker 1998b).

Baker (1998b) has not proven that the Fremont of the Douglas Creek/Dinosaur area practiced cannibalism. There is a possibility, however, that other, less-disturbed sites may yield human bones with the attributes for cannibalism presented by Carnero and White (in Baker 1998b). Disarticulated human remains, when found, should be inspected for these attributes.

Technology

The Fremont tradition is characterized by several unique technological innovations and by the incorporation of technologies that supported a less mobile lifeway. Key aspects of Fremont technology are summarized below.

Pottery

A distinctive pottery tradition is one of the diagnostic attributes of the Fremont tradition. Although locally variable, Fremont pottery can be differentiated from that of the Anasazi and Ute traditions. Fremont sites in eastern Utah and western Colorado commonly yield Emery Gray and Uinta Gray types (Madsen 1977). Uinta Gray is the dominant type in the Uinta Basin in northeastern Utah, and Emery Gray is usually predominant in east-central Utah. Both types are reported from Fremont sites in northwestern Colorado (e.g., Arthur et al. 1981; Creasman 1981; LaPoint et al. 1981; Weber et al. 1977). Too few Fremont ceramics have been reported from the Glade Park area to permit determination of the most common type in that area. Fremont ceramics from western Montrose County may be primarily Emery Gray (Crane 1977), but reanalysis would be productive.

Hauck (1993, 1997) and Baker (1995, 1998a, 1998b) have excavated several sites in the Douglas Creek area that have yielded sand-tempered ceramic sherds. The sand or crushed sandstone temper is distinctive from the crushed limestone characterizing Uinta Gray ceramics or the crushed igneous rock characterizing Emery Gray ceramics, leading Hauck (1993) to define a new ceramic type, termed Douglas Creek Gray. Baker (1995) refers to the same type as Douglas Arch Gray. Hauck (1993) states that Douglas Creek Gray can be differentiated from Lino Gray, an early Anasazi ceramic type also characterized by sand temper. Douglas Creek Gray vessels consist of plain jars. Exterior surfaces are generally smooth, though Baker (1998b) identified a few corrugated sherds with sand temper that were classified as Douglas Arch Gray. Present evidence

suggests that Douglas Creek Gray is restricted to western Rio Blanco County. The type's range, however, may expand as additional work is completed and the new type is recognized by archaeologists. As with any new type, additional data are needed to better define the range of variation within Douglas Creek Gray and to establish its temporal and geographical limits.

Basketry

According to Adovasio (1980), basketry construction style is a useful indicator of Fremont affiliation. Most baskets from Fremont sites are coiled, though some twined baskets have been found. Coiled baskets evidence eight foundation techniques, only four of which are very common. The four common foundation techniques include 1) close coiling, half-rod-and-bundle stacked foundation; 2) close coiling, half-rod-and-welt stacked foundation; 3) close coiling, whole-rod foundation; and 4) close coiling, three-rod-bunched foundation. Of these, the close coiling, half-rod-and-bundle technique comprises roughly half of the sample and is widely represented at Fremont sites yielding basketry (Adovasio 1980:36). Small quantities of Fremont basketry have been found in western Colorado (e.g., Baker 1997; Burgh and Scoggin 1948; Conner and Langdon 1989; Hurst 1941, 1942, 1947; Wenger 1956).

Moccasins

According to Madsen (1989), the "Fremont" moccasin is diagnostic of the Fremont tradition. The "Fremont" style of leather moccasin was constructed from the hock of a deer or mountain sheep in a manner to retain the dewclaw as a hobnail. The Fremont also made several other styles of moccasins, including one-piece varieties and types composed of separate upper and sole portions that were sewn together (Madsen 1989). Moccasins were stuffed with juniper bark for winter use (Burgh and Scoggin 1948). Moccasins have been recovered in Mantle's Cave in Moffat County (Burgh and Scoggin 1948) and from the Dolores River drainage (Huscher and Huscher 1943:67).

Figurines

Ornate, trapezoidal clay figurines is another defining characteristic of the Fremont tradition. These figurines commonly have clay necklaces, belts, and elaborate hair or head decorations. Some figurines have painted face decorations. The figurines share the same artistic style as many Fremont anthropomorphic rock art motifs. No figurines that are clearly Fremont are known from the study area. A few fragments of clay figurines have been found in western Colorado, but tend to be crude and undiagnostic (e.g., Wenger 1956:48; Wormington and Lister 1956:117; Lister 1951:46).

Projectile Points

Most of the projectile points found in Fremont contexts are small arrow points. Rosegate series points appear to be the most common type found at Fremont sites in the Northern Colorado Basin, but several points similar to the Uinta Side-notched type have also been recovered. Most of the Uinta Side-notched points are from Rio Blanco or Moffat counties, suggesting association with northern Fremont groups, a pattern suggested by Holmer and Weder (1980). One artifact from the study area is similar to the Bear River Side-notched type; it was found at site 5MF436. Several Fremont sites in northwestern Colorado have yielded Cottonwood Triangular and Desert Side-notched projectile points. As Holmer (1986) points out, Cottonwood Triangular and Desert Side-notched points first appear in the region in Fremont contexts, though they are common in Protohistoric-era contexts.

Two-Hand Manos

Two-hand manos were not unique to the Fremont tradition, but were associated with horticultural groups. As Diehl (1996) and Hard et al. (1996) indicate, processing food with ground stone implements is laborious, but increased grinding capacity or efficiency can be obtained by increasing the size of the grinding area on milling implements. Increases in mano size have been correlated with increasing dependency upon horticulture (Hard et al. 1996). A small number of two-hand manos have been identified in western Colorado. As one might expect, these artifacts tend to occur on the Colorado Plateau where horticulture was possible (see Figure 7-5).

Miscellaneous Perishable Artifacts

Mantle's Cave (5MF1), a large alcove overlooking the Yampa River, yielded the majority of perishable Fremont artifacts from the study area. Perishable artifacts recovered there include netting, rabbit fur cloth, feather cloth, a feather and ermine headdress, a deer scalp headdress, buckskin bags, snares, arrow shafts, bone and wood fishhooks, and a plaque of osiers (Burgh and Scoggin 1948). Several cloth fragments were recovered in a Fremont level at Hells Midden (Lister 1951).

Architecture

Only two substantial habitation Fremont structures have been investigated. Researchers from Colorado State University tested a rectangular masonry structure at the Edge site (5RB748), an open architectural site on the point of a bench overlooking Douglas Creek. The structure (Feature 1) was built of wet-laid sandstone blocks. When excavated, walls stood a maximum of 1.6 m high and were between 0.8 and 1.0 m thick. The room measured approximately 5 x 8 m. No information on floor features was presented (LaPoint et al. 1981). More extensive work was conducted at the Texas Creek Overlook site (5RB2435). This site is situated atop a sandstone pinnacle (Creasman and Scott 1987). Three rooms were defined in the structure, all enclosed by a substantial masonry exterior wall. The exterior wall is roughly rectangular, but its shape is partly determined by the configuration of the pinnacle. The western wall abuts the face of a sandstone ledge, so the exterior wall does not completely enclose the structure. The exterior wall is a maximum of 2.1 m high. It is composed of wet-laid sandstone blocks. Most of the sandstone blocks are horizontal. In a few places, vertical posts, vertical slabs, and horizontal logs are incorporated into the wall. The bedrock within the enclosing wall forms three "steps." Areas of soil accumulation within each of the levels were designated rooms. No interior walls are evident. Postholes are pecked into the bedrock beneath Room 1, suggesting that the structure was roofed.

Baker (1992a, 1995, 1998a) has excavated several shallow features at Fremont sites in the Douglas Creek area that have been interpreted as ephemeral brush structures. Evidence of structures is tenuous, consisting of indistinct charcoal stains interpreted as possible post holes, "pole-butt" impressions, and irregular floor features (Baker 1995). Baker suggests that burned brush structures are represented. Although it is likely that the Fremont constructed brush structures, the charcoal stains described by Baker are not sufficiently patterned to permit classification as architecture.

A number of granaries have been investigated in northwestern Colorado. Unlike habitation structures, granary architectural details are usually evident at unexcavated sites, because most occur beneath overhangs where little soil accumulates. Northwestern Colorado granaries may occur as single units or consist of a cluster of two or three adjacent units. Individual units generally range from 0.8 m to 2.0 m in diameter and stand up to 1.5 m high (Wenger 1954; Baker 1997). Walls may consist of wet-laid masonry, adobe bricks, or a combination of adobe bricks and

sandstone (Baker 1997). Many are "beehive" shaped, reducing in diameter with wall height. Entrance was usually through the top, which was probably capped by a sandstone slab or similar seal. The storage features were constructed to keep rodents and predators from gaining entrance.

Social Organization

Discussion of Fremont social organization is rare in the regional literature, hindering modeling efforts. Baker (1998b) observes that Fremont sites in the Douglas Creek area generally consist of single structures, indicating occupation by a single household. In no cases are more than three structures or rooms present, so small numbers of people invariably occupied Fremont sites in the area. There are no instances of ceremonial structures, though Baker (1998b) suggests that cannibalism at the Sky Aerie Promontory site may have served as a socially integrative activity.

One problem in modeling Fremont social organization is that archaeologists are unsure whether the Fremont sites in the Douglas Creek/Dinosaur area represent all aspects of the settlement system, or whether they represent seasonal occupations by peoples dispersed from pithouse village sites in Utah. Little progress is possible until this is clarified through comparisons of skeletal populations, identification of season of site occupations, and distribution of pottery traits.

Ideology

In a small way, Fremont ideology is manifest by its artistic expression. Fremont rock art sites cluster in northwestern Colorado and, to a lesser extent, in the Glade Park area. No Fremont rock art has been positively identified in western Montrose County; Formative-era rock art panels there are stylistically more similar to Anasazi styles (Cole 1990). The rock art styles of the Glade Park area and northwestern Colorado are generally attributed to the Classic Vernal style (Schaafsma 1971; Cole 1990). Classic Vernal-style anthropomorphs are characterized by large, trapezoidal bodies, simple heads, and elaborate ornamentation. Ornaments often depicted include necklaces, earrings, and headdresses. Additionally, painted facial designs are often depicted, even in petroglyphs. The ornate clay figurines diagnostic of the Fremont tradition display the same attributes as Classic Vernal style rock art. Schaafsma (1971) suggests that the ornate rock art anthropomorphs and clay figurines served a ceremonial function. Cole (1990) agrees with Schaafsma's assessment, and adds that warrior motifs, as represented by anthropomorphs holding shields, weapons, or scalps, and motifs depicting hunting, may also represent shamanistic activities.

PLAINS WOODLAND TRADITION

Four sites in the Northern Colorado Basin have yielded cord-marked pottery attributed to the Plains Woodland tradition. Forty-two cord-marked sherds were recovered at the Caribou Lake site (5GA22), just west of the Continental Divide in Grand County (Benedict 1985). Benedict (1985) mentions that cord-marked pottery has been found at one other site in Grand County: 5GA1, an apparently unexcavated site in Middle Park. Amateur archaeologist Monte Sanburg of Montrose donated a cord-marked sherd to the Ute Prehistory project, which was evidently found somewhere in the vicinity of Montrose (Buckles 1971). Recently, Naze (1994) found two cord-marked sherds at the Crying Woman site (5GA1208), a multicomponent site in Middle Park.

The paucity of cord-marked pottery in the study area suggests limited trade or incursion west of the Continental Divide by Plains Woodland peoples. When such trade or incursion occurred, Middle Park appears to have been the primary destination.

GATEWAY TRADITION

West-central Colorado sites with masonry habitation structures, Anasazi pottery, corner-notched arrow points, and corn have been attributed to various cultural units over the decades. The archaeological units employed to describe these sites have changed through the years in response to the growing understanding of the variability in the area's archaeology. To the earliest investigators, the Formative-era sites in west-central Colorado were Anasazi (e.g., Woodbury and Woodbury 1932). The Formative-era sites in west-central Colorado were recognized to share some, but not all, attributes of Anasazi sites in the Four Corners region, so variation was explained by west-central Colorado's location along the periphery of the Anasazi homeland. The frontier was evidently perceived as an area where Anasazi were less influenced by Anasazi norms, perhaps because of longer lines of communication or because local environments required different adaptations. Attribution of local sites to the peripheral Anasazi was not universal, however; Huscher and Huscher (1943), for example, argue that the structural sites were the remains of Athabaskan groups enroute from their original homelands in Canada to the Southwest. Morss (1931) first defined the Fremont culture in Utah. The Fremont concept evolved to a point that it was considered a tradition largely independent of the Anasazi tradition, though certain influences from the Anasazi were undeniable. By the 1970s, Formative-era sites in west-central Colorado were being attributed to the Fremont (e.g., Toll 1977), largely because many of the circular stone structures were similar to those excavated by Wormington at the Turner-Look site in east-central Utah (Wormington 1955), and because the local sites lacked many attributes characterizing Anasazi sites. Since the 1960s, there have also been those advocating that Formative-era sites in west-central Colorado were most appropriately attributed to a separate, indigenous group that was considerably influenced by both the Fremont and the Anasazi traditions (Crane 1977:105; Reed 1984b; Solomon 1992). Albert Schroeder (1964:77) first advanced this position in his analysis of the cultural affiliation of C. T. Hurst's Formative-era caves and "pueblos" in western Montrose County. Reed (1997a) suggests that the Formative-era sites represent a distinct tradition and proposes that it be known as the Gateway tradition. According to Reed (1997a:24) the Gateway tradition is characterized by the following attributes:

- Limited reliance upon corn horticulture.
- Manufacture of small corner-notched projectile points, such as the Rosegate series.
- Procurement through trade small quantities of Anasazi and, much less frequently, Fremont ceramics. Such trade with the Anasazi may have occurred primarily during the period between A.D. 900 and 1050.
- Apparent lack of ceramic production.
- Habitation of circular and rectangular masonry surface structures. In a few cases, rooms may be contiguous.
- Possible habitation of pit structures.
- Relatively short-term use of habitation structures, as indicated by shallow middens.
- Construction of granaries and storage cists in rockshelters.
- Rock art with both Anasazi and Fremont influences.

The Gateway tradition is tentatively dated between 400 B.C. and A.D. 1250, coterminous with corn horticulture in the area. Corn appears in the archaeological record of east-central Utah between 400 B.C. and A.D. 60 (Jett 1991) and in Cottonwood Cave in western Montrose County between 158 B.C. and A.D. 216 (Stiger and Larson 1992).

Though unnamed until recently, the Gateway tradition appears to have some utility for describing local variation in the archaeological record, having endured for some 35 years. That the tradition has attributes of both Anasazi and Fremont cultures is undeniable, and is, in fact, one of its defining characteristics. Gateway tradition sites yield almost exclusively late Anasazi ceramic types and may have rectangular rooms or room blocks. Key elements of Anasazi culture are absent, however, including use of kivas, highly patterned site layout, extensive use of pit structures, and evidence of local ceramic production. These attributes spread with Anasazi culture across northwestern New Mexico, southwestern Colorado, southeastern Utah, northern Arizona, and southern Nevada and are evident at practically any Anasazi site in these areas. It seems unlikely that these traits would not be manifest in sites only 100 km (62 mi.) north of Mesa Verde if an Anasazi incursion is represented. Gateway tradition sites also have circular masonry architecture that is similar to Fremont habitations in Utah (e.g., Wormington 1955; see also Spangler 1994). The few diagnostic attributes of Fremont culture common to all recognized regional variants, such as one-rod-and-bundle basketry, moccasins, trapezoidal anthropomorphs depicted as clay figurines or as rock art, and distinct Fremont pottery types (Madsen 1989), are generally absent at the structural sites in west-central Colorado. The authors are reluctant to expand the definition of Fremont culture to include sites that do not share these basic Fremont traits; to do so would be to make the Fremont unit much less useful for describing variability in the archaeological record.

Quality of the Database

The archaeological database for Gateway tradition sites is meager and of generally poor quality. As shown below, only 10 masonry surface structures dating to the Formative era have been excavated in west-central Colorado, all by projects beset with major problems. The Paradox 1 site (5MN191) was excavated to varying degrees by pioneers in Colorado archaeology in the 1920s and 1930s, and then by a SDSU and CC field school in 1970 (McMahon 1997). The results of Jean Jeancon and Frank Roberts' excavations at the site in 1924 were never reported. The State Historical Society's excavations in 1931 were briefly reported (Woodbury and Woodbury 1932), but research objectives and reporting standards were different nearly 70 years ago. SDSU and CC archaeologists probably employed more modern field methods than their predecessors, but all artifacts and most associated literature were destroyed by fire before a report was prepared. Limited documentation of SDSU and CC excavations are included in a published report on the site's faunal remains (Kasper 1977) and in photographs recently compiled by the OAHP (McMahon 1997). C. T. Hurst conducted excavations at Cottonwood Pueblo and Tabeguache Pueblo in the late 1940s, but the resulting reports can only be regarded as preliminary in nature (Hurst 1946, 1948). After a nearly 30-year hiatus in excavation research in western Montrose County, Metropolitan State College excavated Formative-era structures at Weimer Ranch and in Roc Creek. This project had significant problems with field supervision, which caused such a disturbance among the archaeological community that the CCPA was founded to oversee compliance with professional ethics. Metropolitan State College's investigations were ultimately reported by Cathy Crane (1977), a graduate student at Eastern New Mexico University, using field notes provided by the project's director. Although Crane's thesis is an important contribution, more detailed information about field methods, architecture, and artifacts would have probably been reported under more typical circumstances. No controlled excavations have been conducted at regional Formative-era structural sites since the mid-1970s. This, coupled with the overall quality of past excavation reports, makes certain that interpretation of Formative-era sites will remain contentious until additional, problem-oriented field research is conducted.

Gateway-Tradition Sites

Gateway tradition sites occur in relatively low frequencies in San Miguel, Montrose, Delta, and Mesa Counties and appear to cluster in western Montrose County in the vicinity of the San

Miguel River (Huscher and Huscher 1939; Crane 1977). Because the Gateway tradition has only been recently defined, it is not possible to query the OAHP site database about distributions of Gateway tradition sites. If distributions of masonry structures, Anasazi ceramics, and sites with corn are any indication, it appears that fewer than 30 sites possibly attributable to the Gateway tradition have been recorded in west-central Colorado.

Compared to other archaeological units in the Northern Colorado Basin, a large percentage of Gateway tradition sites has been excavated. Excavation data are available for 11 sites (Table 7-3), more than a third of the known Gateway sites. The Huschers tested or excavated several other sites in the region, but these are difficult to identify because the sites were not formally recorded and because excavation data are sparsely reported (Huscher and Huscher 1943).

Excavated sites have revealed both individual circular stone structures and more complex structures with contiguous rooms. The more complex sites include Paradox 1, Cottonwood Pueblo, Tabeguache Pueblo, and Roc Creek sites. Virtually nothing is known about Hill Pueblo, excavated by Hurst shortly before his death (Crane 1977).

The authors believe that the Paradox 1 site has two components: a Fremont component with at least four or five pit structures and a later Gateway component consisting of a masonry surface structure. The Gateway component has multiple, rectangular structures, including Mound 2 excavated by Woodbury and Woodbury (1932) and the surface structure encountered in Excavation Unit 1 by SDSU and CC (Kasper 1977).

Tabeguache Pueblo consists of two to four rectangular structures. Hurst (1946) identified four main structures, but some of these may have been contiguous. The northwestern structure appears to have at least four rooms; other structures appear to consist of single rooms (see Figure 7-7).

Cottonwood Pueblo consists of four small rooms or room blocks, connected by a wall that encloses a large courtyard. Hurst (1948) excavated the northwestern room block (called Lone Tree House), revealing four contiguous, rectangular rooms. Metropolitan State College later excavated the southeastern room block, what Hurst had identified as "House 3." Investigations there revealed north and east walls, but apparently no south wall. Crane (1977:25) questions whether the structure was roofed or whether it represented an open work area. The southeastern structure yielded scores of projectile points and scrapers, along with large quantities of bone tools, bone beads, sherds, and unworked bone fragments. A radiocarbon date was processed for the structure (see Table 7-3). Metropolitan State College also excavated the two western rooms or room blocks, but the results of these investigations are essentially unknown (Crane 1977).

The Roc Creek site, also investigated by Metropolitan State College, may also represent a complex Gateway tradition structure. This site is composed of eight oval, masonry rooms constructed around a large boulder on a north-facing slope. Limited excavations revealed the presence of internal hearths. Artifacts recovered included ground stone, projectile points, sherds, bone tools, and bone beads. Corncobs were also found (Crane 1977).

The ceramic artifacts from the Roc Creek site were inspected by Crane and were tentatively classified as Uinta Gray, Emery Gray, and Emery Corrugated — all Fremont varieties. Crane (1977) noted, however, that the Emery Gray and Emery Corrugated sherds were tempered with crushed igneous rock, like Mesa Verde-region Anasazi ceramics. Because Crane did not subject sherds from the Roc Creek site to petrographic analyses, it is difficult to evaluate her observations about temper from the Roc Creek site. This is critical, because both Mesa Verde-

region Anasazi gray wares and Emery Gray are made from crushed igneous rock. Geib and Lyneis' (1993) petrographic analyses of sherds classified as Emery Gray and Sevier Gray from south-central Utah reveal that Emery Gray sherds commonly contain one of two temper types. The most common temper type — representing the "typical" Emery Gray sherd from the San Rafael Swell area — was derived from light-colored basaltic andesite. Less common was a diorite porphyry temper, probably procured from the Henry Mountains laccolith (Geib and Lyneis 1993:179). The diorite porphyry from the Henry Mountains area is evidently easily confused with gray ware tempers from the Mesa Verde region. Because the classifications of the Roc Creek site ceramics were tentative, and because Emery Gray is seldom corrugated (Madsen 1977), there seems to be considerable likelihood that the ceramic classifications are in error. The Roc Creek site is, therefore, tentatively attributed to the Gateway tradition.

The majority of structures excavated at Weimer Ranch by Metropolitan State College were noncontiguous, round structures. According to Crane (1977:16), most of the stone structures are 5 to 6 m in diameter, are built of unshaped sandstone blocks, rarely have doorways, and have unlined interior hearths. Low quantities are sherds and high quantities of grinding stones and projectile points were recovered in most circular stone structures. At Weimer Ranch, circular stone structures were excavated at the Wagon Bend, Middle Hill, Hill I, and Weimer IV sites.

Table 7-3. Excavated Gateway Tradition Sites.

Site	Chronometric Date Range	Diagnostic Ceramics	Reference
Paradox 1 (5MN191)	A.D. 1024 (tree-ring)	Possible Mancos B/w, Mancos Gray, Moccasin Gray, corrugated	Woodbury and Woodbury 1932
Roc Creek (5MN367)	A.D. 845-955	Possible Emery Corrugated, Emery Gray, and Uinta Gray (problematic)	Crane 1977
Creek Knoll (5MN368)	–	Corrugated	Crane 1977
Weimer IV (5MN368)	–	Gallup B/w, Moccasin Gray, Cortez B/w, Mancos B/w	Crane 1977
Battleship (5MN368)	–	White ware	Crane 1977
Cottonwood Pueblo (5MN517)	A.D. 1–1064	Mancos B/w, Wingate B/r, corrugated, Cortez B/w, Deadman's B/r	Hurst 1948; Crane 1977
Hill I (5MN517)	–	Cortez B/w, Mancos Gray, Moccasin Gray	Crane 1977
Hill Pueblo	–	—	Crane 1977
Middle Hill (5MN652)	–	—	Crane 1977
Wagon Bend (5MN653)	A.D. 515–645	Cortez B/w, Chapin B/w	Crane 1977
Tabeguache Pueblo (5MN1609)	–	Mancos B/w, possible Mancos Gray, corrugated	Hurst 1946

Particularly Important Sites

Because of the dearth of structural sites dating to the Formative era in west-central Colorado, and because of the lack of high-quality excavation data from such sites, any site with probable affinity with the Gateway tradition that retains contextual integrity should be regarded as

a particularly important cultural resource. Whether some of the best examples of the Gateway tradition retain integrity of cultural deposits is uncertain. The four rooms or room blocks at Cottonwood Pueblo appear to have been excavated by either Hurst or Metropolitan State College. The value of the court yard deposits and the presence and integrity of any associated middens are unknown. Tabeguache Pueblo appears to have been completely excavated. At Weimer Ranch, all circular structures at all sites except Weimer IV were excavated. The Weimer IV, Roc Creek, and Paradox 1 sites appear to retain high potential for intact cultural deposits and should be managed accordingly.

Several unexcavated Gateway tradition sites should also receive special management consideration. Site 5SM346, also designated HHC (Huscher and Huscher 1943), consists of a masonry wall 1 m high enclosing a large compound, in which three possibly circular structures are situated (see Figure 7-7). The site is southwest of Redvale on the western rim of Hamilton Creek, on land administered by the BLM. The area of architecture measures approximately 32 x 24 m. Burned adobe was recently observed at the site. Surface artifacts are abundant and include small, corner-notched projectile points; no pottery has been recorded. No vandalism is apparent at the site.

Site 5SM57 is another large site with rectangular structures that should be regarded as a very important resource. The site, situated on public land a few kilometers west of Norwood, Colorado, is on the north rim of Naturita Canyon. The site was visited by the Huschers and partly excavated by the Woodburys in the 1930s; considerable damage to the site was reported at that time (Huscher and Huscher 1943). In a recent site revisitation, Alpine Archaeological Consultants personnel observed discarded screens and recent vandals' pits, yet maintain that the site has important cultural deposits (Pfertsh 1999).

Modeling the Gateway Tradition

Space/Time Systematics

The Gateway tradition has been formally defined only recently (Reed 1997a), and it has been subjected to limited substantive criticism. To date, Todd McMahon (1997) has been the tradition's major critic. McMahon rejected Gateway tradition affiliation for the Paradox 1 site in favor of Fremont affiliation. His compilation of photographs from the site, thought by regional archaeologists to have been lost, provide important support for his position, and the authors concur that the site's early component with pithouses does, indeed, represent a San Rafael Fremont occupation.

McMahon (1997) also considers the applicability of the Gateway tradition to other Formative-era sites in the region, and concludes that they, too, should be regarded as Fremont, citing similarities in ceramics, circular house structures, and rock art. He argues that the Fremont concept should remain in use until the relationship with Fremont sites to the west is better understood, and implies that the definition of Fremont culture should be expanded to account for local variation. Disagreement with McMahon is possible on several points. First, the authors are not convinced that Fremont rock art is much in evidence in west-central Colorado. The trapezoidal figures illustrated by McMahon (1997:37) as evidence of Fremont affiliation appear to be well within the range of typical Anasazi rock art styles (see Cole 1990:121; Schaafsma 1992:11). Second, little similarity in ceramics is seen between the west-central Colorado Formative-era sites and contemporaneous sites in central Utah. Fremont ceramics are reported from very few sites in the region, and classifications are frequently problematic. Moreover, sites reported to have Fremont ceramics are far outnumbered by those yielding exclusively Anasazi ceramics. It is agreed that circular stone structures appear similar to those found at some eastern Utah Fremont

sites, such as Turner-Look (Wormington 1955), but comparisons are difficult because architectural details of circular stone structures in west-central Colorado are so poorly reported. Fremont archaeologists have not identified attributes of circular stone structures that are unique to Fremont culture, so it may be premature to ascribe Fremont affiliation based on surface structure architecture. McMahon's assertion that ties between the west-central Colorado Fremont and those to the west in Utah need to be better understood is, of course, correct, but considerable data do exist that demonstrate little continuity in Fremont site distributions. The excavations of Utah State University at Coombs Cave (42GR383) east of Moab have possibly revealed a Fremont component (Fawcett 1996), but little effort has been made to determine the site's cultural affiliation and ceramic typologies have not been reported. Even if Coombs Cave is a Fremont site, it is in an area with few other Fremont sites, as indicated in the cultural resource overview completed for the BLM's Grand Resource Area (Horn et al. 1994). Formative-era sites of the Grand Resource Area, like west-central Colorado, are characterized by Anasazi sherds — not Fremont sherds. In eastern Utah, the Fremont culture is primarily manifested north of Arches National Monument and west of the Colorado River (Horn et al. 1994). Coombs Cave and the early component at the Paradox 1 site appear to represent isolated Fremont sites in a region mostly occupied by non-Fremont peoples.

The authors further take issue with McMahon's implication that the definition of the Fremont should be expanded to account for the Formative-era sites of west-central Colorado. Archaeological units are most useful when they restrict the amount of variability that they describe, and there is little point in expanding the Fremont concept to include sites that lack all of the four attributes that Madsen (1989) has identified as diagnostic of Fremont culture. McMahon (1997) points out that mtDNA studies among samples of Fremont and Anasazi skeletons collected in other regions have indicated significant differences between the two populations, and that similar studies may provide insight into the cultural affiliation of this region's Formative-era populations. The authors suggest that the Gateway tradition concept is more useful for describing the region's Formative-era components until similar DNA studies shed light on the issue.

Because of the nature of the database for Formative-era sites in west-central Colorado and because no consensus has been reached about the utility of the Gateway tradition, it is entirely appropriate for archaeologists to consider various taxonomic units to describe the region's cultural resources, including the Gateway, Fremont, and Anasazi traditions. This is especially true because multiple, Formative-era groups may have occupied west-central Colorado at different times or in different areas. Even if most sites can be attributed to indigenous peoples, the Fremont may have established outposts in the region. The Anasazi may have made forays into the region to collect resources or to trade, or may have attempted settlement during the Pueblo II period when they expanded into other areas of the Southwest.

Settlement Patterns

Crane's Settlement Model

In her thesis on the Weimer Ranch structural sites, Crane (1977) presents a settlement model in which structural sites served as primary habitations, from which emanated logistical forays to outlying nonstructural sites where floral and faunal resources were procured. The primary sites are located in side canyons, overlooking arable lands on the valley floor, with access to permanent water. Between one and 12 masonry surface rooms may have been occupied at any one time at a residential site. Crane (1978) suggests that the primary residential sites were occupied year-round, based on the types of macrobotanical remains recovered from features. Although no direct evidence was found at Weimer Ranch indicative of winter habitation, cold-season habitation is also suggested by the quality of shelter afforded by the structures, by the existence of storage facilities, and by the presence of formalized waste disposal areas (middens), the latter of which

indicate anticipated long-term habitation (Kent 1992). The secondary sites were more broadly distributed across the landscape, occurring at the location of hunted or gathered resources. Crane (1977:42) notes that association between the secondary sites and the primary residential sites may be difficult to discern, because ceramics and architecture will not be evident at the secondary sites. Crane's settlement model has the following test implications.

- Pollen studies of sediments in valley bottoms near structural sites should provide evidence of cultivation.
- Faunal remains indicative of seasonality of site occupation should demonstrate all-season occupation of structural sites.
- Structural sites and contemporaneous nonstructural, secondary sites should yield the same varieties of projectile points.
- Some nonstructural, secondary sites should yield low quantities of Anasazi pottery.
- Structural sites should be restricted to elevation zones where horticulture is possible.

The archaeological data from regional, Formative-era sites tentatively support some of the above test implications. No pollen studies have been conducted at possible fields, and faunal studies have not provided clear indication of seasonality of occupation at structural sites. However, nonstructural sites dating to the Formative era with Anasazi ceramics and small, corner-notched projectile points are well documented in the region (e.g., McDonald 1998) and possibly represent the secondary sites hypothesized by Crane (1977). Even more common are sites without Anasazi ceramics but with small, corner-notched projectile points that date to the Formative era (e.g., Reed 1997a). As discussed below in the section on the Aspen tradition, not all sites with small corner-notched points may be affiliated with the Gateway tradition. Formative-era structural sites appear to cluster in the region's lower elevations, where horticulture was probably possible (see Figure 7-1), but there are some exceptions. Huscher and Huscher (1943) excavated a substantial masonry structure at the Jeff Lick Stone Circles site (5MN3462) atop the Uncompahgre Plateau at an elevation of 2914 m (9560 ft). This site consists of at least four stone structures. Artifacts at the site are not abundant but are sufficiently diverse to support seasonal habitation. No ceramics have been recovered at the site, although the discovery of small corner-notched projectile points suggests contemporaneity with the structural sites of the lower elevations.

Subsistence

Gateway tradition peoples appear to have cultivated corn, as evidenced by the recovery of corn macrofossils within habitation structures (e.g., Huscher and Huscher 1943; Crane 1977), by the construction of granaries, and, to a lesser extent, by the occupation of substantial structures on a long-term basis. The limited data on Gateway tradition subsistence suggests, however, that hunting and gathering may have remained the primary subsistence focus (Crane 1977). That hunting continued to be important is suggested by abundance of projectile points in the Weimer Ranch assemblages and by high frequencies of animal bone. A variety of wild plant foods were also found at Weimer Ranch, leading Crane (1977:33) to propose the following seasonal model. According to Crane, edible herbs were collected in the spring, and deer were harvested prior to their migration into the higher elevations. Corn was planted in early June, after which mutton grass seeds were harvested, some of which were parched for long-term storage. Logistically organized groups would then travel to the higher elevations to hunt. In August, skunkbush berries, mariposa lily, and wild onion were collected, and by September, goosefoot seeds were harvested and parched for storage. Corn was harvested in early autumn, after which juniper berries, pinyon nuts, and

acorns were collected. People subsisted primarily upon stored foods and local hunting during the winter (Crane 1977). Crane's model has the following implications, though the state of the regional database precludes addressing any of them with data independent of those considered by Crane.

- Stable carbon isotope analyses of human skeletons from Gateway tradition contexts will evidence relatively low ratios of ^{4}C to ^{3}C plants when compared to other Formative-era groups, indicating greater consumption of wild plant foods than populations more dependent upon corn.
- Other regional, Formative-era structural habitation sites should yield floral and faunal remains indicative of year-round occupation.
- As long-term habitations, structural sites should yield large quantities of animal bone, much of which should evidence intensive processing.

Technology

The advent of the Gateway tradition is marked by the appearance of several new types of technology. Pit structures, which first appear in regional Archaic-era contexts, are largely or entirely replaced by masonry surface structures. These may be either round or rectangular. Round habitations, such as those documented by Crane (1977) and by Huscher and Huscher (1943), tend to be 5 or 6 m in diameter, lack evidence of doorways, and may have interior hearths and subfloor storage pits. Round structures generally occur individually, but contiguous rounded rooms are present at the Roc Creek site. Rectangular rooms are more often but not always found as contiguous units. Little is known about the distribution of interior features in these structures, though interior hearths have been documented. Several sites, such as Cottonwood Pueblo and site 5SM346, have substantial walls enclosing or connecting possible habitation structures. The purpose of the enclosing walls is unclear, because excavations have not occurred within the enclosed areas. At the Paradox 1 site, McMahon (1997:35) recognizes that rectangular masonry surface structures postdate pit structures, and suggests an architectural sequence from round pit structures to round masonry surface structures to contiguous, rectangular surface structures. This progression in architectural styles is associated with increased population, resulting in greater reliance upon horticulture. These trends, in turn, required greater flexibility to expand structures for habitation and storage, resulting in the development of rectangular room blocks (McMahon 1997:35). Dates from Gateway tradition sites provide very tentative support for the architectural progression noted by McMahon. A rectangular, multiroom surface structure at the Paradox 1 site, Mound 2, yielded a tree-ring date indicating site construction shortly following A.D. 1024 (see Table 7-3). The Roc Creek site, a structure comprised of contiguous, oval rooms, has a calibrated radiocarbon range between A.D. 845 and 955, suggesting occupation slightly earlier than at the Paradox 1 site. The effects of the possible use of old wood in construction makes precise dating of the occupation difficult, however. The circular structures at Weimer Ranch are best dated by Anasazi ceramics. Both the circular structures excavated at various sites at Weimer Ranch and a rectangular structure at the Cottonwood Pueblo site yielded Cortez and Mancos Black-on-white pottery, indicating possible contemporaneity.

In terms of portable technology, small, corner-notched projectile points, thought to have tipped arrows, characterize the Gateway tradition. These points are commonly classified as Rosegate points, a type attributed by Holmer (1986) to the period between A.D. 300 and 1000. Solomon (1992:81) suggests that some of the "small" points in the Huscher collection from regional structural sites may have tipped darts, so both bow and arrow and dart and atlatl technologies may have been present, at least during some periods. Ceramics were acquired, primarily between A.D. 900 and 1100. Present evidence suggests that the most ceramics were

brought from the Mesa Verde region and were not manufactured in west-central Colorado. Kilns, caches of clay, and artifacts commonly associated with pottery production have not been documented in the region. Gateway tradition manos appear to be the one-hand variety. As Mauldin (1993) has shown, mano size can be correlated with intensity of reliance upon horticulture; that Gateway tradition manos are small suggests limited reliance upon cultigen processing. Little information is available about lithic reduction strategies employed by Gateway tradition peoples.

Social Organization

From her analysis of Weimer Ranch data, Crane (1977) has developed a model of Gateway tradition social organization in which the sites composed of circular stone structures were characterized by a slightly different level of organization than sites composed of rectangular, contiguous structures. Crane has observed that sites with circular habitation structures may be comprised of a single habitation structure or a relatively low number of contemporaneous habitation structures, suggesting fairly small hamlet populations. The basic socioeconomic unit was the independent household, consisting of a nuclear family, or possibly an extended family. Crane notes that these sites do not have architectural structures that served for social integration. Through time, populations are thought to have increased, and contiguous structures, such as Cottonwood Pueblo, were built. Occupation of contiguous rooms by multiple households implies more inter-household interaction and cooperation, and suggests the existence of a more complex level of social organization. Crane's model has the following test implications.

- Sites with contiguous rooms should generally date later than sites with individual rooms.
- At sites composed of noncontiguous structures, contemporaneous households will evidence a considerable degree of redundancy in terms of artifacts and cultural features, reflecting a high degree of household autonomy.
- Sites composed of contiguous rooms should evidence specialized functions, such as storage or habitation.
- Sites with contiguous structures should evidence higher populations than sites composed of noncontiguous structures.

As discussed above, the chronology of architectural types is not well established. That structures with contiguous rooms date later than isolated structures should be regarded as a working hypothesis. Crane's (1977) observation of redundancy in activities between noncontiguous structures seems credible but cannot be addressed further with data from other sites. Whether contiguous rooms evidence similar levels of redundancy cannot be determined, though Crane (1977:23) suggests that one of the four rooms excavated by Hurst at Cottonwood Pueblo may have been a storage room. The other three rooms, with hearths, are thought to represent habitation rooms.

Sites with contiguous structures do not clearly evidence higher population levels than sites with multiple, noncontiguous structures, though structure contemporaneity is more difficult to establish where structures are noncontiguous. Assuming that all four rooms or room blocks at Cottonwood Pueblo were roofed — which Crane doubts — the site would have had a roofed area of about 46 m^2. The five discernible rooms at Tabeguache Pueblo had a roofed area of approximately 135 m^2. Actual population can be estimated through cross-cultural studies of historic and ethnographic groups. Lightfoot (1994:149) cites a worldwide study by Brown (1987) that indicates an average of 6.2 m^2 of roofed area per person and a study by Dohm (1990) of

nineteenth and twentieth century Navajo habitations that indicates an average of 9.7 m^2 of roofed area per person. Using these two figures, Cottonwood Pueblo was probably occupied by five to seven people, and Tabeguache Pueblo may have been inhabited by 14 to 22 people. In comparison, the Weimer IV site, with five noncontiguous circular structures, may have been occupied by 12 to 19 people, if all structures measured 5.5 m in diameter and were simultaneously occupied.

That the occupants of noncontiguous structures lacked architecture of social integration is not supported by site 5SM346, where apparently circular structures are enclosed by a substantial masonry wall. The wall, surrounding a cluster of circular structures that may have been habitations, suggests a lesser degree of household autonomy than if each structure was surrounded by its own wall. The enclosing wall at Cottonwood Pueblo may also define communal space, if each room block represented a different household — a debatable assumption (see Crane 1977).

Site Structure

The site structure of Gateway tradition components is poorly understood. Data from the Paradox 1 site suggest that middens are not always located south of room blocks in the manner characterizing Anasazi sites, though it is not possible to determine the association between middens and structures.

Extraregional Relationships

Gateway tradition peoples evidently maintained trading relations with the Anasazi, especially during the Pueblo II period. This trade focused almost exclusively on ceramic artifacts. Ocean shells, copper, macaw feathers, turquoise, and other items common to Anasazi exchange systems do not appear to have entered west-central Colorado. Interaction with Fremont peoples is also likely, as evidenced by similar styles of masonry architecture and, possibly, by infrequent trading of Fremont ceramics. Interaction with the Fremont may have intensified if, as has been hypothesized above, isolated Fremont outposts were occupied in the Gateway tradition homeland.

Ideology

No rock art sites have been attributed directly to the Gateway tradition. Cole (1987; 1990), however, discusses regional Formative-era rock art, and attributes it to the Anasazi tradition. Cole's (1987) Abajo-LaSal Anasazi rock art style, thought to date between A.D. 600 and 1200, is regarded as a distinctive variant of Anasazi rock art, having Uncompahgre complex influences. This suggests some degree of cultural continuity with Archaic-era peoples, as might be expected if the Gateway tradition represented an indigenous development. The overriding Anasazi styles, suggest, at least, strong cultural influence from the Anasazi culture. Perhaps the inhabitants of the two areas shared certain religious elements.

ASPEN TRADITION

Introduction

Within Colorado and the entire surrounding region, cultural systems were changing during the Formative era, as attested by widespread adoption of horticulture in the Southwest, and the variable use of cultigens by the Fremont to the west and Early Ceramic Period peoples to the east. In the Wyoming Basin, intensifications in subsistence can be seen in seed procurement (Smith 1988, 1992), episodic mass kills of pronghorn (Lubinski 2000), large numbers of pit features with associated ground stone, and by a general increase in the number – or at least visibility – of sites. This led to the definition of the Uinta phase (Zier et al. 1983; Metcalf 1987), a taxonomic unit that has become better defined over time, but which is still in use (Thompson and Pastor 1995). No

taxonomic equivalent exists in the Northern Colorado Basin, even though almost half of the dated components in the database are post-Archaic in age. As is evident from the above discussions of the Anasazi, Gateway, and Fremont traditions, relatively few sites are ascribed to these traditions, and the distribution of these sites is confined to geographically restricted locales in the western-most part of the study area. Essentially, these three traditions are horticultural-based subsistence systems and their core areas are defined by the effective limits of economically viable gardening. This limitation excludes most of the Northern Colorado Basin .

Archaeological evidence suggests that the Northern Colorado Basin was not immune to the symptoms of economic or population stress experienced in other areas. The number of radiocarbon ages increases dramatically, as shown in Figure 6.1, and there is also in increase in the use of prepared fire pit features (Figure 6.3). The Gunnison Basin, apparently used by full-time residents through much of the Archaic era, appears to have been used only seasonally after about 1000 B.C. (Stiger 1998b:94-95). Stiger suggests that winter abandonment of the Gunnison Basin; increasing use of residential sites; use of substantial houses at places like Abiquiu, Casa de Nada, and Kewclaw; the spread of corn farming out of the Southwest; and increasing use of game drives in the high mountains are responses to environmentally induced stress on adaptive systems. Variability in Fremont subsistence systems to the west appears to be the norm, with increasing evidence of periodic shifts, odd mixes of foraging and farming, and variable patterns of mobility (e.g. Simms 1986; Madsen 1989; Metcalf 1993). The Northern Colorado Basin study unit encompasses the same sort of variability, though the role of farming, like in the Wyoming Basin, was constrained to the very western valleys of the state. The Aspen tradition is proposed here as a taxonomic unit for use in describing the variability among nonhorticultural cultural systems in the Northern Colorado Basin between about 400 B.C. and A.D. 1300.

It is suggested here that the post-400 B.C. database should be reexamined from a perspective that focuses attention on variability in subsistence systems. Traditional traits that have been used to order the data – projectile points, pottery styles, house types – appear to have little utility in ordering the record. Variability in point styles decreases as bow-and-arrow use becomes widespread, with forms centering first around small, corner-notched points until about A.D. 1000, followed by a shift to side-notched forms. These forms are prevalent, with only minor differences, across much of the west. Ceramics are mostly absent. Where they do occur, sherds are usually ascribed to the Anasazi, Fremont, or Woodland traditions. Low frequencies of vernacular, inconsistently tempered generic gray wares show up at sites, and gradually, researchers are resisting the temptation to assign these sherds to categories like Emery Gray, Uinta Gray, Great Salt Lake Gray, and Promontory Gray. A persistent preoccupation with assigning sites to geographically distant taxonomic units has masked the real story, which the authors believe will be found in exploring the numerous ingenious ways localized groups coped with the various stresses on their subsistence systems. External trade and alliances are probably a part of this picture, as suggested by such things as distributions of obsidian, real occurrences of trade wares, and geographic extensions of rock art motifs. The prevailing pattern is probably one of local groups using a variety of means to earn a living.

As a place to start, the Aspen tradition is defined as a taxonomic equivalent to the Gateway and Fremont traditions discussed above, and as a sort of parallel construct to the Uinta phase of the Wyoming Basin. The proposed time span of 400 B.C. to A.D. 1300 serves to separate it from the preceding Archaic era and the following Protohistoric era. The beginning date must be viewed as approximate. The transition from the Archaic era is marked by a series of changes, including the adoption of cultigens in subsistence, a shift to the use of bow-and-arrow technology, the adoption of ceramics, and a gradual broadening, or intensification of the hunted and gathered subsistence base. There is an apparent shift in group mobility patterns, and an apparent increase in reliance on

the use of prepared firepits for food processing. All of these changes become apparent in the archaeological record at some time between about 500 B.C. and A.D. 1, and there is no single "date" that is satisfactory as a beginning age. By 400 B.C. cultigens were present in the region, the settlement shifts noted by Stiger (1998b:96) had occurred, there is some evidence for early use of the bow-and-arrow, and the increase in the number of radiocarbon ages is apparent. The ending date of A.D.1300 is likewise arbitrary, but corresponds generally to the end of the Formative era as it has been traditionally defined for horticultural-based traditions. Specific to the ending of Aspen tradition, there is a decline in the number of radiocarbon ages, an apparent shift in the nature of pit feature use, disappearance of generic Fremont-like gray wares, and replacement of small, corner-notched arrow points by side-notched point forms.

Quality of the Database

The database for the Formative era contains 344 radiocarbon ages from 64 components representing about 45 sites in eight counties. Many more sites can be tentatively assigned to the Aspen tradition on the basis of small, corner-notched projectile points or generic gray ware ceramics. Based on the excavation database used for this study, the distribution of known Aspen tradition sites appears to be skewed towards the lower elevation counties, and toward the lower elevations of the major river drainages (Figure 7-9). Obviously, if Aspen tradition sites can be identified on the basis of geography and the presence of small, corner-notched projectile points, many more sites could be added through an examination of surface survey data and distributions might change. In the case of the Aspen tradition, there is a good database. The problem at this time is that these data have not yet been examined from the perspective of subsistence variability or other aspects of the proposed Aspen tradition.

Particularly Important Sites

Of the at least 45 sites with some excavation data, many are important to the Aspen tradition, yet few can be singled out as individually critical. Rather, fleshing out the Aspen tradition will require piecing together data from a number of sites. Excavated sites of this age are most numerous in Rio Blanco, Moffat, Mesa, and western Garfield counties. In general, these sites are of interest because of their elevation and their proximity to the area where horticulture was part of the subsistence mix. Sites in the Douglas Creek area where Douglas Creek Gray has been defined (Hauck 1993; Baker 1998a) are of interest because they allow exploration of adaptive diversity, whether one labels them Fremont or not. There are also a number of sites where diagnostic Fremont traits do not occur, which provides the opportunity to compare data sets. Site 5RB2449 (Babcock 1984) and Alimony Alcove (Hauck 1994:1887) are of interest simply because of evidence of *Chenopodium* procurement.

Additional clusters of Aspen tradition components are found in Moffat County, though here exploitation of sagebrush-grassland steppe is a factor rather than exploitation of pinyon-juniper canyonlands, as is prevalent in Rio Blanco County. Several sites excavated by Centennial Archaeology (Kalasz et al. 1990) date from this period, as do several unreported sites excavated by Metcalf Archaeological Consultants on the Uinta Basin Lateral (Kalasz 1999; McDonald 1998). These sites are located in the extreme southern physiographic Wyoming Basin and have similarities to Uinta phase sites. Mesa and western Garfield counties have several excavated sites, including a cluster from the Battlement Mesa project (Conner and Langdon 1987), and an assortment of smaller projects (e.g., Tickner 1997).

Other clusters of Aspen tradition sites occur in the upper Gunnison Basin (Jones 1982, 1986a; Stiger 1998) and in the Upper Colorado drainage (Benedict 1985; Liestman 1984; Metcalf et al. 1991). Utilization of upland environments provides a contrasting area for comparing subsistence data.

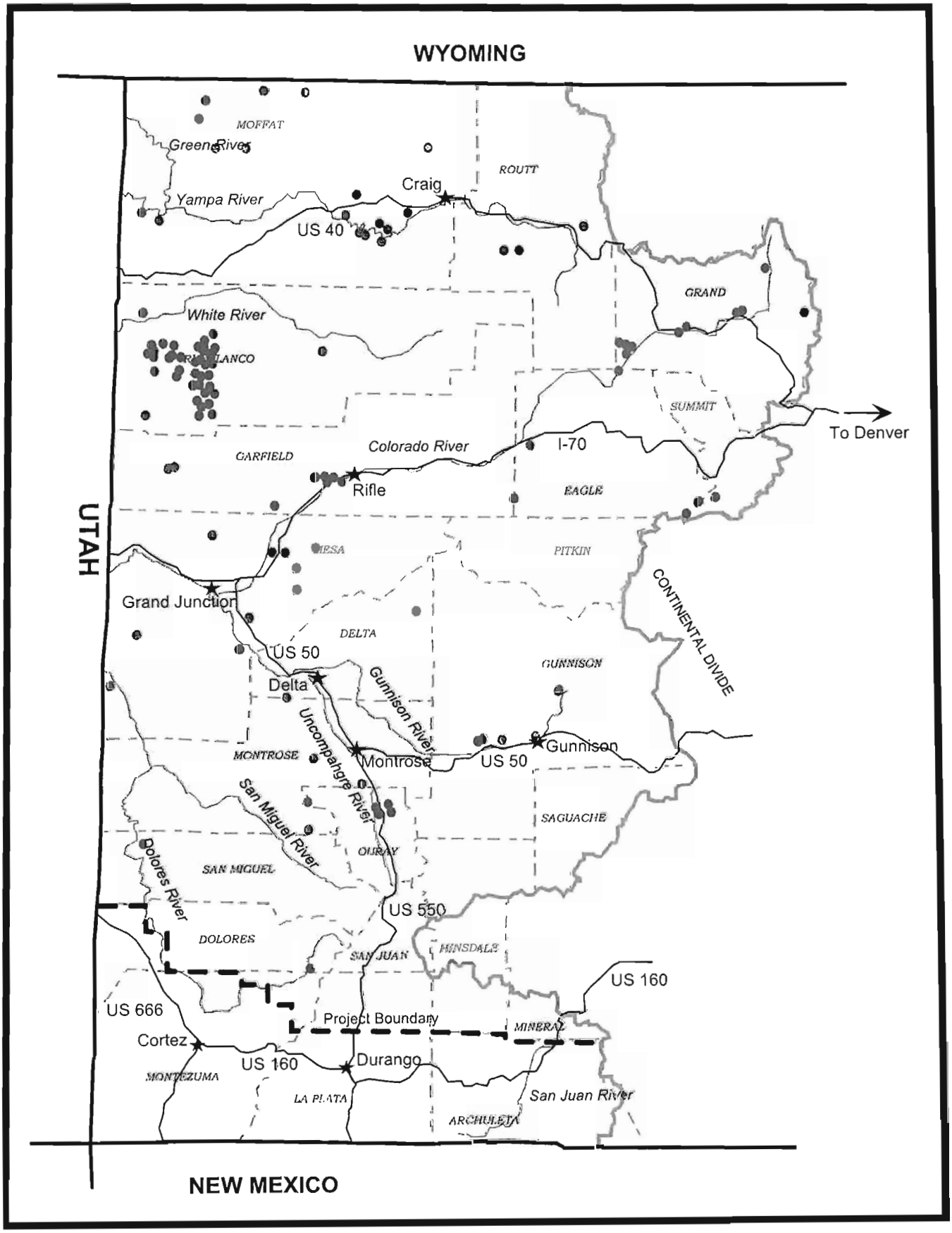

Figure 7-9. Distribution of Aspen tradition sites.

Modeling the Aspen Tradition

Radiocarbon Record

Perhaps the most dramatic, and potentially most misleading, aspect of the Formative -era radiocarbon record is the rapid increase in date frequency after 400 B.C. As was noted earlier, much of this increase can be attributed to dates on multiple pit features from sites below 2134 m (7000 ft) in elevation. The frequency of dates in the radiocarbon record from the higher elevations remains relatively consistent with earlier periods, though there appears to be a shift in use patterns from a year-around pattern to a warm-season pattern underlying the consistent numbers. Frequently, an abrupt rise in radiocarbon frequency is taken to signify an increase in populations, and this may be a factor in the increase of radiocarbon ages for the period. Alternatively, a subsistence system that utilizes frequent use of processing features may be a contributing factor in high radiocarbon date numbers, because such features are quite visible in the archaeological record and tend to be easily discovered during archaeological investigations. In turn, a reliance on foods that require specialized processing is suggestive of increasing stress on subsistence systems. The date frequency peaks about A.D. 700, after which there is rapid decline in date frequencies, bottoming out about A.D. 1300.

Some combination of population growth and climatic stress probably underlies this pattern, but no completely satisfactory explanation has yet emerged. The shift to seasonal use of the Gunnison Basin posited by Stiger (1998) is reflected by a drop in the frequency of high-elevation dates and an increase in low-elevation date frequency at about 800 B.C. General regional cooling with higher effective moisture at low elevations may be a factor influencing settlement. In the Yampa Valley record, a second episode of weak cumulic soil building occurs after 1000 B.C., and there is evidence of more discrete paleosols at about 200 B.C. and more definitely around A.D. 200-400. Low-elevation dates peak between about A.D. 900 and 1100 and are steady in the high-elevation record, perhaps an indication of all-around good times. Drought in the late A.D. 1100s is supported by a bump in the high-elevation date record, and a near-crash in date frequencies in the high record in the late A.D. 1300s is mirrored by higher date frequencies in the low record. Some interplay between highland and lowland resource utilization can be posited on this basis, though considerable detail needs to be worked out.

Pit Features

Data presented on pit morphology and distribution in Chapter 6 are also relevant to examination of subsistence organization in later periods. The frequency of all dated features increases during the Formative era, as noted above (Figure 6.3). Of seven feature types used in the analysis, all but rock-lined features show some increase in use. Increased use of rock-filled basins is perhaps the most obvious, but simple basin hearths show a less dramatic increase. Increased processing, either through stone boiling or roasting, would seem to be indicated. As noted for the Archaic era, functional and content analysis of the various feature types would appear to have some of the strongest potential for testing models of shifting mobility and subsistence. The fact that more than half of all the radiocarbon ages from the study area derive from features postdating 400 B.C., suggests a need for more thorough study of the organizational context of feature use.

Structures

The range of shallow pit, brush, and rock habitation structures attributed to Fremont-related occupations has already been reviewed. Stiger (1998b) suggests that use of substantial houses shifting to lower elevations after 1000 B.C. marks a shift of winter residential patterns to lower elevations. Within the basin house type defined by Shields (1998), a significant number of structures in the regional database date between A.D. 150 and 900. This includes a cluster of sites

in the Browns Park area of Utah (McKibbin 1992) and a number of sites in the southern Wyoming Basin, but only a structure from 5GN42 (Jones 1986) is located explicitly in the Colorado Basin study area. The regional pattern is for the use of basin houses to mimic an increase in feature use.

Other structure types suspected during the Aspen tradition include tipi rings (Metcalf et al. 1991) and wickiups, and other informal brush and rock structures. So far, most of the sites with structures in the study area have been attributed to other Formative-era traditions. The database is still too small to evaluate the meager but variable record of structure use over most of the study area.

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