

MUSEUM OF NEW MEXICO

OFFICE OF ARCHAEOLOGICAL STUDIES

**ARCHAEOLOGICAL TESTING REPORT AND DATA RECOVERY
PLAN FOR TWO SITES ALONG STATE ROAD 50 NEAR
GLORIETA, SANTA FE COUNTY, NEW MEXICO**

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ADMINISTRATIVE SUMMARY

Test excavations at two sites along State Road 50 near Glorieta demonstrated that they have the potential to provide information on local prehistory and history. LA 76138 is a two-room structure with an associated midden and surface artifact scatter dating to the Glaze E-F period of the Rio Grande Classic. With the exception of the northeast corner of the artifact scatter, this site lies entirely within proposed project limits. LA 76140 is an American Territorial period site containing two possible fireplace bases, a post hole, possible structural remains, and an artifact scatter. This site is completely within proposed project limits. At the request of the New Mexico State Highway and Transportation Department, testing was conducted at these sites and a data recovery plan was prepared. The plan includes discussions of local prehistory and history, a research orientation, site descriptions, and field strategies.

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CONTENTS

Administrative Summary	ii
Introduction	1
Cultural History Overview <i>Joan K. Gaunt, Macy Mensel, and James L. Moore</i>	3
Prehistory	3
Historic Period	6
Physical Environment <i>James L. Moore</i>	11
Geology	11
Soils	12
Flora and Fauna	12
Climate	13
Site Descriptions and Testing Results	15
Testing Methods <i>James L. Moore</i>	15
LA 76138 <i>Joan K. Gaunt</i>	16
LA 76140 <i>Macy Mensel</i>	20
Research Orientation <i>James L. Moore</i>	25
Introduction	25
Fieldhouse or Farmstead: LA 76138	25
Adaptations to the New Mexico Frontier: LA 76140	34
Field and Analytic Methods <i>James L. Moore</i>	45
General Excavation Procedures	45
Unexpected Discoveries	47
Analysis	47
Research Results	53
Conclusions and Recommendations	55
References Cited	57
Appendix 1. Site Location Information	67
Appendix 2. Prehistoric Sites near the Project Area	69
Appendix 3. Treatment of Human Remains	75
Appendix 4. Curriculum Vita	85

Figures

1. Project vicinity	2
2. Plan of LA 76138	17
3. Profile of east wall of 84N/72E in Structure 1, LA 76138	18
4. Plan of LA 76140	21
5. Site location	68

Tables

1. Average seasonal precipitation rates for the years 1925-1954	14
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INTRODUCTION

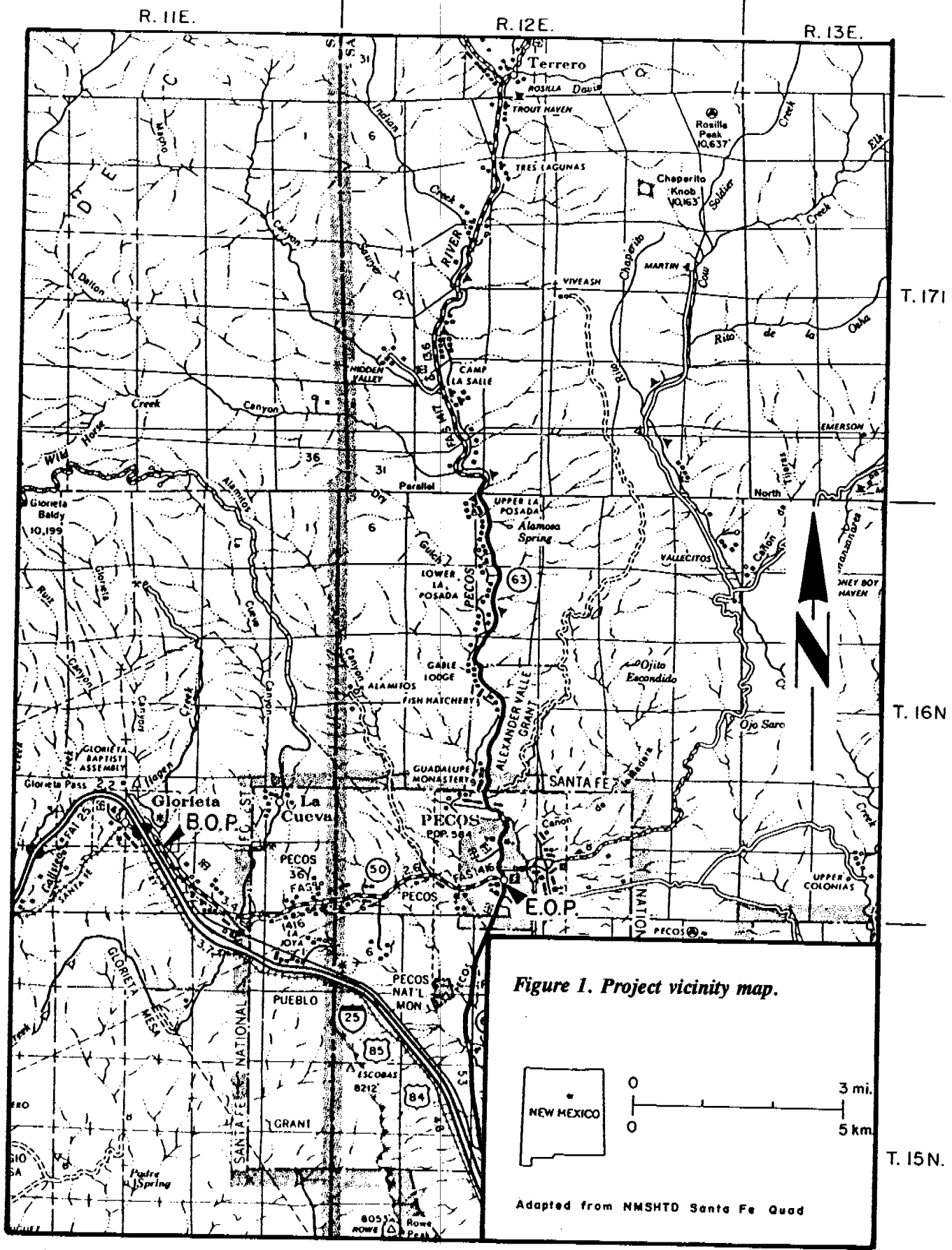
At the request of the New Mexico State Highway and Transportation Department (NMSHTD), the Office of Archaeological Studies of the Museum of New Mexico conducted test excavations and prepared a data recovery plan for two sites along State Road 50 near Glorieta, Santa Fe County, New Mexico (Fig. 1). Field work was conducted between September 9 and 19, 1991. James L. Moore was the supervisor, and was assisted by Joan K. Gaunt, Macy Mensel, and Natasha Williamson. The report was edited by Robin Gould, and figures were produced by Ann Noble. Timothy D. Maxwell acted as principal investigator. Both sites were on private land.

Three sites--LA 76138, LA 76139, and LA 76140--were originally located in this area during survey for proposed improvements to a 9.7 km (6 mi) stretch of SR 50 (Zamora 1990). They were recorded as a possible Pueblo IV fieldhouse (LA 76138), a lithic and ceramic artifact scatter of unknown date (LA 76139), and an American Territorial period trash scatter (LA 76140). Testing was proposed for all three sites (Zamora 1990). As field work began, LA 76138 and LA 76139 were determined to be parts of the same archaeological site. Rather than imposing artificial boundaries on these remains, they were combined and tested as LA 76138.

LA 76138 contained three features--a two-room structure, a shallow midden, and a lithic and ceramic artifact scatter. Testing showed that up to 60 cm of deposition was present in the structure, and up to 30 cm in the shallow midden. Temporally diagnostic artifacts suggested a Protohistoric or early Historic date circa A.D. 1600 to 1750.

Four features were found during testing at LA 76140--two possible fireplace bases, a post hole, and a stone alignment that may have been part of a structural foundation. Each feature contained cultural deposits up to 30 cm thick. Temporally diagnostic artifacts suggest occupation during the late American Territorial period circa A.D. 1880-1900.

Testing has shown that both sites have the potential to provide information on local prehistory and history, and a plan for recovering these data was developed and is included in this report. The data recovery plan includes proposed research orientations and a strategy for implementing research goals through excavation and analysis. Specific site and assemblage attributes that may aid in addressing research orientations are discussed. Also included are descriptions of the sites and testing results, a discussion of regional prehistory and history, and information on the local environment. All site location information is included as Appendix 1.



CULTURAL HISTORY OVERVIEW

by Joan K. Gaunt, Macy Mensel, and James L. Moore

Few places in New Mexico have more prehistoric or historic events associated with them than the Glorieta/Pecos area. This region has been the home of numerous Indian groups (including those at the large pueblo of Pecos), it served as an exploratory route for the Spanish entradas, was divided into Mexican land grants, was crossed by the Santa Fe Trail, and was the scene of one of the few Civil War battles fought in New Mexico. Today, the area contains Hispanic and Anglo-Americans clustered in several communities along the Pecos River and Glorieta Creek.

Prehistory

Paleoindian: 10,000-5500 B.C.

The earliest occupation of the Southwest was during the Paleoindian period, which contains three broad temporal divisions: Clovis (10,000-9500 B.C. to 9000 B.C.), Folsom (9000-8500 B.C. to 8500-8000 B.C.), and Plano (8300-8000 B.C. to 5500-5000 B.C.). The latter of these combines several late traditions together (Agogino 1968; Irwin-Williams 1965, 1973; Irwin-Williams and Haynes 1970; Neuman 1967).

Evidence of the Paleoindian occupation in the Pecos area is sparse. Paleoindian points have been recovered in the nearby Sangre de Cristo Mountains (Stuart and Gauthier 1981:295), on the Las Vegas Plateau, and in the Galisteo Basin highlands (Lang 1988:20). The lack of Paleoindian sites in this region is not clearly understood. Nordby (1981:6) suggests that it may be due to a lack of large game species, such as bison, in the area. Some evidence of Paleoindian occupation has been located south of the project area along the Pecos River. Jelinek's (1967:67) middle Pecos work produced five unfluted lanceolate points with lateral and basal grinding, and a Folsom channel flake. A single point fragment similar to a Midland point was found north of Santa Rosa along the Pecos (Levine and Mobley 1975:67).

Archaic: 5500 B.C.-A.D. 400

It was realized at an early date that the Archaic occupation of northern New Mexico was distinct from that of its southern neighbor, the Cochise. Bryan and Toulouse (1943) were the first to separate the northern Archaic from the Cochise, basing their definition of the aceramic San Jose complex on materials found in sand dunes near Grants, New Mexico. Four Archaic traditions have been defined in the Southwest (Irwin-Williams 1979): western, southern, northern, and southeastern. The study area is within the area occupied by the northern, or Oshara tradition.

The Oshara tradition is divided into five phases: Jay (5500-4800 B.C.), Bajada (4800-3200 B.C.), San Jose (3200-1800 B.C.), Armijo (1800-800 B.C.), and En Medio (800 B.C.-A.D. 400). Jay and Bajada sites are usually small limited base camps (J. Moore 1980; Vierra 1980).

San Jose sites are larger and more common than those of the earlier phases. Corn horticulture was probably adopted by the beginning of the Armijo phase (Irwin-Williams 1973). The En Medio phase corresponds with Basketmaker II, and represents the transition from a mobile hunter-gatherer pattern to a lifestyle combining hunting and gathering with dependence on corn horticulture.

Archaic sites in the Pecos area are primarily found on high benches above waterways (McCrary 1983:5). Archaic sites occur in rock shelters and as lithic artifact scatters in the Pecos Valley near Santa Rosa (Levine and Mobley 1975). Other Archaic sites have been found at high elevations in the Santa Fe National Forest and in the Pecos Wilderness (Wendorf and Miller 1959; Stuart and Farwell 1983), and some are located near both water and potentially arable land.

Privately owned projectile point collections from the Pecos Valley exhibit possible Bajada and San Jose points (Wait and Nordby 1979:7). Archaic projectile points have recently been found on three sites near Pecos in association with Pueblo material (Lent et al. 1991). Obsidian hydration dates from predominantly Puebloan contexts near Rowe (Morrison 1987) suggest material scavenging from Archaic sites, perhaps also located in the Pecos Valley.

Anasazi/Pueblo: A.D. 400-1600

Wendorf and Reed (1955) divide the Rio Grande Anasazi into four periods: Developmental (A.D. 600 to 1200), Coalition (A.D. 1200 to 1325), Classic (A.D. 1325 to 1600), and Historic (A.D. 1600 to present). The first half of the Developmental period (A.D. 600 to 900) corresponds to Basketmaker III and Pueblo I of the Pecos classification. Early Developmental sites are rare in the northern Rio Grande (Wendorf and Reed 1955). Sites usually contain one to three circular pithouses in association with rectilinear surface storage structures (Stuart and Gauthier 1981). Three early Developmental period pithouses were found near the administration building at Pecos National Historical Park (L. Nordby, personal communication, 1991). Subsistence items included small-game, wild plants, and corn. Agricultural fields are thought to have been situated along the lower terraces of the Pecos River and Glorieta Creek.

The second half of the Developmental period (A.D. 900 to 1200) corresponds to the Pueblo II and early Pueblo III phases. There was a large population increase in the northern Rio Grande during this period (Wendorf and Reed 1955), accompanied by major changes in settlement pattern, architecture, and site size (Anschuetz 1986). The number of sites and range of environmental zones being exploited increased, and areas of higher elevation began to be used (Stuart and Gauthier 1981:59). The shift from pithouses to above-ground structures began, and communities consisting of definable clusters of villages appeared. Mineral-painted wares, including Kwahe'e Black-on-white, were the most commonly produced decorated ceramics (Mera 1935).

The Coalition period (A.D. 1200 to 1325) corresponds to late Pueblo III. Carbon-painted wares replaced mineral-painted ceramics; the appearance of Santa Fe Black-on-white marks the beginning of this period. Other changes included an influx of population and expansion into new environmental zones, including upland areas like the Pajarito Plateau (Anschuetz 1986; Wendorf and Reed 1955). Sites ranged in size from 13 to 30 rooms, and were usually arranged in linear or L-shaped room blocks (Stuart and Gauthier 1981:51). By A.D. 1300, large villages of 200

to 300 rooms were established in the Pecos area at Pecos (LA 625), Rowe (LA 108), Forked Lightning (LA 672), Dick's Ruin (LA 672), and Loma Lothrop (LA 277) pueblos. These villages were heavily dependent on agriculture, and are thought to be ancestral to Pecos Pueblo.

Construction began at Cicuye, or Pecos Pueblo (LA 625), between A.D. 1300 and 1350 (Kidder 1958). This first village was a one-story stone pueblo built on a mesilla with an open plaza facing west. Rowe Ruin (LA 108) is in the upper Pecos Valley, 6.4 km east of Pecos Pueblo. Bandelier (1892:125) described the ruin as "three quadrangles connected with one another," with two entrances "being well constructed for defense." Residents of Pecos Pueblo called the site Ku-uang-ual-a (Bandelier 1892:125). Excavation in 1917 discovered three superimposed masonry structures representing distinct periods of occupation (Guthe 1917). A wood specimen taken from Guthe's trench by Smiley and others (1953) dated A.D. 1306, showing that it was initially occupied before Pecos Pueblo.

Forked Lightning Ruin is .8 km southeast of Pecos Pueblo and was occupied between A.D. 1225 and 1300. Hostile pressure from Plains Indians may have forced the occupants to move to Pecos. This village was partially excavated by Kidder in the early 1900s (Kidder 1958). Dick's Ruin (LA 672) is an L-shaped pueblo 2.8 km southeast of Pecos Pueblo on a low terrace above the west bank of the Pecos River. Architecturally it is similar to Forked Lightning Ruin, with most of its walls built of coursed adobe with little use of stone masonry. It was partially excavated by H. D. Skinner in 1926 when he was a guest of Phillips Academy at Pecos (Kidder 1958:47). Loma Lothrop (LA 277) is an adobe pueblo to the northwest of Pecos Pueblo on the opposite side of Glorieta Creek. It was contemporaneous with Forked Lightning Pueblo, and was constructed sometime between A.D. 1315/1335 and 1400 (Nordby 1984:17). It was partially excavated by Sam Lothrop in 1926.

The Classic, or Pueblo IV period (A.D. 1325 to 1600), is marked by the aggregation of smaller communities into large multistoried pueblos, often with several plazas. Regional populations reached their highest prehistoric levels, and village locations shifted from upland areas to the major river valleys. Specialization in ceramic production split the northern Rio Grande into two zones: a northern biscuit ware area, and a southern glaze ware area.

At Pecos, several phases of construction eventually generated a four-sided, three- to four-story Classic period village with a large enclosed plaza (Kidder 1932:3). By 1620, Pecos was a defensive village with no ground floor entrances and second- and third-story corridors containing ladder and trap door features. Pecos reached its zenith during this period, containing 600 to 700 rooms, 15 to 16 kivas, and its first great kiva. Kidder (1958) extensively excavated Pecos Pueblo between 1915 and 1929.

One contemporaneous site is Arrowhead Mesa (LA 251), which is 1 km southeast of the study area on a mesa overlooking Galisteo Creek. This village was comprised of eight room blocks containing at least 79 rooms and 2 kivas. Tree-ring samples and pottery date the pueblo from A.D. 1370 to 1450, though there are small amounts of both earlier and later sherds present. It was one of the last pueblos occupied in this area before the local population aggregated at Pecos. It was partially excavated by Texas Tech University between 1933 and 1948 (Holden 1955:102). Small structural sites (one to three rooms), both with and without associated lithic and ceramic artifact scatters are common in the Pecos area, and many have been recorded during recent surveys (Appendix 2). Most of these sites date to the late Coalition and Classic periods,

and probably represent farming locales. The small structures probably served as farming shelters, while many of the artifact scatters could be prehistoric field locations.

Trade relations developed between Plains Indians and local pueblos during this period, particularly Pecos (Spielman 1982, 1983). Pecos originally imported most of its decorated pottery from the Rio Grande pueblos, but between A.D. 1500 and 1600 it began making and trading its own polychrome pottery (Peckham 1988:38). With the exception of Pecos Pueblo, local villages were abandoned by A.D. 1450. It has been suggested that the local population aggregated at Pecos Pueblo because of intensified raiding by Plains Indians (Hewett 1904; Holden 1955; Kidder 1958; Mera 1940). This idea has since been refuted (Ford et al. 1972:30; J. Gunnerson 1969; Nordby 1981:11). Nordby (1981) suggests that the smaller pueblos may have consolidated to increase the work force necessary for expanded irrigation systems, or that population pressure on arable land created competition and war between pueblos. Flidner (1981:73) believes that the population declined during this period because the environment was overstressed.

The people of Pecos Pueblo were mostly farmers dependent on corn, beans, and squash. Crops were planted in the flat valley bottoms; however, some crops were grown along intermittent streams and washes and others were planted in higher, less well watered areas. Flidner (1981) recorded 1,200 probable field houses, mostly within 1 km of the pueblo. Hunting and gathering sites occurred outside this zone, but decreased in number with distance from the pueblo. Flidner (1981) also noted that the fields increased in size up to A.D. 1300 and oscillated thereafter. Similar to Flidner's data, more than half the sites located during the Rowe survey were one-room or two- to five-room structures (Morrison 1987).

Historic Period

Exploration: 1539-1597

Based on information gathered by Alvar Nuñez Cabeza de Vaca and his companions, New Spain turned its attention northward. Initial exploration by de Niza and Coronado occurred in 1539 and in 1540-1541. Captain Hernando de Alvarado, in command of the vanguard of the Coronado expedition, became the first European to visit Pecos Pueblo in 1540 (Sanchez 1988:46). Pecos Pueblo sent a delegation to Coronado at Zuni, carrying gifts of buffalo hides, shields, and feathered headdresses, and Alvarado returned to Pecos with the delegation. Following the Coronado expedition, there were no other formal contacts between New Spain and New Mexico until 1581 when Father Agustín Rodríguez and Captain Francisco Sánchez Chamuscado led a group up the Rio Grande to Pueblo country (Hammond and Rey 1966). Antonio de Espejo led a party of explorers into New Mexico in 1582, ostensibly to rescue two priests left by the Rodríguez-Chamuscado expedition.

In 1590-1591 Gaspar Castaño de Sosa entered the region, but was arrested for colonizing without a license and returned to Mexico (Simmons 1979). In 1593 a second attempt at colonization was made under the leadership of Francisco de Legua Bonilla and Antonio Gutiérrez de Humaña, but the party of explorers was nearly decimated by Indians (Hammond and Rey 1953).

Colonization: 1598-1680

Juan de Oñate established the first successful colony in New Mexico at San Juan Pueblo in 1598. By 1600 the Spanish had moved into San Gabriel del Yunque, sister village to San Juan, which had been abandoned by the Indians for Spanish use (F. Ellis 1987). Oñate was removed from the governorship in 1607 and replaced by Pedro de Peralta. Peralta founded Santa Fe and moved the capital there around 1610 (Simmons 1979).

The early period of Spanish occupation was predicated on Christianization of the Pueblos. The Crown almost abandoned New Mexico because of its poverty, but the many native inhabitants provided an opportunity for the church to win new souls. The colony was therefore allowed to continue, with its maintenance almost entirely underwritten by the royal treasury (Simmons 1979:181). Because seventeenth-century New Mexico was primarily a mission area, the church was extraordinarily powerful and influential, causing considerable conflict with the secular government (R. Ellis 1971:30-31). Beginning in the 1640s, this struggle weakened the Spanish hold on New Mexico (Simmons 1979).

In 1619, Franciscan priests, sent by Oñate, built the first church northeast of the Pecos Pueblo complex on a small mesa projection; it is now known as the Lost Church (LA 4444). A second church was erected to the south of South Pueblo in 1620 (Hayes 1974). A number of kivas were destroyed by the Spaniards, earning them the animosity of the villagers. During this time, various Apache groups often camped outside the pueblo during the winter months. This peaceful coexistence lasted until 1675 when raiding by Plains Indian groups became common.

The Pueblo Revolt and Reconquest: 1680-1694

A combination of religious intolerance, forced labor, the extortion of tribute, and Apache raids led the Pueblo Indians to revolt in 1680, driving the Spanish colonists from New Mexico. The Pueblos resented Spanish attempts to supplant their traditional religion with Christianity, and numerous abuses of the encomienda and repartimiento systems fueled their unrest (Forbes 1960; Simmons 1979). These problems were further exacerbated by nomadic Indian attacks, either in retaliation for Spanish slave raids or because of drought-induced famine (R. Ellis 1971:52; Sando 1979a:195). The colonists who survived the revolt retreated to El Paso del Norte, accompanied by the few Pueblo Indians that remained loyal to them.

Attempts at reconquest were made by Antonio de Otermín in 1681 and Domingo Jironza Petriz de Cruzate in 1689, but both failed (R. Ellis 1971). In 1692 Don Diego de Vargas negotiated the Spanish return, exploiting the factionalism which had once again developed among the Pueblos (R. Ellis 1971:64; Simmons 1979:186). Vargas returned to Santa Fe in 1693, and reestablished the colony. Hostilities continued until around 1700, but by the early years of the eighteenth century the Spanish were again firmly in control.

Spanish Colonial Period: 1694-1821

Though failing in its attempt to throw off the Spanish yoke, the Pueblo Revolt caused many changes. The hated encomienda system of tribute was never reestablished, and the missionary

system was scaled down (Simmons 1979). The new Spanish population grew rapidly and soon surpassed that of the Pueblos. Relations between Spanish and Pueblo became considerably more cordial. The post-Revolt Spanish colonists tended to be farmers and herdsman, living in scattered communities that did not demand the amount of forced native labor that the pre-Revolt economic system had. The royal government continued to subsidize New Mexico, but it now served as a buffer against the enemies of New Spain (Bannon 1963), not as a missionary effort.

In 1697, a third church was built at Pecos in the same location as the second church, which had been destroyed during the Pueblo Revolt. It was a small temporary structure built over the south end of the second church's nave (Hayes 1974). The fourth and final church was completed in 1705, and was constructed on top of the rubble of the third church.

By 1690, Apaches were again wintering at Pecos and were present until the mid-1700s when Comanche raiding all but eliminated trade with other Plains groups (Gunnerson 1988:42-43). Gunnerson (1988:42-43) states that archaeological evidence at Pecos for trade with Plains Indians includes Alibates chert artifacts from the Texas Panhandle (recovered in stratified trash mounds at Pecos dating after A.D. 1500), and Pecos pottery found as far east as central Kansas, presumably traded to Plains Indians. He also describes tipi-ring sites containing Pecos pottery near Anton Chico and Las Vegas. A burned jacal structure excavated at Pecos contained Pueblo and Jicarilla Apache wares, including Ocate Micaceous and Perdido Plain (Gunnerson 1988:43-44).

Parties of marauding Plains Indians sporadically raided Pecos in the 1700s. By the 1740s, Comanches became a serious threat to Pecos security. Numerous residents of the pueblo were killed, and Kidder (1962:86) reports that by 1750 most of the adult male population of Pecos had been victims of Plains Indian attacks. The pueblo was further devastated by a smallpox epidemic in 1788; only 180 people survived. According to Pecos Indians, the local Spanish were poisoning their waterholes between 1830 and 1840, making life increasingly intolerable (Hall 1984:60).

The Mexican and American Territorial Periods: 1821-1912

On August 24, 1821, under the Treaty of Cordova, Mexico gained independence from Spain and New Mexico became part of the Mexican nation. Mexican independence brought two major changes to New Mexico--a more lenient land grant policy and expansion of the trade network (Levine et al. 1985). Mexican colonial law and custom, particularly concerning settlers' rights, was applied to New Mexico, resulting in conflict over ownership of lands held by the Pueblos. For the Indians at Pecos Pueblo, this confusion would prevail for the next 100 years as non-Indian settlers entered the area and exerted continuous pressure to acquire rights to Pueblo land and water. These events would eventually result in the abandonment of Pecos Pueblo in 1838.

Before the eighteenth century, Pueblo Indians under Spanish law seemed to have been entitled to whatever lands they routinely used. Sometime after 1700, the policy of granting one square league to Pueblo Indians developed. The Pecos Pueblo Grant was delineated in 1689 and measured one league in each direction from the cross in the mission cemetery (Hall 1984:13; Kessell 1979:439). Both LA 76138 and LA 76140 are within the original Pecos Pueblo Grant,

just inside its west-central boundary. The grant was established by Governor Domingo Jironza Petriz de Cruzate in 1689, despite the fact that the Spanish had been expelled in 1680 and were based in El Paso (Sando 1979b). Though legally questionable, the Cruzate Grants were initially respected by local administrators and citizens (Hall 1984). The Pecos Grant extended north past Alamitos Arroyo and south past the Arroyo de los Torreones, east over the Pecos River and west over Glorieta Mesa.

By the late eighteenth century, Hispanic settlers had entered the Pecos Valley and by 1803 were farming Pueblo lands. In 1794, the governor of New Mexico, Fernando Chacon, authorized the first community land grant to settlers in the Pecos Valley (Hall 1984). The land was granted to genízaro settlers from Analco, who established San Miguel del Vado at the edge of the Comanche frontier. A second settlement was established in 1803 at San Jose del Vado, 4.8 km north of San Miguel. Both settlements provided auxiliary troops to neighboring militias when needed. In the same year, the alcalde of Santa Fe granted 58 irrigated tracts to families in San Miguel del Vado, and 48 to families in San Jose del Vado (Hall 1984:5). Parts of these grants were located within the Pecos Grant, and this represented the first of many intrusions into Pueblo lands. The distinct nature of the pueblo grants was formally altered in 1812, when a law was passed that authorized local governments to allot unused Pueblo farmlands to individual Indians and non-Indians (Hall 1984:16). This law effectively opened the landscape to new Hispanic settlement. By 1829, Hispanic settlers were farming and grazing in the center of the Pecos Grant.

While Hispanics were beginning to settle the Pecos area, numerous expeditions into the recently acquired Louisiana Purchase brought American explorers and traders west from the Missouri River, eventually establishing the Santa Fe Trail. After the two branches of the trail converged in the La Junta-Watrous area, it headed south to Las Vegas and west through Pecos. Trade over the Santa Fe Trail expanded geographically to Chihuahua and in the volume of consumer goods transported until 1828, when factors like Indian raids, military escorts, and Mexican trade regulations caused notable fluctuations in the flow of commerce (Pratt and Snow 1988:296). The economic impact of such an extensive trade network may be hard to detect in small areas like Pecos, but it is likely that local inhabitants were introduced to a wide variety of material goods like nails, iron hardware, bricks, wallpaper, cotton muslin, and window glass that were previously impossible or too expensive to acquire (Pratt and Snow 1988:302).

The village of San Miguel del Vado was the first settlement encountered by traders before the founding of Las Vegas in 1835 (Pratt and Snow 1988:287). Serving as the port of entry for New Mexico, San Miguel del Vado housed the Mexican customs operations for many years. Although virtually abandoned by 1838, Pecos Pueblo and its mission ruins served as a landmark and campsite for Santa Fe Trail travelers.

Kozslowski's Ranch and Stage Station, which was 7 km from the study area on the property now known as Forked Lightning Ranch, was established by Napoleon Kozlowski, a Polish immigrant who came to New Mexico in 1846 (Simmons 1984). He acquired land adjacent to a spring, and with materials scavenged from the Pecos mission and pueblo, built a ranch and a barn from which he served meals to stage passengers en route to and from Santa Fe. The ranch later served as Union Headquarters during the Battle of Glorieta Pass, fought in March 1862. Pigeon's Ranch, about 1.6 km from the study area along State Road 50, was another Santa Fe Trail stopover. Established in the 1850s by Alexander Valle, the ranch provided lodging and

food for travelers. Today, only three adobe rooms, a mounded ruin, and stone corral footings remain. Pigeon's Ranch was also used during the Battle of Glorieta Pass, first as the site of a makeshift hospital and morgue, and later, as a burial ground (Y. Oakes, personal communication, 1991; Simmons 1984).

At Pecos, the period between 1830 and 1840 was characterized by continuing encroachments on Pueblo land and a gradual decline in population. In 1838, the last inhabitants of Pecos Pueblo moved to Jemez Pueblo, 128 km away. The local Hispanic farming population continued to expand and occupy the pueblo grant. New Mexico was part of Mexico until 1846 when war broke out with the United States. American troops led by Colonel Stephen W. Kearny took possession of New Mexico on August 15, 1846. Kearny established an interim government and the Kearny code, which was designed to protect the rights of native New Mexican inhabitants, property claims, and religious practices (Pratt and Snow 1988:308). In areas like Pecos, where pueblo land claims had been reinterpreted by Mexican law, the record of land ownership became hopelessly complicated.

The early American Territorial period immediately followed acquisition from Mexico, and was characterized by a growing interest in commerce and a market economy that demanded more dependable means of transportation (Pratt and Snow 1988). By 1850, long distance stagecoach routes were established to transport travelers as well as the U.S. mail. One stagecoach route that ran from Prescott, Arizona to Las Vegas passed near Pecos.

In 1862, Pecos and the neighboring village of Glorieta were involved in the last battle of the Civil War in New Mexico when a force of Colorado volunteers met Confederate troops at Glorieta Pass. The next major event in the history of Pecos occurred in 1879 when the Atchison, Topeka, and Santa Fe railroad reached Las Vegas. Although not considered a railroad center, the village of Pecos was on the main line between Las Vegas and Lamy. For the villagers of Pecos, the arrival of the railroad meant new jobs and improved access to commercial goods. Economic growth associated with the railroad stimulated a period of development in New Mexico, primarily in the larger urban areas (Pratt and Snow 1988:441). In 1880, the Territorial Assembly passed an act requiring towns with a population of 2,000 or more to incorporate and establish a municipal government, but it was not until 1953 that Pecos was finally incorporated. In 1912, New Mexico became the 47th state, and the American Territorial period ended.

Little work has been completed at sites in the Pecos area dating to the Mexican and American Territorial periods. Only two sites dating to these periods have been investigated near the study area--Pigeon's Ranch and the Glorieta Battlefield (Y. Oakes, personal communication, 1991).

PHYSICAL ENVIRONMENT

by James L. Moore

The study area is in a long and sometimes narrow valley incised by Glorieta Creek, a tributary of the Pecos River. The valley separates Glorieta Mesa from the Santa Fe Mountains, and forms a natural highway through the north-central New Mexican highlands. This area is also a transitional zone between the southern Rocky Mountain Province and the Sacramento section of the Basin-and-Range Province (Fenneman 1931). The Sangre de Cristo Mountains represent the former and Glorieta Mesa is the northeastern boundary of the latter (Fenneman 1931).

Geology

Structure

As a transitional zone between physiographic provinces, the geology of the study area is complex. Though the region has a long history of faulting, uplift, and subsidence, only a few of the more pertinent events and structural features will be discussed. Pennsylvanian and early Permian rocks unconformably overlie Precambrian basement rocks in the region. These strata were deposited in the Rowe-Mora Basin in the area now occupied by the central Sangre de Cristo Mountains (Baltz and Bachman 1956). Considerable deformation occurred during the late Cretaceous and early Tertiary periods. A block measuring 320 km long by up to 30 km wide was uplifted, forming the Sangre de Cristo Mountains (Woodward and Ingersoll 1979). At the same time, the Raton Basin was formed along the eastern edge of this uplifted zone.

Uplift in the Sangre de Cristos resulted in deformation of areas directly south of that feature (Goolsby 1965). The zone separating the Sangre de Cristo uplift from the Glorieta Mesa uplift was severely deformed into a complexly faulted and folded graben (Lisenbee et al. 1979:92-93). These orogenic forces were felt on the Glorieta uplift as well, and are represented by gentle folds. The Glorieta Mesa uplift is an uplifted arch trending slightly west of north (Griggs and Hendrickson 1951:34).

During the late Cenozoic period (and probably continuing to the present), movement along the Rio Grande Rift formed a series of northward trending graben, including the Española Basin (Woodward and Ingersoll 1979). The Española Basin forms part of the western boundaries of the Glorieta Mesa and Sangre de Cristo uplifts, and is separated from the former by the Glorieta Mesa boundary fault. Movement along this fault system has been recurrent since the Precambrian period.

Stratigraphy

Unless otherwise noted, stratigraphic descriptions are summarized from Baltz and Bachman (1956), Goolsby (1965), and Griggs and Hendrickson (1951). Basement rocks consist of igneous, metasedimentary, and Precambrian granites, schists, gneisses, and quartzites. The most

commonly outcropping formations are Precambrian through Permian in age. In nearby areas, they are overlain by other formations including (in ascending order) the Artesia sandstone and siltstone formation (Permian), the Entrada sandstone formation (Jurassic), the Todilto limestone formation (Jurassic), the Morrison sandstone formation (upper Jurassic), the Dakota sandstone formation (Cretaceous), the Mancos formation shales, sandstones, and limestones (late Cretaceous), and the Galisteo sandstone formation (Tertiary).

Outcrops along Glorieta Creek consist of occasional igneous and metamorphosed Precambrian rocks, the Magdalena group, and the Sangre de Cristo, Yeso, and San Andres formations. Precambrian rocks occur as occasional exposures in the Pecos River Valley and its tributaries. The Magdalena group outcrops in the lower part of the valley. The Sangre de Cristo Formation outcrops around the mountain edges and on the lower northern slope of Glorieta Mesa. Yeso formation exposures also occur along the northern mesa slope. The Glorieta sandstone member of the San Andres formation forms a resistant cap over the top of much of Glorieta Mesa, though in places it is overlain by younger rocks. A considerable portion of the mesa top is also covered by the middle member of the same formation, while the upper member outcrops along the east and west sides of the mesa.

Soils

Both sites are located on the Capillo-Rock outcrop complex of soils (Folks 1975:18-19), which occur at elevations between 2,438 and 3,353 m. This complex has developed on moderate to steep slopes (10 to 50 percent) and includes 55 percent Capillo gravelly sandy loam and 25 percent rock outcrops. A variety of other soils make up the remaining 20 percent of the complex, and include Cueva, McVickers variant, and Fort Wingate variant soils, as well as some Mirabal, Supervisor, and Cundiyo soils (Folks 1975:19). Capillo gravelly sandy loams, which comprise the bulk of the association, are well drained and forming on mountain sides in materials weathered from sandstones and shales. Permeability is slow, runoff speed is medium to rapid, and the potential for erosion is moderate to severe.

Flora and Fauna

Flora

Vegetation in the study area is dominated by juniper, with some oak and piñon (Morain 1979). However, vegetation varies with soil type and elevation. The Capillo-Rock outcrop complex supports ponderosa pine, Douglas fir, and white fir, as well as various shrubs and grasses. A riparian plant community occurs along Glorieta Creek. Various species are supported by the abundant moisture available in that environment including willow, cottonwood, tamarisk, cattail, and rushes. Grasses are common on the floodplain and adjacent valley slopes and include blue grama, sand dropseed, wheatgrass, and Indian ricegrass. Various shrubs and cacti occur on the slopes bordering the stream, including gooseberry, currant, yucca, mountain mahogany, tansy mustard, cholla, and prickly pear.

Fauna

Some of the most common mammals found in the area include the cottontail, jackrabbit, and rodents such as the Colorado chipmunk, pocket gopher, western harvest mouse, deer mouse, and Mexican woodrat. Larger rodents include porcupines and, formerly, beaver. Native artiodactyls include mule deer and, formerly, elk. A number of carnivores also occur. Among them are coyotes, black bears, raccoons, long-tailed weasels, mountain lions, and bobcats. The gray wolf and grizzly bear formerly ranged through the area.

In the study area, relatively common raptors include the red-tailed hawk, great horned owl, and screech owl. Both the turkey vulture and raven are common scavengers. Other birds found in relative abundance include Gambel's quail, mourning dove, red-shafted flicker, piñon jay, robin, mountain bluebird, and house sparrow. The turkey was probably once common in the area as well (Robbins et al. 1966).

Climate

New Mexico is one of three areas in the United States that receives over 40 percent of its annual precipitation in the summer months (Tuan et al. 1973). The annual precipitation rate also greatly fluctuates around the mean, and there is a higher frequency of dry years than wet years (Tuan et al. 1973). Though these fluctuations are less severe than those occurring in humid regions, they are of greater significance because of the overall aridity of the area. With less precipitation to begin with, any drop in the annual rate can seriously impact the biotic environment.

Summer rainfall in the Southwest follows a true monsoon pattern (Martin 1963). Moisture-laden winds flowing north from the Gulf of Mexico are the main source of summer moisture, and their movement is controlled by a high pressure system situated over the Atlantic Ocean. The amount of summer rainfall in the Southwest depends on the positioning of this system. When it is in a northward position, moist tropical air flows into the area and the summer is wet. When it is positioned southward the summer can be dry, a condition that may be caused by abnormally cold years in the north temperate latitudes (Martin 1963).

Winter precipitation is derived from air masses originating in the extratropical regions of the Pacific Ocean or in Canada. While summer storms are generally short and intense, winter precipitation usually falls as snow, which melts slowly and soaks into the soil rather than running off as does most summer rain. Though all precipitation is beneficial to local biota, winter precipitation is more effective because it soaks into the ground and recharges soil moisture reserves.

Mean annual precipitation in the general study area is 343 mm, of which nearly 40 percent falls during the summer months. Table 1 illustrates seasonal precipitation patterns for the region. As can be seen, summer receives the most precipitation and winter the least. The relative density of the vegetative mat probably helps prevent much erosion. Damage to the vegetative mat, however, can increase the potential for severe erosion. An overall change in precipitation patterns could adversely affect the vegetative community and, hence, help contribute to erosion.

Table 1. Average Seasonal Precipitation Rates for the Years 1925-1954.

Season	Mean Precipitation (cm)	Percentage
Winter	5.08	14.82
Spring	8.89	25.93
Summer	12.70	37.04
Fall	7.62	22.22
Total	34.29	

The valley bottom zone (1,890 to 2,012 m) has a 160 to 170 day frost-free period. The date of the first killing frost in the fall is usually around September 30 and the last in the spring is generally around May 20 (Folks 1975; Williams and Morgan 1979). Mean annual temperature is around 48 to 52 degrees F. These variables differ with altitude. Between 2,012 and 2,134 m, mean annual temperature and precipitation rates remain much the same, but the number of frost-free days drops to a mean of 150 to 160. Between 2,134 and 2,438 m, mean temperature drops to 48 to 52 degrees F while the mean precipitation rate increases to 360 to 410 mm. The average number of frost-free days falls to 120 to 130. Between 2,438 and 3,353 m, induced climatic changes are even more extreme. Average annual precipitation increases to 460 to 510 mm, the mean annual air temperature drops to 43 to 45 degrees F, and there are only 50 to 100 frost-free days (Folks 1975).

SITE DESCRIPTIONS AND TESTING RESULTS

Test excavations were conducted at two sites--a Pueblo IV-V structure with an associated artifact scatter (LA 76138) and an 1880s homestead (LA 76140). Testing results are presented after a discussion of field methods.

Testing Methods

by James L. Moore

The first step in testing was to establish a datum to which all horizontal and vertical measurements were tied. The surface of each site was inspected to locate and mark diagnostic artifacts, horizontal limits, artifact clusters, and features. Each site was then gridded into 1 by 1 m units to facilitate excavation and recording. Site plans were produced using a transit and stadia rod or 30 m tape, and include the locations of all test pits, features, collected surface artifacts, artifact concentrations, and current topographic and cultural features. Artifacts within project limits were collected when they were recovered in test pits or were diagnostic. Topographic contours were mapped to provide an accurate depiction of site structure in relation to its immediate physical environment.

Horizontal test units were 1 by 1 m grids. All excavation was done using hand tools. Grids were excavated in arbitrary 10 cm levels unless natural stratigraphic breaks were found. When natural strata were defined they became the vertical units of excavation. Soil removed from test grids was screened through ¼-inch mesh hardware cloth. Artifacts recovered by screening were bagged, assigned a field specimen number, and transported to the laboratory for analysis. A form describing the matrix encountered, and listing ending depths and field specimen numbers was completed for each excavation unit. Test pits ended when sterile strata or bedrock were encountered, and they were backfilled. Auger holes were bored into the bottoms of some test pits to verify that sterile strata had been reached. Chronometric samples were recovered when available, but were not submitted for analysis. Chronometric specimens will be submitted for dating during data recovery.

Profiles were drawn where more than one cultural stratum was encountered. Soil colors were determined using a *Munsell Soil Color Chart*. Each site was photographed. Cultural materials recovered during these investigations are curated at the Laboratory of Anthropology, Museum of New Mexico. Field and analysis records are on file at the Archaeological Records Management System of the New Mexico Historic Preservation Division.

LA 76138

By Joan K. Gaunt

Introduction

During survey LA 76138 was defined as a two-room structure measuring 3.0 m north-south by 4.80 m east-west. The artifact scatter around the structure was very sparse and contained mostly lithic artifacts, with only one gray ware sherd noted. LA 76139, approximately 30 m to the northeast, was a small lithic and ceramic artifact scatter covering 154 sq m (Zamora 1990). Upon reexamination and delineation of site boundaries, it became obvious that these sites represented opposite ends of a single continuous scatter. For this reason they were combined as LA 76138.

The redefined site measures 24 m north-south by 74 m east-west. It is situated on a gentle south-sloping hillside. Site boundaries are defined as a sandstone bedrock outcrop to the north, the State Road 50 roadcut to the south, the edge of the artifact scatter to the east, and a drainage to the west. It is likely that the site once extended further south into what is now the State Road 50 right-of-way. A shallow linear depression was noted in the eastern part of the site, which either represents the remains of a trail or part of a drainage. It is most likely a natural feature.

Diagnostic artifacts recovered during testing included several late Rio Grande Glaze Ware sherds. One Glaze E (A.D. 1515-1700) bowl rim, possibly a Pecos Polychrome and two Glaze E-F (A.D. 1600-1700) bowl rims were found. A few micaceous jar sherds were also noted.

Six test pits were excavated to examine subsurface deposits. Three were placed in and adjacent to the structure and three were placed within the artifact concentration originally defined as LA 76139. Most commonly, noncultural gravel deposits were encountered in the test pits, and excavation was terminated. When the gravel concentration was not extremely heavy, auger holes were bored into test pit floors to further examine subsurface strata. Figure 2 illustrates the site plan, showing test pit and structure locations. Test pits and features are individually described below.

Feature 1: Structure

The structure appears to be divided equally into two rooms. Room 1, on the west side, has interior dimensions of 3.5 m north-south by 2.3 m east-west. Room 2, on the east side, measures 3.5 m north-south; its east-west dimension could not be determined as there was no distinct wall alignment along its eastern edge. The south wall of Room 2 measures 2.5 m long, and the north wall is 2.0 m long. Numerous stones, possibly representing fall from the east wall, were found just above sterile soil in the test pit placed within the structure. Wall stones are irregularly shaped sandstone that have not been dressed. It is uncertain whether the wall was dry-laid or wet-laid as no intact portion of wall was uncovered.

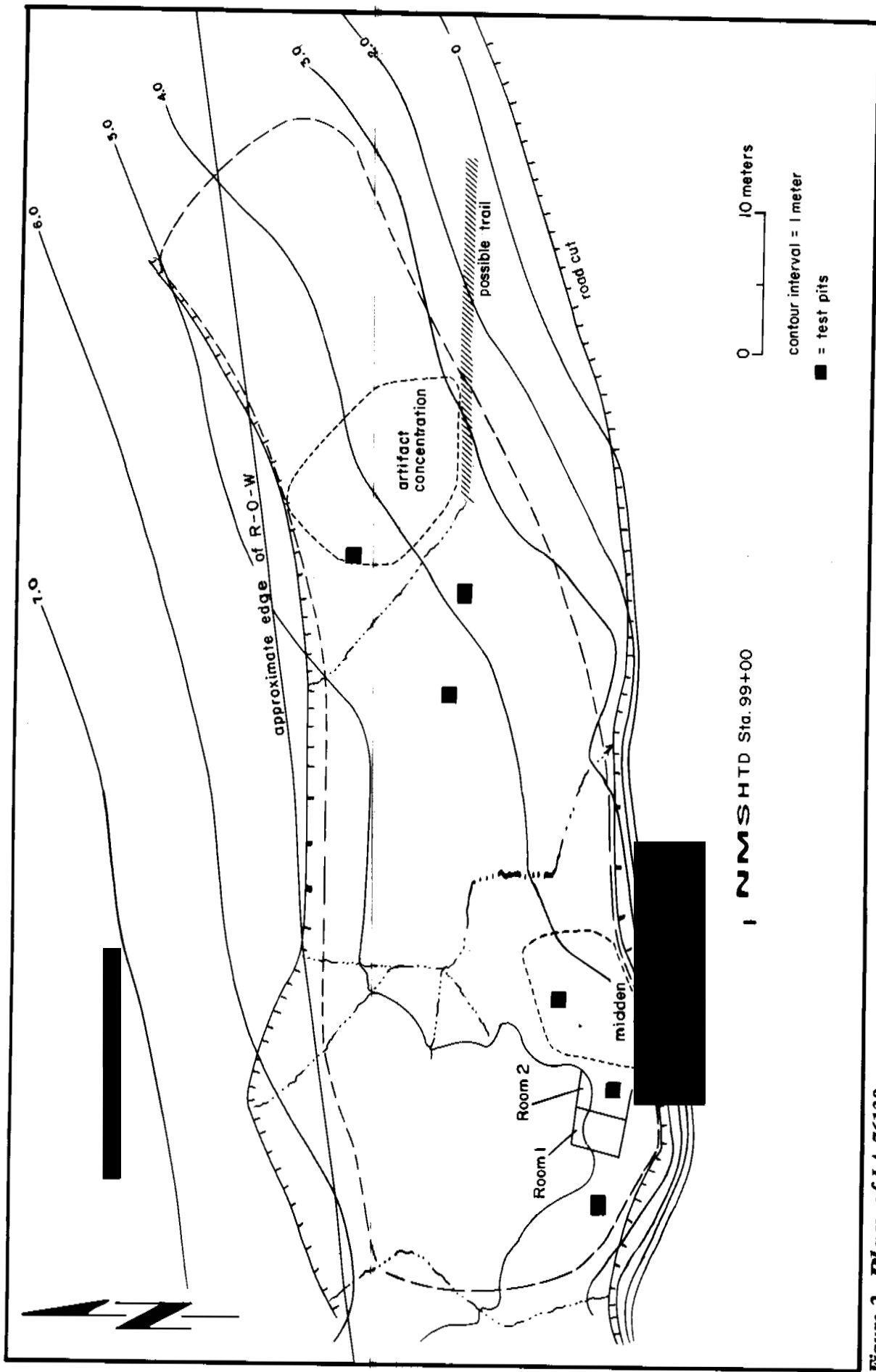


Figure 2. Plan of LA 76138.

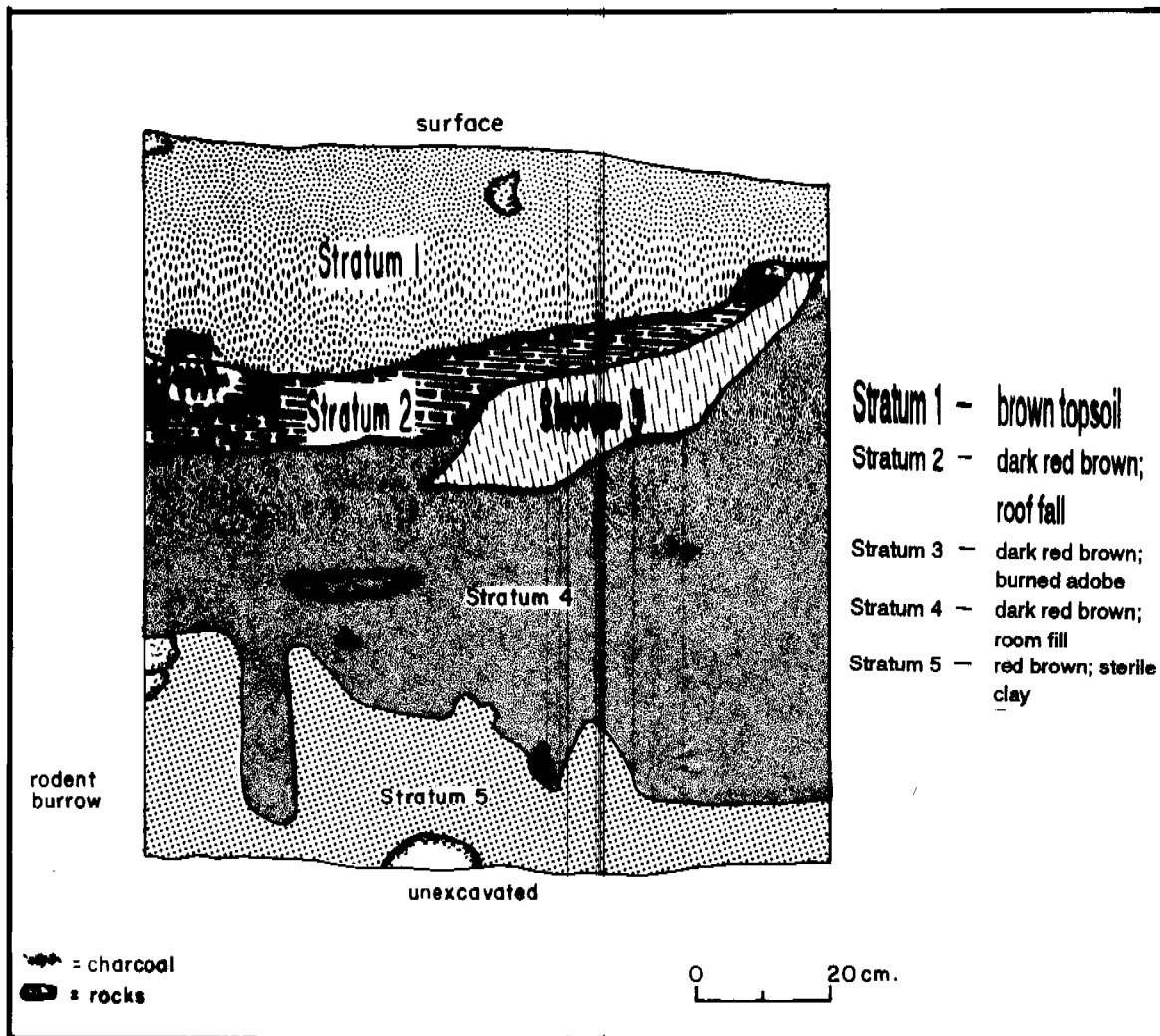


Figure 3. Profile of east wall of 84N/72E in Structure 1, LA 76138.

A test pit was placed at 84N/72E in the southwest quadrant of Room 2. This location was chosen to delineate the eastern edge of the structure, to examine deposits within it, and to look for a floor surface. Five strata were defined (Fig. 3). Stratum 1, averaging 20 cm thick, was a dark brown sandy clay with a high organic content consisting mostly of pine duff. Stratum 2, a 5 cm thick cultural level containing concentrations of ash and charcoal, may represent roof fall. Stratum 3 was found in the south half of the grid, and consisted of a 6 cm thick deposit of burned adobe. Stratum 4 ranged between 20 and 46 cm thick, and contained much charcoal and burned adobe, as well as numerous cobbles from a collapsed wall. Stratum 5 was a 30 cm thick layer of reddish brown sterile clay. Artifacts were recovered from each level, with the exception of the lowermost.

The exact location of the floor could not be determined because of heavy rodent and root disturbance. The east wall profile exhibits a possible floor at a depth of 55 cm below ground surface at the bottom of cultural deposits; however, it was extremely disturbed and difficult to define. Most artifacts in the lower sterile clay levels were probably introduced through bioturbation.

Feature 2: Midden

A concentration of 100 to 200 surface artifacts was noted on the east side of the structure and defined as a possible midden. Numerous lithic artifacts including debitage, a knife, a biface, two projectile point fragments, and plain gray sherds were noted within the scatter. A light scatter of artifacts was present on the west side of the structure as well. Two test pits were excavated to determine the depth of cultural materials in these areas.

One test pit was placed at 88N/78E to determine whether cultural deposits existed northeast of the structure. The surface and subsurface of this grid contained numerous large gravels. The only stratum defined in this pit was a red clay (Stratum 5) containing copious amounts of gravel. Three lithic artifacts were recovered from the upper 30 cm.

The second test pit was placed at 85N/64E to investigate the possible midden. The ground surface was covered by gravel and vegetation was sparse. Two strata were defined; Stratum 1 was a 12 cm thick layer of medium brown sandy clay containing large cobbles. Stratum 5 was a sterile red clay. Excavation ended 8 cm into this unit. Cultural materials were recovered from Stratum 1 and included eight lithic artifacts.

Feature 3: Surface Artifact Concentration

A second concentration of artifacts was located in a small clearing 31 m northeast of the structure; it measured 12 m north-south by 13 m east-west. This area was originally defined as LA 76139 during survey (Zamora 1990). Three grids were excavated to investigate this feature--one was placed near the center of the artifact scatter and two were set along its outer edge.

One test pit was placed near the edge of the small clearing that contained Feature 3 at 95N/99E. Only one stratum was identified--a dark brown sandy clay containing many gravels and large cobbles (Stratum 1). Excavation ended 20 cm below the surface as no artifacts were recovered and it appeared that no cultural deposits were present.

A second test pit was placed at 101N/103E near the center of the artifact concentration. Its surface was covered by decomposing sandstone washing down from a sandstone bedrock outcrop. Two strata were encountered. Stratum 1 was 30 cm thick and contained seven sherds and two lithic artifacts. It consisted of a dark brown silty clay containing numerous small gravels. Excavation ended when Stratum 5, the red sterile clay, was encountered below Stratum 1.

The third test pit was placed at 96N/92E in a duff-covered area near a stand of pine trees where the soil appeared to be relatively uneroded. Two strata were encountered. The top unit, Stratum 1, contained numerous small gravels and a few large sandstone cobbles. The underlying unit, Stratum 5, changed gradually from dark brown to reddish brown, and also contained numerous gravels. Large cobbles were encountered in this heavy gravel matrix at 20 cm below surface, and excavation ended.

Summary of Testing Results

Testing at LA 76138 demonstrated the presence of cultural deposits that can potentially provide important information on the prehistory of the Pecos area. In particular, three cultural features warrant further investigation. The most substantial of these is a two-room structure that probably functioned as a farming shelter. A test pit in one of the rooms indicated that 50 to 60 cm of deposition exists within the structure. Testing also revealed the presence of a shallow surface midden to the east of the structure. Cultural deposits appear to be 20 to 30 cm deep in that area and contain numerous ceramic and lithic artifacts. While no cultural deposition was noted in Feature 3, the artifact scatter originally defined as LA 76139, materials in that area are either related to occupation of the nearby structure or are evidence of farming. By collecting surface artifacts and subsurface pollen samples from that area, it should be possible to determine its function.

LA 76140

by Macy Mensel

During survey, LA 76140 was identified as an American Territorial period (ca. 1880 to 1930) trash scatter containing three rock piles of unknown function (Zamora 1990). It sits on a gently sloping cobble terrace on the north side of State Road 50 in an area dominated by piñon-juniper forest. As originally recorded, the site covered an area of 336 sq m at an elevation of 2,183 m. The proposed project area extends 35 m north of the current centerline of State Road 50; this area contains all three features and most of the associated artifact scatter.

Site boundaries were redefined, diagnostic artifacts were collected, and surface features were re-examined during testing. The north, east, and west boundaries were defined as the limits of the artifact scatter, and the south boundary was the existing State Road 50 right-of-way. This suggests that the site may once have extended further south into the existing right-of-way. LA 76140 is oriented northeast to southwest, and is larger than originally defined, covering an area of 1,276 sq m (Fig. 4). Five 1 by 1 m test pits were used to examine subsurface deposits in the three rock piles and in two areas containing concentrations of artifacts.

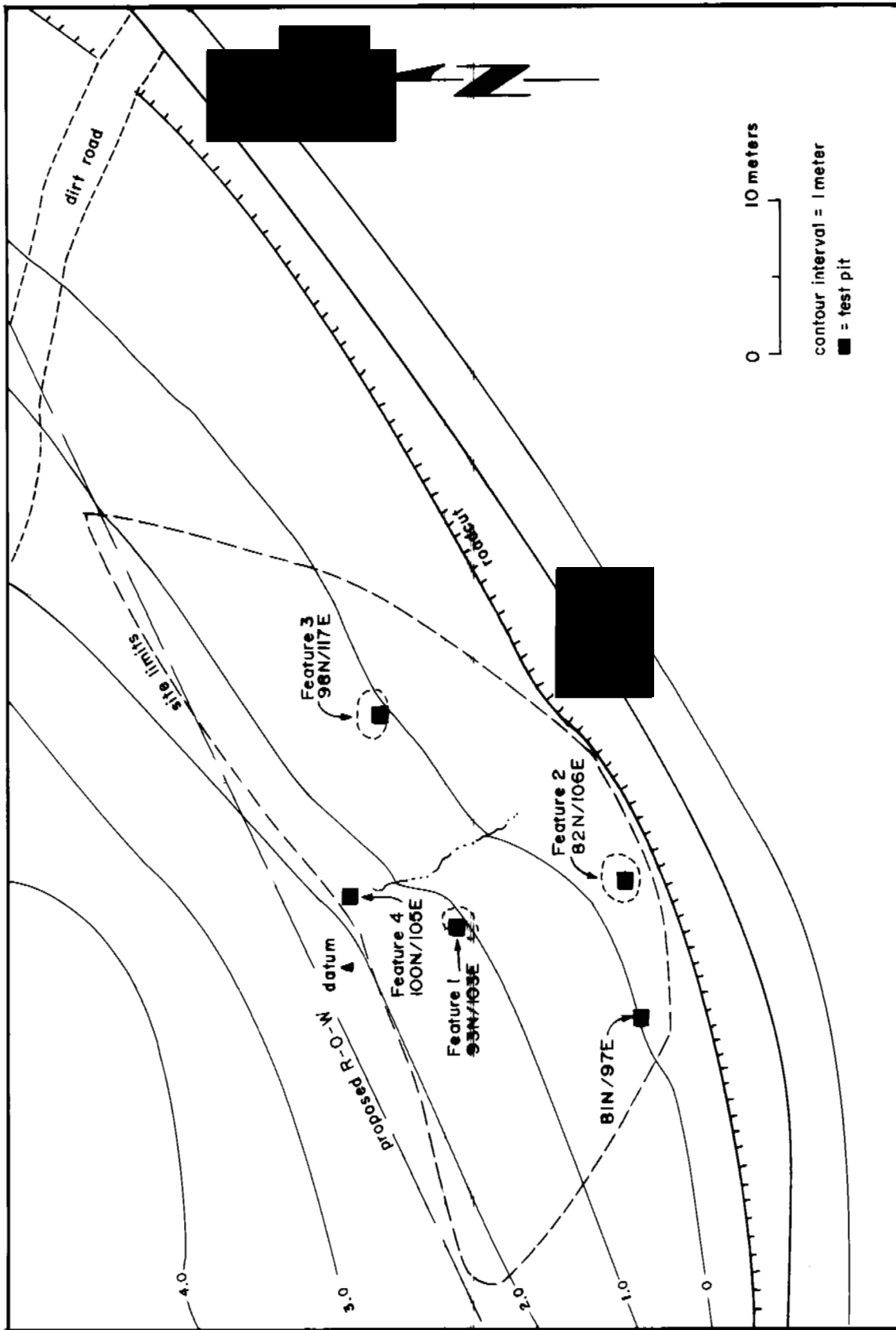


Figure 4. LA 76140 site map.

Upon the completion of testing, the surface scatter was re-examined for diagnostic artifacts, which were point provenienced and collected to provide temporal information. A review of the glass types, bottle finishes, and solder-sealed cans collected suggest that LA 76140 dates to the 1880s.

Feature 1

Feature 1 was a concentration of sandstone slabs measuring .9 by 1.1 m that may represent the remains of a hearth. A test pit was placed at 93N/103E and was excavated to a depth of 24 cm to determine whether the sandstone concentration was natural or represented the remains of a cultural feature. Although the test pit failed to confirm the cultural nature of this feature, a small exploratory hole dug 96 cm further east located a burned layer at 33 cm below surface. Pieces of burned adobe and charcoal were also noted, and, in combination with the oxidized zone, suggests that the slabs represent the remains of a hearth or fireplace.

Two strata were defined in the test pit. Stratum 1 was a 16 cm thick layer of dark brown sandy soil containing large amounts of gravel and cobbles. Artifacts recovered from Stratum 1 included six pieces of glass. Stratum 2 was a layer of reddish brown clayey soil containing gravel and large cobbles. Excavation ended 8 cm into Stratum 2 because it was apparent that the sandstone slab concentration was a cultural feature. One piece of window glass and one nail were recovered from Stratum 2.

Feature 2

Feature 2 was a concentration of sandstone slabs measuring 1.25 by 1.0 m in the south part of the site approximately 2 m from the edge of the existing roadcut. A test pit was placed adjacent to the slabs at 82N/106E to determine whether there was any subsurface deposition. Excavation ended at a depth of 6 cm when a highly oxidized zone was encountered. The stones appeared to have been set around the oxidized area, which suggests that Feature 2 represents the remains of a fireplace or hearth. Stratum 1 was the only soil unit encountered, and was a dark grayish brown sandy loam containing numerous pebbles. The oxidized zone was directly under this stratum. Artifacts recovered from this unit included 14 pieces of glass and 5 pieces of metal.

Feature 3

Feature 3 was a surface rock pile measuring 1 by 1 m in the east-central part of the site. A test pit was placed within the rock pile at 98N/117E and was excavated to a depth of 18 cm to investigate subsurface deposits. The presence of burned adobe and a stone alignment suggest that Feature 3 represents the remains of a collapsed fireplace or a wall foundation.

Two strata were defined within the test pit. Stratum 1 was a 7 cm thick layer of brownish gray clayey loam containing 60 percent mixed gravels and small cobbles. It was distinguished from Stratum 2 by a radical decline in rock inclusions and the presence of charcoal flecks and charcoal staining in the latter. Several large angular rocks that seemed to form a corner were articulated with the base of Stratum 1, and may be part of a structural foundation. Stratum 2 was a 20 cm thick layer of silty clay containing numerous artifacts, charcoal, and some rocks in its upper 5 cm. The lower 15 cm were relatively sterile, but contained pieces of charcoal and burned adobe. The test pit ended at sandstone bedrock. Test Pit 3 contained the

highest density of subsurface artifacts. Stratum 1 contained two lithic artifacts, six pieces of bone, eleven pieces of glass, and seven pieces of metal. Stratum 2 produced one sherd, one piece of glass, and sixteen pieces of bone.

Other Test Pits

Test Pit 4. Test Pit 4 was placed in the north-central part of the site at the head of a small drainage that runs south for 11 m. The test pit was placed at 100N/105E and was also at the north end of a scatter of artifacts thought to be eroding out of the gully. No artifacts were recovered during subsurface testing; however, a possible post hole (Feature 4) was found in the southwest corner of the test pit.

One soil stratum was identified before the test pit was terminated at 20 cm below surface. Stratum 1 was a sterile reddish brown clayey soil. The possible post hole measured 14 cm in diameter; its matrix was very ashy and contained a large fragment of wood that did not appear to be part of the post. The area immediately around the post hole also contained charcoal.

Test Pit 5. Test Pit 5 was placed at the southwest corner of the site at 81N/97E in an area containing a high density of artifacts to determine whether any subsurface deposition was present. The presence of several lithic artifacts on the surface suggested that there might be a prehistoric component in that area, but this was not confirmed by testing.

Two soil strata were defined in this test pit. Stratum 1 was a 12 cm thick layer of silty clay containing numerous cultural materials including three lithic artifacts, six sherds, one piece of bone, and four pieces of metal. Stratum 2 was a sterile layer of red clay containing numerous small pebbles and fist-sized cobbles. Excavation ended 8 cm into this stratum and no cultural materials were noted. An auger was used to investigate deposits below this level; Stratum 2 continued to a depth of 65 cm before the clay became mixed with caliche.

Summary of Testing Results

Testing at LA 76140 demonstrated the presence of cultural deposits that can potentially provide important information on the history of the Pecos area. Four cultural features were defined during testing. Features 1 and 2 contained evidence of burning and may represent the remains of fireplaces or hearths. The stone alignment at Feature 3 suggests the presence of a section of possible wall foundation. The presence of a possible post hole (Feature 4) suggests that some type of structural component may be present in that area as well, though no other evidence of a structure was found. It was not possible to determine whether there was any relation between features during this phase of investigation. Testing showed that cultural deposits are up to 20 cm deep in features. In most cases, however, artifacts were restricted to the upper 10 cm. Outside features, cultural materials appear to be restricted to the surface.

The presence of lithic artifacts, primarily in the southwest part of the site, suggests that there may be a prehistoric component. However, this was not confirmed by testing, and it is possible that the lithic artifacts are associated with the historic remains. Diagnostic artifacts included solder-sealed cans, purple and aqua glass, and bottle necks with applied finishes. This combination of artifacts suggests an occupation in the late nineteenth century, probably during the 1880s.

RESEARCH ORIENTATION

by James L. Moore

Introduction

Two sites from different periods and cultures will be examined by this project. Small sites, while rarely impressive, have the potential to provide valuable information concerning past cultural processes. Yet it must always be remembered that they are an expression of the culture that created them, and can only be fully understood in that context.

Site structure, feature types, and artifact assemblage at LA 76138 suggest that it was a small farming site dating to the Protohistoric or early Historic period. The presence of a two-room structure and an adjacent midden indicate that it was more than an ephemeral shelter used by farmers while cultivating their fields. Rather, the remains at this site suggest that it was occupied for one or more seasons at a time, probably by a nuclear family residing at Pecos Pueblo during the rest of the year. Evidence of seasonal occupation should be found, and an artifact assemblage indicative of a full range of subsistence activities should also be present.

LA 76140 appears to be the remains of a late nineteenth-century homestead containing one or more structures. Testing identified the bases of at least two fireplaces or hearths and indicated that trash deposits were surficial. This suggests that the structures were cabins, but the possibility that they were tents cannot be ruled out. Traditionally, Hispanic structures were built of adobe and trash disposal was in pits. Thus, the presence of probable cabins and a pattern of surface trash disposal at LA 76140 may be indicative of an Anglo occupation; however, use by a different ethnic group must also be considered. No evidence of subsistence activities was found during testing, but it is likely that site occupants were involved in agriculture or herding. Further investigation should resolve these questions and provide information on how the site relates to late developments on the New Mexico frontier.

In order to assess these assumptions, a specific research orientation will be developed for each site. While different sets of questions will be asked for each site, data recovery efforts are ultimately aimed at refining occupational dates and determining the role each had in its settlement system. LA 76138 will be studied to determine whether it represents a seasonally used farm site or some other part of the Anasazi settlement system. LA 76140 will be examined in light of cultural processes in historic New Mexico. Particular attention will be paid to the artifact assemblage and what it can tell us about life on the American Territorial frontier. Models for the detailed study of each site are developed below, and sets of questions to be used in analysis are provided.

Fieldhouse or Farmstead: LA 76138

The behavioral aspect of interest at LA 76138 is the use of small sites. Pilles and Wilcox (1978:1) define small sites as those

whose size and artifactual assemblage suggest a limited temporal occupation by a small group of people, gathered at the locality to carry out a specific, seasonally-oriented set of activities.

In a Pueblo context, small sites reflect sets of activities that may or may not have also been performed at the primary residence. By studying small sites, it may be possible to isolate material traces that are indicative of discrete activities. Recognition of such traces can be an invaluable adjunct to the investigation and analysis of more permanent sites, where specific tool kits inevitably become mixed and obscured by later activities. More importantly, small sites like LA 76138 represent part of the general Anasazi adaptive system. If only major villages are studied, our conclusions concerning prehistoric life will be skewed. By studying sites of all types we can develop a more accurate picture of prehistoric life.

The small size and location of LA 76138 suggest that it was used by persons involved in agricultural pursuits. Sites of this nature are usually defined as fieldhouses. Unfortunately, this term has been applied to remains ranging from ephemeral clusters of rubble associated with sparse lithic and ceramic artifact scatters to substantial masonry structures of one to three rooms with associated middens. This tends to obscure variation in settlement systems and patterns of land use over time. Where one end of the continuum may represent ephemeral structures used for shelter during the work day or for overnight stays of limited duration by task specific groups, the other suggests residence by an entire family for a season or more while engaged in farming. This variation may be indicative of the relationship of inter- and intragroup competition for arable land, the distribution of land suitable for cultivation, and the relative importance of farming in the subsistence system.

Preucel (1989:3-4) characterizes the Anasazi agricultural system as a network of permanently and seasonally occupied nodes. Villages and hamlets represent permanent nodes from which individuals circulate while fulfilling economic, cultural, and social needs. While much of the population may be resident at other locations during part of the year, these segments of the settlement system are considered permanent because they represent the nodes from which circulation originates. Villages are characterized by relatively large populations, and contain features related to systems of ritual integration. Like villages, hamlets contain larger populations than seasonally occupied nodes, but lack ritually integrative elements like kivas. Hamlets are closely linked to villages through kin ties, and though they are occupied on a permanent basis, the population circulates between the two as social and ritual duties need to be performed. Two types of seasonally occupied nodes are recognized--farming communities and fieldhouses (Preucel 1989:3-4). The former are small communities occupied during the growing season by more than one extended family group. Historically, many farming communities have become permanently occupied hamlets. Field houses are small residences occupied during the growing season by nuclear families and exhibit a tremendous variability in form. Both types of seasonal nodes lack ceremonial features.

This model is interesting because it provides for the use of multiple residences on a yearly basis rather than presuming that all activities originate at the primary locus of residence (village). Ethnographically, this seems to have been the norm. Bandelier (1892:15-16) noted that:

Cultivable soil need not be in the immediate neighborhood of a village, or be contiguous to it. A pueblo might be, as is Acoma today, ten or even fifteen

miles from its fields. The custom of emigrating *en masse* to these fields in summer, leaving at home only a small portion of the people to guard it, explains why we find ruins in places where the nearest tillable patch is quite distant.

While Bandelier's application of this process to prehistoric sites may be questionable, it was quite common in the historic pueblos:

...there is the same tendency to huddle together in winter for protection and shelter, the same inclination to a change of abode in the summer, in every pueblo from Taos to Isleta, from Nambé to Zuñi and the Moquis. In summer, as is well known, the pueblos are nearly deserted. The Zuñis move to Pescado, to Aguas Calientes, to Nutria, etc., at distances of ten to twenty miles away; all the other tribes emigrate into their fields, leaving but a few families at home, until the time comes for housing the crops. Then the return begins, one after another the summer ranchos are abandoned; their inmates move the few household utensils they have taken with them in spring back to their original quarters.... (Bandelier 1890:313-314)

Unfortunately, ethnographic observations like these must be applied to prehistoric sites with great care. For example, it is possible that historic farming communities and hamlets developed as village movement became circumscribed by Spanish Colonial law. By giving land ownership a legal definition, the ability of villages to relocate became restricted. The decision to move a settlement no longer belonged to villagers, but was now the purview of the colonial government. Thus, development of farming communities and hamlets may have been a function of European law rather than custom. Since the village could not relocate to a more suitable area, new locales were occupied seasonally and people returned to the main village after harvest.

Conversely, the use of farming communities and hamlets may have begun during the prehistoric period, and could represent an outgrowth of the development of large and closely integrated villages. The concentrated population of a large village would require at least the same amount of farmland as would a dispersed population of the same size; however, concentrating farmers in one location required some to cultivate distant fields. As the distance of fields from the village increased, so did the need for a nearby temporary residence. This need had an economic basis--as the distance to fields increased, so did the amount of time spent in travel. Additionally, the further fields were from the village, the more vulnerable they were to predation, both by animals and other humans. At times, groups of farmsteads may have formed dispersed communities, linked by kinship ties and membership in the same ritually integrated population (village). Eventually, such dispersed communities could become more closely integrated and form a hamlet, residing permanently away from the main village while maintaining kinship and ritual ties. Finally, when relocation became necessary or desirable, hamlets may have formed the nucleus of new villages.

Little of this can be addressed by investigations at one site. However, this discussion does provide a perspective for examining information gathered from LA 76138. A small site represents only part of the settlement and adaptive systems its occupants participated in. Thus, it cannot be studied in a vacuum; regional data must be integrated with information obtained by more intensive studies to provide a comprehensive picture of the settlement and adaptive systems. Dating will be critical in determining whether LA 76138 represents part of the traditional pueblo

settlement system or is indicative of changes caused by the imposition of a new legal and economic system by Spanish settlers. Another important question that must be addressed is where this site fits in the pueblo settlement system--was it used on an erratic basis by a task specific group, or was it a seasonal residence occupied by a nuclear family? Until specific dates and function are assigned, it will not be possible to understand the role it played in the pueblo settlement and adaptive systems.

Fieldhouses versus Farmsteads

Bruce Moore (1978, 1980) presents detailed discussions of pueblo fieldhouses, or seasonally utilized farm shells (SUFS). He defines SUFS as architectural shells used seasonally by farmers for agrarian activities, which generally occur within or in close visual proximity to fields (B. Moore 1978:10). Wilcox (1978:25-26) essentially agrees with this definition, describing fieldhouses as architectural components of the subsistence-settlement system used as temporary residences during the growing season, located near or within fields or gardens. They may contain storage facilities, but this is not necessary. These definitions make two aspects of the SUFS concept quite clear--they are located near or on agricultural land, and they are temporarily occupied.

Wilcox notes two important distinctions. First is the difference between *fieldhouses* and *farmsteads*. Fieldhouses are occupied seasonally by part of a family, and farmsteads serve as year-round residences for entire families (Wilcox 1978:26). A second distinction is made between temporary and masonry fieldhouses. The latter may have appeared coincident with the development of water and soil control systems, reflecting greater labor investment in agriculture (Wilcox 1978:28). It is possible that both types of features (masonry fieldhouses and water and soil control systems) correlate with increased frequency of field use and an attendant reduction in the fallow cycle, as well as with changes in the land tenure system (Wilcox 1978:28).

This distinction is important, and has been modified for this discussion. Rather than representing year-round occupation by a single family, farmsteads are a variety of seasonally occupied farming shells. In our model, year-round residency at a site suggests it was a permanent node and should be considered part of a dispersed community. This distinction demonstrates an interpretive problem in Pueblo archaeology. Small structural sites are often recorded individually and considered to be independent occupational units, particularly when they contain a kiva. However, provided their basic function has not changed significantly in the last six to eight hundred years, kivas were used by organizations whose membership crosscut a range of kin groups (moieties, clans, lineages, and families). Thus, they reflect ritually integrative mechanisms at a community rather than kinship level. Just as every discrete group of rooms in a large village does not contain ritual space, it is not necessary for every room block in a dispersed community to have a kiva. Studies in the San Juan Basin (Marshall et al. 1979; Powers et al. 1983) and at Mesa Verde (Rohn 1977, 1989) have identified dispersed communities comprised of noncontiguous room blocks, many lacking kivas. Rather than reflecting a "rejection of the cheek-by-jowl existence of communal living" (Wilcox 1978:26 citing Bloch 1966:11), small permanent pueblos more likely represent segments of dispersed communities, whether kivas are present or not. Thus, small structural sites lacking kivas cannot be assumed to have functioned as fieldhouses or farmsteads. Only by looking for evidence of seasonal residence by task-specific groups or families can these varieties of SUFS be distinguished from small room

blocks belonging to a dispersed village.

B. Moore (1978:10, 1980:9-10) has presented two lists of characteristics defining SUFS which can be combined into a model of expected SUFS attributes that can be tested and refined by ethnographic and archaeological data. Though a rigorous test is beyond the scope of this study, the fit of observations made during data recovery to the expected pattern can be examined. The following variables comprise the model:

1. Site morphology and composition: Though SUFS may vary in morphology and composition, no more than three rooms should be present. Each room should share at least one wall with another room. At least one room should be large enough to permit occupation by at least one adult. Floor areas should be (roughly) no larger than that of contemporaneous habitation rooms in the same settlement system. The structure should be isolated; no other contemporaneous architectural unit should be present.

2. Ritual architecture: Kivas and other ritual features should be lacking. As temporary components of the settlement system, SUFS lack ritual functions.

3. Site location: SUFS should be located where their view of nearby fields is unimpaired.

4. Material remains: The range of activities reflected in the artifact assemblage at a SUFS should be limited relative to habitation sites or villages.

5. Pattern of use: One or more of three patterns of use should be evident: (a) daily, where overnight use is restricted to the period of crop ripening; (b) seasonal, with continuous use during the farming season; (c) throughout the year by travelers.

SUFS exhibiting evidence of daily use by task-specific groups with limited overnight stays (pattern a) are fieldhouses, while those evidencing seasonal occupation by entire family groups (pattern b) are farmsteads. Occasional use by travelers and wayfarers (pattern c) should be archaeologically invisible since transitory overnight use normally leaves few material remains behind.

Other aspects of SUFS are more amenable to study at the regional level, but are mentioned because they are important to understanding the model. B. Moore (1978:11) feels that SUFS result from inconvenience rather than site aggregation, with the *perception* of inconvenience being sufficient reason to construct them; site aggregation alone is not a satisfactory explanation for their use. Additionally, SUFS and other small sites were extensions of the village. As such, villages cannot be studied in isolation; they are inextricably linked to support sites located around them, and no single site is representative of the entire adaptive system. Finally, SUFS probably contributed to social stability. Besides providing shelter for farmers, SUFS may have served as refuges for people who were fed up with some aspect of village life and needed to escape from domestic tensions. This ability may have acted as a safety valve, preventing conflict and stress from building to the point where fissioning was the only alternative. At the very least, this mechanism may have slowed the process of group disintegration. However, it is doubtful that the resolution of conflict was responsible for the development of SUFS; rather, it is more likely that this function originated after they came into use.

Testing the Model

The test implications listed below should help determine whether LA 76138 was a fieldhouse, a farmstead, or part of a dispersed community. While it is unlikely that each test implication can be examined in detail with data from only one site, enough information should be recovered to allow an evaluation of site function relative to the SUFS model.

1. **Site morphology and composition:** If LA 76138 was a fieldhouse, the following characteristics are expected:
 - a. A field shelter should be present. Possible types include shades, ramadas, or small structures. If a structure is present it should contain at least one and no more than three rooms.
 - b. If more than one room is present, each should share at least one wall with another room.
 - c. At least one room should be large enough to permit occupation by at least one adult.
 - d. Floor areas in rooms should be consistent with the average for contemporaneous villages of the same settlement system or cultural tradition.
 - e. There should be no other contemporaneous structures present.
 - f. Evidence of substantial architectural effort should be absent. Structures should lack full-height masonry or adobe walls. Architecture should be unsuitable for cold season use.

If LA 76138 was a farmstead:

- a. More than three rooms may be present.
- b. If multiple rooms are present, each should share at least one wall with another.
- c. One or more rooms should be large enough to permit occupation by more than one adult.
- d. Floor areas in rooms should be consistent with the average at contemporaneous villages of the same settlement system or cultural tradition.
- e. There should be no other contemporaneous structures present; however, detached shades or ramadas providing exterior work space may be associated.
- f. Evidence of substantial architectural effort may be present. Structures might possess full-height masonry or adobe walls. Architecture may be suitable for cold season use.

If LA 76138 was part of a dispersed community:

- a. The number of rooms in individual structures will vary considerably--while there may be as few as one or two rooms present, there can also be more than three.
- b. If multiple rooms are present, they may not form a contiguous room block.
- c. One or more rooms should be large enough to permit occupation by more than one adult.
- d. Floor areas in rooms should be consistent with the average at contemporaneous villages of the same settlement system or cultural tradition.
- e. Other contemporaneous structures should be located nearby.
- f. Evidence of substantial architectural effort should be present. Structures should possess full-height masonry or adobe walls. Architecture should be suitable for cold season use.

Though subjective judgments are included in this set of characteristics (how much space is required by a single adult?), most are quite specific. Excavation of the structure and examination of the site for evidence of features that were not visible during surface inspection will facilitate comparison of observed site morphology with expected patterns.

2. Ritual architecture: Ritual architecture will be absent if the site was a fieldhouse or farmstead. Ritual objects related to farming may occur, but are not expected. If LA 76138 was part of a dispersed village, kivas and other ritual features may be present and generalized ritual objects might be recovered.

3. Site location: Land with agricultural potential should be located in direct line of sight with the structure if LA 76138 was a fieldhouse or farmstead. If it was part of a dispersed village, arable land should occur nearby but will not necessarily be in direct line of sight.

4. Material remains: The artifact assemblage should reflect a limited range of activities related to farming and equipment maintenance if the site was a fieldhouse. Trash should be surficial or restricted to shallow subsurface deposits. Material remains will be more substantial if the site was a farmstead. A midden should be located near the structure, and a range of activities suggesting occupation by an entire family should be reflected in the assemblage. Material remains should be even more substantial if the site was part of a dispersed village. A midden should be located 5+ m away from the structure, and a range of activities suggesting occupation by at least one family should be reflected in the assemblage.

5. Pattern of use: A limited use pattern should be evident if LA 76138 was a fieldhouse, reflecting daily use with occasional overnight stays. There should be evidence of continuous occupation for at least a season if it was a farmstead. Evidence of year-round occupation should be present if the site was part of a dispersed village.

The latter is perhaps the most difficult characteristic to study because the two use patterns proposed for SUFS may be indistinguishable from one another and, in some cases, from year-round occupancy. Fieldhouses should produce the fewest remains. Food preparation tools may be present, but food processing tools should be rare or nonexistent. Thus, manos and metates should be absent, and if present should demonstrate low cost and have little value beyond their immediate use. Artifacts associated with farming or tool maintenance may occur. Evidence of hunting or wild plant gathering might be present, but the processing of these foods should have occurred elsewhere unless they were used immediately after collection. Small animal remains should predominate in the faunal assemblage, reflecting hunting in fields to eliminate small herbivores or omnivores. Hearths should be outside the structure, and designed for food preparation rather than heating. No human burials should occur at fieldhouses.

Farmsteads should contain artifacts reflecting a wide range of food preparation, tool production, and maintenance activities. Architecture suitable for cold season use and interior hearths built for heating and cooking may occur, but ritual objects and features should be absent. There should be evidence of food processing as well as preparation--manos and metates might be present, in particular, if broken or evidencing little investment in manufacture. Trash disposal patterns may be less standardized and more haphazard than at sites occupied year-round. Middens should be shallow, and may be very near the structure. There should be evidence of the consumption of a wide range of animal types and sizes. Human burials will be rare if they occur at all. Burial of more than a single individual is not expected, and the site may have been abandoned immediately after an inhumation occurred.

Year-round occupancy should be reflected by a wide range of food preparation, tool production, and maintenance activities in the assemblage. Architecture should be suitable for cold as well as warm season use, and interior hearths should have been built for heating and cooking. Ritual architecture or objects may be present. Trash disposal should be standardized, with middens located 5+ m from the structure; trash deposits may be deep. There should be evidence of the consumption of a wide range of animal types and sizes. One or more human burials may occur, with placement in rooms, middens, or both. Site abandonment immediately after an inhumation occurred is not expected.

Data Required to Test the Model

Testing results suggest that LA 76138 was a fieldhouse or a farmstead. Preliminary analysis suggests that the latter is most likely. Data needed to test this proposition include architectural style and building techniques, feature types and placement, occupational date, range of activities performed, seasonality, location of fields, and the types and distribution of other components of the contemporary settlement system. More intensive investigations during data recovery should provide most of the requisite information. The exception to this are data concerning the contemporary settlement system, which must be obtained from other sources such as earlier survey, testing, and excavation projects.

Architectural data will be recovered by totally excavating the structure. Surface stripping and augering will be used to examine areas where external features that were not identified during earlier investigations might exist. Chronometric data will be recovered when available, and may include radiocarbon, tree-ring, archaeomagnetic, and obsidian hydration samples in addition to

temporally diagnostic ceramic and lithic artifacts. By using several chronometric techniques to provide dates it should be possible to determine whether some of the results are erroneous. Inconsistent dates could reflect site reoccupation, use of old wood in fires, collection of artifacts from earlier sites for reuse, or the presence of an earlier component.

Information on subsistence and range of activities performed should be available from midden deposits and the surface artifact assemblage. Ground stone tools used for processing vegetal foods should be present. The chipped stone assemblage should reflect a wide range of activities including hunting, tool manufacture and maintenance, and the processing of floral and faunal materials for use (for example, hide preparation and wood-working). Ceramic artifacts should evidence cooking as well as storage.

Floral and faunal remains can provide data on activities occurring at the site as well as seasonality. Faunal remains may be recovered from both the structure and midden. By ascertaining the types of animals and body parts present in the assemblage it may be possible to determine whether hunting was restricted to fields (rodents and small herbivores), occurred throughout the area (small to large animals including nonherbivores), or occurred in another part of the settlement system (limited body parts represented). Floral remains should be obtained by taking flotation samples from features and cultural deposits within and outside the structure. The presence of wild plant foods is indicative of collecting activities and can help determine the season of occupation as well as the relative importance of such foods in the diet. Faunal remains can also provide information on seasonality and the importance of wild dietary supplements. These data can help determine whether the site was occupied seasonally or year-round, and could be of critical importance in determining whether LA 76138 was a farmstead.

If LA 76138 was a farmstead, fields should have been located near or next to the structure. As the site overlooks a perennial stream valley, the most likely location for fields is on the floodplain next to the stream. In addition to being well watered, the floodplain is adjacent to a reliable source of supplemental water. Unfortunately, this area is outside project limits and cannot be investigated. Even were this possible, results would be problematic as this zone was also used for farming by later European occupants of the region. Studies of Pueblo agriculture in other areas indicate that rather than concentrating farming efforts in one zone, Pueblo farmers tended to spread their fields across the landscape (Bradfield 1971; J. Moore n.d.a). This was done to take advantage of the generally patchy distribution of adequately watered arable soils, and to ensure that no single disaster would destroy an entire crop.

Recent studies near Taos have associated a surface artifact scatter with an agricultural field (J. Moore n.d.b). The surface of the field was covered by a diffuse scatter of lithic and ceramic artifacts and lacked features. Analysis of subsurface sediments showed that the area was used for growing corn. If LA 76138 was a farmstead, the adjacent diffuse lithic and ceramic artifact scatter may reflect a similar usage. Sediment samples will be recovered from this area for pollen and/or phytolith analysis to examine this possibility.

Adaptations to the New Mexico Frontier: LA 76140

New Mexico was a frontier through most of its history, first to New Spain (1600 to 1821), then to Mexico (1821 to 1846), and finally to the United States (1846 to mid-twentieth century). Its role as a buffer for the interior provinces of New Spain and Mexico shaped much of its history. It remained a frontier during these periods because of distance from the interior provinces, the cost and difficulty of communication and transport, and continuous conflict with nomadic Indians. Though communication and transport costs decreased during the American Territorial period and conflict with nomadic Indians ended in the late nineteenth century, New Mexico remained a frontier into the twentieth century because of its small population and distance from centers of manufacture and consumption. It should be noted that throughout this discussion the terms *settlers* and *natives* are used without regard to ethnic origin. People moving onto a frontier are *settlers*, while *natives* are the population already resident there. Most discussions of frontiers are concerned with historic or geographic processes, and are hard to adapt to archaeological studies. A general discussion of frontiers is provided, followed by a model that attempts to apply these ideas to archaeological remains. Of particular interest to the model is the process of frontier acculturation.

The Frontier as Place and Process

Billington (1963) distinguishes between the frontier as a place and as a process. As a place the frontier is

a geographic region adjacent to the unsettled portions of the continent in which a low man-land ratio and unusually abundant, unexploited, natural resources provide an exceptional opportunity for social and economic betterment to the small-property individual. (Billington 1963:25)

By this definition, movement onto a frontier is an economic process, where individuals who lack wealth seek a chance to improve their economic situation. A frontier is also

the process through which the socioeconomic-political experiences and standards of individuals were altered by an environment where a low man-land ratio and the presence of untapped natural resources provided an unusual opportunity for individual self-advancement. (Billington 1963:25)

Again, this definition views the frontier as an economic process where movement into a new environment caused changes in the settler's social, economic, and political systems. Steffen (1980) criticizes this model, suggesting that it is not relevant to development of the American frontier past the first tier of states west of the Mississippi River (Steffen 1980). Rather than farmers struggling to tame the frontier, these later settlers were more closely linked to mercantile capitalism (Steffen 1980). Two types of frontiers are defined:

Mining and ranching were essentially expeditionary frontiers while the farming frontier was more sedentary in its nature. On the expeditionary frontier there was

an absence of a "settling" mentality. Individuals of the mining and ranching frontiers, while temporarily removed from "civilization," retained the value structure which they brought with them. On the farming frontier the settler often experienced an equal sense of removal from civilization, but he had no intention of returning. Individuals on the farming frontier were building their own civilization and in the process some of their original manners and customs were altered as an expedient to meet environmental circumstances. (Steffen 1980:25)

Thus, while changes in the settler's social organization and structure, customs, and subsistence patterns might be expected on a farming frontier, they should not occur on an expeditionary frontier. While movement onto the farming frontier resulted in value transformations, this did not occur with movement onto the expeditionary frontier because it remained closely linked to the mainstream culture (Steffen 1980).

In his discussion of frontiers and boundaries, Kristof (1959:272) notes that: "the frontier has, and always had, also a strategic meaning--the defensive line which keeps enemies out--and in this depends on support from the hinterland." Frontiers are also areas of integration, representing a transition from one way of life to another, where traits from both are assimilated (Kristof 1959:273). As a place, New Mexico was a frontier that provided a chance for economic advancement while serving as a defensive buffer, first for the inner provinces of New Spain and Mexico, then for the United States. As a process, the New Mexico frontier was a place where Spanish, Indian, and Anglo-American cultures overlapped and adapted to one another, producing an amalgam that was neither wholly one nor the other.

The degree of acculturation probably varied with wealth, the amount of interaction with other groups, and cultural biases. Rich individuals, particularly those of high social status, would be less likely to adopt the trappings of another culture, and more likely to try to preserve what they viewed as a traditional lifestyle. Poor people may have had no choice; partial assimilation of another lifestyle may have been necessary for survival. Such trends are demonstrated in the Spanish Colonial remains at St. Augustine, Florida (Deagan 1983). There, the proportion of aboriginal to European ceramics decreased as economic status rose. Among the European wares, the proportion of British trade ceramics to Spanish majolica and earthenware also decreased as economic status rose. Thus, access to the more desirable traditional commodities improved with economic status, and they were selected over other available merchandise.

No matter how close or attenuated contact between natives and settlers was, cultural bias could cause the acceptance or rejection of specific aspects of the other lifestyle. Traits seen as superior or adaptive might be assimilated, while those viewed as inferior are rejected. This is a two-way street--as settlers adapt to new environmental and cultural constraints, they will adopt native traits that are considered useful or necessary. In a similar fashion, the native population will adopt desirable traits from the settlers. However, there may also be a forced assimilation of economic, organizational, or religious traits, with settlers compelling the native population to accept their ways.

Acculturation may also depend on the type of frontier being settled. It may act in both directions on a farming frontier, with settlers and natives assimilating adaptive traits from each other. Acculturation is more likely to be one-way on an expeditionary frontier. Settlers should retain most of their traditional cultural baggage, while natives should assimilate traits from them.

This may be true of the late New Mexican frontier, where the Anglo-American population maintained close ties with its homeland while the native Hispanic, and to a certain extent Indian, populations were separated from their own.

The Frontier as a Dynamic Process

Because of the nature of expansion, frontiers are spatially and temporally impermanent (Lewis 1977:153). They change over time when events that occurred in the center of an occupied region are repeated on its periphery as the region expands outward (Lewis 1977:153). Chances for economic advancement decrease as frontiers become settled--unclaimed land becomes scarce and the best agricultural and pastoral areas are already occupied. New settlers begin to press beyond what had been the frontier in search of economic opportunity. A new frontier is formed, and the previous frontier becomes part of the hinterland.

Although New Mexico was a frontier to New Spain and Mexico, when viewed as a discrete spatial entity, it was also comprised of a hinterland and frontier. The hinterland was the core area along the Rio Grande where most of the population and wealth was concentrated. The frontier was the zone that surrounded the core area and, to some extent, protected it. The frontier represented a chance for economic advancement, and was settled by people who were willing to leave the relative safety of the core area in search of land or wealth.

This process is illustrated by movement into the Chama Valley (Quintana and Snow 1980). The first settlements in that area were small scattered homesteads. Rather than community grants, early settlers built on individual allotments and may have used the valley seasonally for livestock grazing. Occupancy became year-round as the region developed; more substantial homes were built, and multifamily plazas began to appear. This was a rapid process--the first individual grant was approved in 1724 and the first community grant in 1734 (Carrillo 1988; Quintana and Snow 1980). Conflict with Indians kept the frontier from expanding further outward until late in the Spanish Colonial period. Initially, the village of Abiquiú was on the edge of the frontier settlement zone. When herders and later farmers pushed beyond to develop lands to the north and west, Abiquiú stopped serving as an outpost and became a supply center (Van Ness 1980).

Thus, the location of the New Mexican frontier was variable, changing as areas on the fringe of the Spanish-occupied zone were settled or abandoned. The entire territory was a frontier during initial colonization. Later, a core area developed and expanded as the frontier was pushed outward by those seeking economic improvement. A lack of official support hindered this expansion, causing it to proceed slowly and suffer continual setbacks. This process underwent radical change as the United States came into close contact with New Mexico in 1821. Suddenly New Mexico was on the United States' frontier, and represented an area that could be exploited for economic gain. Led by trappers and traders, Americans began filtering into the region. Movement into this frontier increased after the area was acquired by the United States in 1846. These settlers considered both Spanish and Indians to be the native population. Thus, the position of the Spanish inhabitants of New Mexico was suddenly reversed--they were in the same position relative to the American settlers as Pueblo and other Indians had once been to them. Political and economic power had shifted hands, and the Spanish no longer completely controlled either. The process of acculturation began once again as both natives and settlers strove to adapt to these new conditions.

Socioeconomic and Cultural Change on Frontiers

Social change accompanies movement onto frontiers, and settlers often suffer a sudden loss of sociocultural complexity because of the attenuation of economic and social contact between frontier and core area (Doolittle 1973; Lewis 1973, 1977). Even so, Lewis (1977) suggests that settlers must maintain a higher level of sociocultural complexity than natives, and Casagrande and others (1964) feel that settlers must possess a technological superiority over natives, as well as a power advantage. Communication between frontier and core area are important, and a continuity of tradition with the parent culture is maintained (Casagrande et al. 1964). Doolittle (1973) distinguishes between *colonial* and *pioneer* societies. Colonial societies are almost completely dependent on the parent culture for economic and technological support, while pioneer societies are largely self-sufficient. These differences are relative, and may be a function of communication and transportation speed.

Frontier societies must also be adaptable. Because of the difficulties involved in transportation and communication, many goods may not be available on a frontier for long periods of time, the delivery of goods may be unreliable, or the cost of transport may make them so expensive that they are affordable by only a small part of the populace. When this situation prevails there may be a reverse acculturation—rather than the native population adopting the settlers technology, the settlers may be forced to adopt native technologies. Thus, there is evidence that Spanish settlers in New Mexico adopted native lithic and ceramic technologies to supplement or replace goods that were economically unavailable to them (D. Levine 1990; J. Moore 1988).

While frontier models consider adaptational changes in settlers, they are generally silent on corresponding changes in native societies. Obviously, native societies must adapt to the presence of settlers in their midst, and it is necessary to examine these processes before frontier adaptations can be understood. Native responses to settlement by outsiders should be conditioned by a number of factors including:

1. The degree of technological and organizational superiority displayed by the settlers;
2. The amount of interaction occurring between the groups;
3. Communication and transport costs between core area and frontier;
4. Cultural and political attitudes of one group toward the other;
5. The amount of sociocultural disruption caused by contact between settlers and natives;
6. The economic status of natives vis-à-vis settlers.

If settlers appear to have little organizational or technological superiority over natives and there is no perception of an advantage to be gained by their presence, there may be an outright and hostile rejection of the settlers. The movement of Americans onto the northern Plains is an example of this process. European contact with this frontier was based on the fur trade until the early 1800s, operating according to customs that were violated by Americans who began entering Indian lands to hunt and trap in addition to trading (Swagerty 1988:363). Indians allowed trading

posts to be built under the economically advantageous conditions of the early fur trade (Swagerty 1988). Their culture underwent significant changes in adapting to this economy, but those changes did not include accepting the presence of permanent settlers. The end of the Mexican War in 1848 brought a surge in westward movement, which was accelerated by the discovery of gold in California and the end of the Civil War (Utley 1988; Winther 1964). Resentful of the foreigners moving into their lands, Plains Indians unleashed a devastating campaign to drive them out. Many factors probably contributed to these hostilities; among them was a perception that the invaders were not militarily superior (because frontier defenses were weakened by the Civil War), and that there were no advantages to be gained by allowing them to remain.

Overwhelming technological or organizational superiority can result in an initial acceptance of settlers; however, if the deficits associated with colonization outweigh the benefits, organized resistance may eventually occur. Success or failure are dependent on the degree of technological or organizational superiority possessed by settlers. Initial Spanish settlement of New Mexico met little or no organized resistance (Bannon 1963; Sando 1979a). However, as the deficits associated with this occupation became clear, a rebellion was organized and the Pueblos were able to displace the settlers for twelve years (Sando 1979a; Simmons 1979).

The acculturation of settlers and natives to one another depends on the amount of contact occurring between the groups. This is tempered by the cost of communication and transport between frontier and core area as well as the cultural and political attitudes of one group toward the other. When settlers form elite enclaves and choose not to mix with native peoples except under controlled conditions, contact will be severely limited. While acculturation will occur, it may be slow and selective. Native groups might adopt desirable aspects of the settlers culture, but the settlers will maintain close ties with the core area and assimilate little of the native culture. However, as communication between frontier and core area becomes more difficult and expensive, the amount of native material culture assimilated by settlers should increase. If native groups reject the settler's culture passively rather than overtly, settlers might still be restricted to enclaves and natives may adopt few traits other than the goods they find desirable. The former process is illustrated by the British colonization of India, while the latter is exemplified by European attempts to establish colonies in China.

All of these processes can be affected by the amount of sociocultural disruption caused by contact between settlers and natives. This is best exemplified by early European colonies in the New World. Spanish settlers possessed little technological or organizational superiority over the native imperial powers of Mexico and Peru, yet small groups of adventurers were able to prevail over these powerful nations. In both cases, the appearance of Spanish settlers on the scene disrupted the balance of power and introduced new diseases to which the native populations had no immunity. In Mexico, Cortez was able to exploit dissension between the Aztecs and their vassal states and enemies, using the latter to cause the downfall of the former (Bray 1968; Cantu 1966). Aztec resistance was seriously affected by an outbreak of smallpox, which reduced the leadership as well as the general populace (Bray 1968; Cantu 1966). Smallpox also contributed to the Spanish conquest of the Incas in Peru by devastating the population before Pizarro's arrival (Hyams and Ordish 1963). The ruling Inca was one of the victims of this epidemic, setting in motion events that culminated in a bitter civil war as two of his sons fought for the throne (Hyams and Ordish 1963). Pizarro was able to exploit these conditions, and several of the more distant provinces eventually allied with him, seizing the opportunity to rid themselves of Inca rule. In both cases, extreme disruptions caused by the introduction of new diseases and alliances

with an outside power contributed to the defeat of nations that should have been able to resist the colonial efforts of foreigners under more favorable conditions.

Interaction between natives and settlers and the adoption of aspects of each culture can be conditioned by wealth and proximity. Rich individuals have fewer reasons to interact with the other population than do poor people--they can always hire others to act as go-betweens. Thus, as economic status increases, direct contact with the other population should decrease; conversely, as economic status decreases, interaction with the alien group should increase. Wealth also allows some individuals to better maintain the outward trappings of their traditional culture, or to acquire those of another culture. Thus, wealthy settlers are able to maintain their traditional material culture, while wealthy natives can more easily acquire the settlers' material culture. A similar differentiation should occur at the lower end of the economic scale. The greatest degree of acculturation to native customs and material culture should occur among poor settlers. Economically, they are less able to maintain their traditional material culture and more prone to adopting aspects of native culture that enhance their prospects for survival. Conversely, the least amount of acculturation in the native population should occur among poorer individuals, who are forced to maintain their traditional material culture because they can't afford to acquire that of the settlers.

A Model of Frontier Acculturation

While this discussion has considered New Mexico to be a frontier to New Spain, Mexico, and the United States, the model for examining LA 76140 will concentrate on the latter period. This research will continue studies begun at three sites near Abiquiú--Santa Rosa de Lima (LA 806), La Puente (LA 54313), and the Trujillo House (LA 59658). Significant variation in material remains from Spanish Colonial and Territorial occupations were found at those sites, reflecting differences in access to goods resulting from changing frontier and trade patterns. Although general access to manufactured goods was poor during the Spanish Colonial period, the situation was particularly dismal on the frontier. Few artifacts of distinctly European manufacture were found in Spanish Colonial deposits. Instead, the assemblage indicated heavy trade with local Indians for certain commodities, and some adoption of native technologies. Territorial period deposits demonstrated a different orientation. Dramatically improved access to manufactured goods was indicated, and was associated with a decreased reliance on native technologies.

These sites provide data concerning Spanish adaptations to the New Mexican frontier. Unfortunately, information from other cultural groups was lacking in that study. Analysis of LA 76140 during testing suggested it was occupied by Anglo settlers during the American Territorial period. More detailed studies will provide data that can be compared with the results of earlier work. It must be stressed, however, that this assignment of ethnicity is an assumption based on comparisons with a limited number of other sites from this period. In general, the trash disposal pattern and the possible presence of cabins suggest Anglo rather than Hispanic occupancy. While this assumption provides a basis for developing a research orientation, its validity must be tested during data recovery.

The primary question that must be addressed at LA 76140 is relatively simple, but its implications are quite complex. Succinctly stated, the main question that will be asked is:

What can these archaeological remains tell us about the ethnicity of site residents and the process of acculturation on the frontier?

The first problem that must be resolved is whether site occupants were settlers or natives. While the easiest way to address this problem will be to locate documents concerning the site, it is possible that such documentation does not exist or contains insufficient detail. Thus, it is necessary to construct a model that takes into account membership in both populations.

Settlers on a frontier maintain continuity with their parent culture. As Casagrande and others (1964:283) note, colonization is "a conscious effort to reconstitute a familiar way of life in an alien land." Native populations also maintain contact with their parent culture, even when the acquisition of material goods from settlers is desirable. Traits that are most likely to be acquired by either group are those that enhance adaptability. Those that will be retained include aspects of material culture that demonstrate group membership. The ability to accomplish both of these things is conditioned by wealth and proximity. The closest approximation of parent culture should be seen among wealthy settlers and poor natives. While the former can afford to copy and maintain their traditional lifestyle, it is difficult for the latter to acquire a new material culture. Sites belonging to members of these economic groups should be relatively easy to distinguish. When other strata of frontier society are represented, this will not be as easy to accomplish. In particular, sites belonging to poor settlers or wealthy natives should be similar because it is desirable for both to acquire some of the characteristics of the other. Poor settlers will often be forced to adopt characteristics of the native culture, which would help them adapt to the frontier. Wealthy natives may find it desirable to display their wealth, and one of the best ways to do this is to acquire expensive material goods, which will often include items imported by settlers.

Earlier studies at LA 76140 suggest that site occupants were neither wealthy settlers or poor natives. Thus, these remains reflect other strata of frontier society, and it is necessary to develop a set of test implications to determine the ethnicity of site occupants. Analysis of Territorial period remains at two sites near Abiquiú showed that while access to manufactured goods improved with the coming of the railroad, certain aspects of traditional material culture persisted. While it is not yet possible to determine whether this occurred for economic or cultural reasons, the latter is likely. At both sites, there continued to be a heavy reliance on native-produced pottery (both Indian and Hispanic) and the use of lithic artifacts for certain tasks. These artifact classes may be the key to determining ethnicity at sites of questionable cultural origin. Ceramics were more important in Spanish than British colonies. Hispanic assemblages from Florida, the Abiquiú area, and Santa Fe are dominated by kitchen activity related remains, which in turn are distinguished by a preponderance of pottery (Boyer 1988; Deagan 1983; Wiseman 1988). Chipped stone tools were used as components in fire-making systems (gunflints and strike-a-light flints), and as replacements for expensive and difficult to acquire metal tools (J. Moore 1988). While improved supply and transport seems to have superseded the latter use, the former was retained.

With these distinctions in mind, test implications can be generated. They include:

1. If site occupants were native Hispanics:

a. Material culture should be dominated by kitchen-activity related items, primarily

pottery. While other activity sets may be represented by a diverse range of artifacts, kitchen-activity related items should comprise a dominant proportion of the assemblage.

- b. A heavy reliance on locally produced pottery, both Indian and Hispanic, should be evident.
- c. Lithic artifacts should occur in the assemblage; they will be associated with other remains, and should reflect fire-making activities.
- d. Imported pottery may include Spanish wares.
- e. Log construction should consist of vertical members.

2. If site occupants were Anglo-American settlers:

- a. While kitchen-activity related items should comprise a large percentage of the assemblage, they will not dominate material culture remains. Other activities should be represented by roughly equivalent percentages of related artifacts.
- b. Little locally produced pottery should occur.
- c. If lithic artifacts occur, they should reflect an earlier occupation of the area, and should not be in direct association with the rest of the assemblage.
- d. Imported pottery should be dominated by American and British produced wares; Spanish wares should be absent.
- e. Aspects of native culture in the assemblage should be subsistence related. These may include specialized tools and foods; limited numbers of utilitarian objects might also occur.
- f. Log construction should consist of horizontal members.

While it is assumed that certain classes of artifacts are ethnic markers, other possibilities must also be considered. Transport cost and difficulty are important aspects of frontier acculturation. Settlers are more apt to adopt parts of the native adaptational system when it is difficult and expensive to acquire those goods from the parent culture. The attenuation of contact with New Spain caused Spanish settlers in New Mexico to adopt aspects of native culture as noted above. By the time LA 76140 was occupied, the movement of manufactured goods was much more efficient and less expensive. Settlers would be expected to assimilate few aspects of native material culture under these conditions. If use of the artifacts assumed to be ethnic markers in the model is, instead, a function of economics, there may be no easily discernable differences between settler and native assemblages. While the Abiquiú sites were of a similar age and contained evidence of continuity in material culture, that area is much further away from the main supply centers and transport corridors. Were cultural factors responsible for the retention of traditional material culture in that area or was it due to transport costs? The latter might be indicated if LA 76140 was occupied by local Hispanics and has an assemblage that is

indistinguishable from Anglo sites of similar date.

A final topic that must be considered is the part of the settlement system represented by these remains. The model is aimed at examining residential sites. Evidence of cabins at this site would suggest such a use. However, if the features defined during testing are related to a temporary occupation, certain aspects of the model must be reconsidered. Should ethnic markers be expected on seasonally occupied sites? The distinction drawn between fieldhouses and farmsteads during the discussion of LA 76138 might be extended to this possibility. Two types of seasonal use can be defined--short-term occupation by task-specific groups and seasonal residence by an entire family. In the first case, the assemblage should be limited and contain few if any cultural markers. In the second, the assemblage should be very similar to that of a residential site, but considerably fewer artifacts should occur. Thus, if a short-term occupation by task-specific groups is indicated, a settler's site might be hard to distinguish from a native site. If seasonal use by an entire family is indicated, differences similar to those exhibited by residential sites should be visible.

Data Required to Test the Model

Several types of data are needed to test this model. The most important may be those available in documents. While it will be possible to partially test the model without documentary data, precise information on site residents and occupational date are needed to accurately define ethnicity, market access, and site function. In the absence of documentary information it will be possible to come to some conclusions concerning ethnicity and market access, but a rigorous test requires some documentation of site residents. Documentary sources that may provide needed data include deeds and tax assessment rolls.

Construction information should be provided by more detailed investigations, allowing determination of the types of structures present at LA 76140 and how they were built. In the absence of documentary sources, this should aid in defining site function. Excavation will also provide information on material culture. These data are critical to any tests of the model, whether the ethnicity of site residents and dates of occupation are available from documentary sources or not. Lacking documentary data, the artifact assemblage should contribute information on the date of occupation, and can be examined in light of the model to provide an estimation of ethnicity. These conclusions can then be compared with data from other sites of comparable age and known ethnicity to evaluate their accuracy. When contrasted with documentary data, assemblage data will allow a more comprehensive evaluation of the model and its predictive capabilities.

The artifact assemblage should also provide information on the range of activities that occurred at the site. This will be important to an assessment of its position in the settlement system. Information on subsistence should be provided by faunal specimens, botanical samples, and other material remains such as cans and bottles. These data are needed to assess the degree of subsistence acculturation demonstrated by site occupants, particularly since this is the area in which settlers are most likely to have adopted native traits.

Finally, accurate information on the ethnicity of site occupants and the date of occupation will allow an assessment of the degree of acculturation demonstrated by the artifact assemblage.

Again, by comparing and contrasting these data with other sites of comparable age and varying ethnicity, it should be possible to come to a preliminary assessment of how frontier acculturation varied with wealth, distance to market centers, and cultural origin.

FIELD AND ANALYTIC METHODS

by James L. Moore

General Excavation Procedures

The first step in excavation will be reestablishment of a grid system that will be used to provenience collection and excavation units. Surface artifacts will be collected in 1 by 1 m grids. Hand tools will be used to excavate cultural deposits. Mechanical equipment will be used where needed to strip disturbed or sterile overburden or areas lacking surface remains.

Excavation by strata is considered optimal because they tend to represent specific depositional episodes. Therefore, exploratory units will be excavated into features to aid in defining their natural vertical and horizontal structure. Excavation units will consist of 1 by 1 m grids, and will be dug in arbitrary 10 cm vertical levels unless natural stratigraphic divisions are encountered. When natural divisions are found they will be used to delimit the boundaries of a level. These unit sizes allow the desired amount of control over recovered materials.

Excavation will be expanded outward from exploratory grids to determine the nature and extent of cultural deposits and features that are encountered. Surface stripping will be used to attempt to define features that are not visible from the surface. Excavation of features or other cultural deposits will continue until sterile soil is encountered.

All soil recovered from undisturbed contexts will be screened through ¼-inch mesh hardware cloth, with all artifacts being removed and bagged for analysis. Artifacts found on floors or other occupational surfaces will be mapped in place and bagged separately. Pollen and flotation samples will be collected from all prehistoric cultural strata and from the surfaces of any floors or occupational surfaces found. Pollen samples will also be obtained from suspected prehistoric farming areas within site and project boundaries. In addition, an off-site pollen control sample will be collected to aid later analysis. Flotation samples will be taken from each historic cultural stratum and feature encountered. If available, charcoal, tree-ring, and archaeomagnetic samples will be collected to aid in identifying the period of occupation.

Areas in which features or surface artifacts are not visible will be investigated using a soil auger to determine whether subsurface cultural remains are present. All materials removed by auger will be screened through ¼-inch mesh hardware cloth, and artifacts recovered in this way will be collected and bagged for analysis. If subsurface cultural deposits are found in an auger hole, that area will be more intensively investigated using the methods outlined above, or will be trenched by backhoe to delineate the extent of buried remains.

Structural features will be completely excavated, and data concerning technique and style of construction as well as use will be collected. These data will aid in analyzing site residence patterns, construction sequence, remodeling, and number and type of occupations.

Discovery of burials during data recovery seems unlikely. LA 76138 was a limited use site where the probability of on-site death and interment are low. We do not expect to find

human remains at this site. LA 76140 appears to have been a residence occupied in the late nineteenth century, and on-site burials are again unlikely. Related interments should be in cemeteries, and we can assume that no human remains will be found at this site. However, should human remains be discovered at either locale, standard archaeological excavation techniques will be employed to remove them after consultation with appropriate review authorities has been completed. They include definition of the burial pit, use of hand tools to expose skeletal materials, mapping and photographing of the position of the skeleton and any grave goods, and retrieval of soil for pollen analysis.

Field treatment of human remains and other sensitive cultural discoveries will be based on the Museum of New Mexico policy adopted March 20, 1986, "Collection and Display of Sensitive Materials" (SRC Rule 11; Appendix 2). If human remains or other sensitive materials are uncovered, no person will be allowed to handle or photograph them except as part of scientific data recovery efforts. Data recovery related photographs of sensitive materials will not be released to the media or general public. As both sites are on private land, human remains will be treated in accordance with state law. Should human remains be encountered, local law enforcement officials and the State Historic Preservation Officer will be notified and necessary consultations will be completed before the remains are excavated. Excavation will be carried out under blanket permit ABE-34. Interested parties including relatives (if they can be found) or local Indian Tribal organizations will also be informed, and will be consulted concerning disposition of the remains and any grave goods.

All tests and features will be mapped using a transit and stadia rod or 30 m tape. Artifacts will be provenienced by grid and excavation unit (either arbitrary 10 cm level or natural stratum), or by exact location when such treatment is warranted as outlined above. Plans and profiles of individual features and exploratory grids will be drawn, and standard recording forms will be completed. Features will be photographed before and after excavation.

In general, both sites will be approached similarly using the methods described above. Specifically, however, there will be a few differences in the approaches used. Data recovery efforts at LA 76138 will focus on the structure and shallow midden identified during testing. Most of the data needed to examine the model developed for this site should be available from these features. The interior of the structure will be entirely excavated. Grids will also be excavated adjacent to the exterior of the structure to examine construction techniques and identify related features. Any features discovered in this fashion will be completely excavated. At least 50 percent of the midden will be excavated to recover information related to site occupation. All visible surface artifacts will be collected in 1 by 1 m grids. A series of auger holes will be used to examine the artifact scatter for features that are not visible from the surface, and to collect pollen samples to determine whether that area was used as a field. It is estimated that 15 to 20 cu m of fill will be removed during data recovery at LA 76138.

Excavation at LA 76140 will concentrate on the features identified during testing. All three rock pile features will be completely excavated, and adjacent areas will be surface-stripped to determine whether other structural remains are present. If associated structural remains are found, at least 50 percent of each structure will be excavated. Further excavation will be conducted as warranted by artifact content or the condition of the structure. In the latter case, poor definition of building elements will necessitate more extensive excavations. In addition, the post hole (Feature 4) will be excavated, and a 2 to 4 m diameter area centering on this feature

will be surface stripped to determine whether other related features are present. All visible surface artifacts within proposed project boundaries will be collected in 2 by 2 m grids. Auger holes will be bored in areas containing surface artifact concentrations to determine whether subsurface trash deposits are present. It is estimated that between 10 and 15 cu m of fill will be removed during data recovery at LA 76140.

Unexpected Discoveries

There is always a risk of finding unexpected deposits or features during an archaeological excavation, and the project outlined in this plan is no exception. The procedure that will be followed in the event of an unexpected discovery will vary with the nature and extent of the find. Should human remains be found, appropriate consultations will be completed, and they will be treated according to the procedures outlined above and in Appendix 3. Small features, structures, or cultural deposits that were not located during survey or testing will also be excavated according to the procedures outlined above. On the other hand, finds that have the potential to significantly alter the scope and intent of this plan will require consultation with the New Mexico State Highway and Transportation Department, the State Historic Preservation Officer, and other agencies involved in permitting. As the existing road bed adjacent to both sites was cut into bedrock or sterile deposits, it is likely that no intact cultural deposits lie under the existing road at either location.

Analysis

Laboratory analysis will be conducted by the staff of the Office of Archaeological Studies and qualified professional consultants. The types of cultural materials anticipated and brief descriptions of the kinds of information desired from each are presented below.

Ceramic Artifacts

In order to assign date, origin, and function to locally made pottery, a detailed analysis of morphological attributes will be undertaken. Sherds will be identified by existing type name and vessel form. Other attributes that will be studied include rim form and cross section, vessel diameter, paste texture and color, temper, surface color and finish, slip, design style, thickness, and alterations such as burning, smudging, reuse, and mending. Examination under a binocular microscope will facilitate this analysis. The analysis of Euroamerican pottery will differ from this approach, and is discussed along with other categories of historic artifacts.

Pottery from LA 76138 should provide information in several critical areas. In particular, this assemblage will provide temporal data that can be compared with dates from other sources to assess their reliability. This information will be provided by using such attributes as rim form and cross section, paste color and texture, temper, surface color and finish, slip, design style, and thickness to assign sherds to existing types with known dates. These attributes can also be used to determine where many vessels originated, providing information concerning ties to other sites.

Close ties to Pecos Pueblo are expected, as LA 76138 is thought to be part of its settlement system.

Functional assignments will be made on the basis of vessel form and diameter, and alterations such as burning, smudging, reuse, and mending. These data can then be compared to the pattern predicted for farmstead use, and tentative conclusions concerning site function can be made. In turn, these conclusions can be compared with other data sets in an overall examination of site function. Both storage and cooking vessels are expected. Sherds should be relatively common, and should represent a number of vessels of varying form and function. Imported ceramics may be present; the assemblage should be dominated by local utility wares, though local decorated wares may occur.

Chipped Stone Artifacts

Chipped stone artifacts will be studied to provide data on material procurement and selection, activities, and alterations to enhance flaking quality. Certain attributes will be studied on all chipped stone artifacts. Material type and texture will provide data on selection and source, and in particular whether materials were procured nearby or from distant locations. The type of cortex present will also be used as an indicator of material origin--while some types suggest procurement at the source, others indicate secondary deposits. In conjunction with other studies, these data will provide information on mobility and ties with other regions. Chipped stone artifacts will be classified by morphology and presumed function, which will provide a basic categorization of activities employing chipped stone tools as well as a basis for more intensive analyses. They will also be examined for evidence of thermal alteration to enhance flakeability, a process that is tied to reduction strategy and the suitability of materials for reduction. The flakeability of some materials can be improved by heating, and this can be an important aid in strategies aimed at formal tool production while it is less important in strategies based on informal tool use.

A range of other attributes will also be examined, depending on artifact morphology. Information on group mobility and tool production can be derived from an analysis of the reduction strategy employed. The reduction process produces three basic by-products: debitage, cores, and formal tools. Debitage and cores are the immediate by-products of this process, while formal tools are by-products that were modified to produce a specific shape. While the former categories provide information about the reduction strategy employed, the latter provide data on tool-using activities. Thus, different attributes will be examined for each of these broad categories.

Debitage and cores will provide information on reduction strategies. Attributes used for this analysis will include debitage type, amount of cortical surface, artifact portion, and size. Cores will be morphologically identified by the direction of removal and number of striking platforms, providing basic information on how they were reduced. Flakes are debitage that were purposefully removed from cores, and can provide critical data on reduction technology. Hence, several attributes will be analyzed on this class of artifact including platform type and modification, platform lipping, direction of dorsal scarring, and distal termination.

Formal tools will be identified by morphology and wear patterns. Informal tools will be identified by the presence of marginal retouch or use-wear patterns along one or more debitage edges. A binocular microscope will be used to identify and classify retouch and wear patterns on all tools, and utilized or retouched edge angles will be measured. All evidence of edge modification will be recorded for informal tools, while evidence of use or modification unrelated to production will be recorded for formal tools. These attributes will provide information on activities employing chipped stone tools.

Data from lithic artifact analysis is important to the investigation of LA 76138. Information concerning basic site function, mobility, and ties with other regions can be derived from these studies. Chipped stone artifacts should reflect an expedient reduction strategy, and there should be little or no evidence of purposeful thermal alteration. A wide range of subsistence-related, manufacturing, and maintenance activities should be represented. While local materials should predominate, exotic materials may occur in small quantities. Biface manufacture and use should be restricted to special-use tools (as defined by Kelly 1988). Evidence of large unspecialized bifaces serving as cores as well as tools should not be found.

If LA 76140 was an Anglo-American residential site, the lithic artifacts noted during testing should evidence no direct association with the historic remains. If it was occupied by natives or its occupants were acculturated to local customs, the lithic artifacts might be associated with other historic materials. In the former case, the expected reduction strategy could either be predicated on curated or expedient manufacture, depending on temporal and cultural affiliation. In the latter, evidence of an expedient reduction strategy should be present, as should tools diagnostic of historic use such as strike-a-light flints and gunflints.

Ground Stone Artifacts

Like the chipped stone assemblage, ground stone artifacts will be studied to provide data on material procurement and selection, range of activities, and alterations. Raw material choice, procurement costs, and the cost of producing specific tools will be studied by examining material type and quality, preform morphology, production input, plan-view outline form (a measure of the regularity of artifact form), and ground surface texture. Because ground stone artifacts are large and durable, they may undergo a long life history and be used for a variety of purposes, even after being broken. Several attributes will be used to monitor artifact life histories by identifying post-manufacture changes in form and treatment. They include size, heat alterations, portion represented, evidence for sharpening the grinding surface, wear patterns, physical alterations for secondary use, and the presence of adhesions. Relative tool and assemblage age will be measured by examining the cross section form of manos, and the depth and cross-section of metate grinding surfaces.

Ground stone artifacts were found at LA 76138 during testing; none were noted at LA 76140, and it is expected that none will be recovered during data recovery. Thus, this discussion will only address the former site. The attributes listed above allow evaluation of the types of activities using ground stone tools represented, and assemblage cost and value. Cost is the amount of time and energy invested in procurement, preparation, and shaping. Value is a measure of how used or "worn out" an artifact is. As with other artifact classes, fieldhouse versus farmstead use should be reflected in the ground stone assemblage. Since fieldhouses were used

on a short-term basis they should lack evidence of food preparation. Thus, manos and metates should be absent. If other types of ground stone are present, they should demonstrate low cost and value--manufacture should be expedient and little effort should have been invested in procurement, shaping, and preparation. The artifact(s) should have little value beyond its immediate use.

As Bandelier (1890:313-314) noted, utensils were transported between historic farmsteads and main residences. Thus, it is likely that ground stone artifacts that retained value (i.e., were not badly worn or were suitable for another use) might not be left at farmsteads. While ground stone artifacts, particularly those used in food preparation, might occur at a farmstead, they should be worn, broken, or of little value. Tools that retained value should have been returned to the main residence at the end of a season of occupation. Complete ground stone tools at a fieldhouse should be worn out, of expedient manufacture, or so heavy that transport to another location was not economically desirable. Ground stone tool fragments demonstrating significant investment in procurement, shaping, and preparation are expected to show evidence of secondary use subsequent to breakage. In other words, artifacts that retained value even after being broken should have been recycled.

Faunal Remains

Faunal analysis will concentrate on the identification of species, age, bone element, and condition to aid the documentation of food procurement and consumption patterns. Data concerning the use of faunal materials as tools, and information on butchering and processing methods will also be collected. As is the case with other types of formal tools on a site, bone tools can provide information on activities occurring at that locale. Thus, bone tools will be categorized by morphology and wear patterns.

This information will be especially important to studies at LA 76138. Faunal procurement and consumption patterns should vary between fieldhouses and farmsteads. As defined earlier, fieldhouses are locales occupied on a short-term basis by task-specific groups involved in agricultural activities. Evidence of hunting should be confined to species available in and around fields. While small game might be eaten on-site, large game would most likely have been transported to the main residence for processing and consumption. Much of the small game taken at fieldhouses would be consumed there because animals like pocket gophers and rabbits provide little meat for more than a meal. Large game, on the other hand, would provide more meat than could be consumed during a short-term fieldhouse occupation, and would be a prime commodity for sharing with family and friends. Thus, faunal remains at fieldhouses should be dominated by small game, particularly those attracted to fields. Evidence of nonlocal fauna should not occur, with the possible exception of broken and discarded bone tools.

Farmsteads, on the other hand, are small residences occupied by a family for one or more seasons. A wider range of hunting activities should be visible at this type of site. In addition to small game taken in and around fields, the hunting and on-site consumption of large game might also occur, and could include species from distant locales. Attributes used to distinguish between fieldhouses and farmsteads will include species, bone elements, and artifact condition. Species identification will help determine the types of animals consumed and where they were obtained. Analysis of bone elements will also aid in these investigations--the occurrence of

certain elements (such as feet) may indicate nearby or on-site procurement, while their absence might mean the opposite. The condition of bone elements will also provide information on consumption patterns. Evidence of burning, roasting, or boiling provides details on the processing of faunal materials as well as corroborating their economic use. Cut marks provide similar information, and are also indicative of economic use.

By estimating the age of fauna consumed at a site it is often possible to determine the season of use. Many species reproduce at specific times of the year, and the presence of infant or immature specimens allows the timing of procurement to be estimated. If available, these data should demonstrate use during late spring or late summer to early fall for fieldhouses, and farmsteads should evidence use from late spring to early fall.

Analysis of faunal remains from LA 76140 should provide information on the economic orientation of site occupants. Domestic animals should dominate the assemblage. The range of elements represented and butchering patterns will be used to determine how and where meat was procured. Evidence of axe butchering and the presence of elements from skulls, feet, and pelvis would suggest on-site butchering and processing. In this case, it is possible that site occupants were raising animals for consumption. The presence of saw-cut bone representing a limited range of elements and meat cuts would suggest that meat was bought from a merchant. As discussed above, evidence of burning, roasting, or boiling provides details on the processing of faunal materials as well as confirming their economic use. Similarly, the age distribution of individuals represented in the assemblage may provide information on season(s) of use.

Floral Remains

Three types of floral remains may be gathered during data recovery. When possible, macrobotanical specimens such as corncobs, nuts, charcoal, and seeds will be separated from other materials during excavation. Other botanical materials will be obtained from flotation and pollen samples. While both types of samples will be taken from each prehistoric stratum defined, only flotation samples will be obtained from historic remains. Where possible, macrobotanical samples will be identified to the specific level. Selected charcoal samples from prehistoric contexts will be submitted for radiocarbon dating. Other macrobotanical and flotation samples will be used to provide information on subsistence and seasonality.

If LA 76138 functioned as a fieldhouse, little use of wild plant foods is expected. While wild plant foods may have been gathered around a fieldhouse, their preparation and consumption should have occurred at the main residence. Exceptions to this might include wild foods requiring little or no preparation prior to consumption, like nuts. If the site was used as a farmstead, however, the preparation and consumption of wild plant foods is expected to have occurred.

Pollen samples will provide two types of information. If samples are obtained from undisturbed prehistoric contexts, they can be used to compare the local environment at the time of occupation with that of the present. Additional samples will be used to investigate the possibility that the surface artifact scatter represents a prehistoric field. If so, pollen from crops like corn may be present in small quantities. Analysis of pollen samples from this context will be aimed at investigating this possibility rather than environmental reconstruction.

Macrobotanical and flotation samples from LA 76140 will be used to examine economic and consumption patterns. Traditional crops and some wild plant foods may occur if the site was occupied by natives; native foods are not expected if residents were settlers. If parts of economic plants are identified, they may help define the economic orientation of site residents. Plant parts like cornstalks and beanpods may occur if they were raising their own food, but should be absent if they were not. Unfortunately, the absence of such materials is not definite evidence for the latter.

Historic Artifacts

This class of artifacts includes Euroamerican sherds, glass, metal, leather, plastic, and cloth. Historic artifacts should only be recovered from LA 76140, and will represent the bulk of materials found there. The most important attribute monitored by this analysis will be function. Artifacts will be arranged in categories related to basic human activities such as subsistence-production and indulgence. Within these categories, artifacts will be further subdivided by type and specific function. Other variables that will be studied include material type, evidence of source, and manufacturing date.

Material type provides a secondary method of categorizing artifacts. While this attribute was not chosen to be the focus of analysis, it will be recorded because it can be an important aid in dating artifacts. In addition, many other analyses *are* categorized by material type, so this information is necessary for comparison. Evidence of source includes attributes such as "manufacturer" and "brand name," where the former refers to the company that made an artifact and the latter to the product it contained. These attributes can provide information on where an artifact originated and the size and scale of the mercantile network a site was tied into. Several attributes will be used to assign dates to artifacts, when possible. They include seams on bottles and cans, bottle finishes, can seals, glass color, size or volume, and pottery decoration styles. By combining these data with information on the maker of an artifact, it is often possible to very accurately determine the manufacturing date.

These attributes are critical to testing the model discussed earlier, whether documentary information on occupational date and the ethnic background of site occupants is available or not. In conjunction with documentary information, these data will permit a critical evaluation of the model. Lacking this information, it will allow a tentative assignment of occupational date and ethnic identity, permitting comparison with other, better documented sites. While this will not allow a rigorous test of the model, it will at least permit its evaluation.

As LA 76140 is thought to have been occupied by Anglo-American settlers, the kitchen-related (or domestic) activity set should not dominate. Other functional categories such as construction/maintenance and indulgences should also comprise large parts of the assemblage. Locally manufactured items are not expected; in particular, local pottery should not occur. As noted earlier, historic chipped stone tools like strike-a-light flints and gunflints should not be present.

Human Remains

As discussed in the section on field methodology, the probability of locating and recovering human remains is low. If any human remains are recovered, the sample should be extremely limited. Under such circumstances, it will not be possible to establish that they are representative of the human biological populations that created a site. The main goal of skeletal analysis will therefore be a nondestructive study of the remains in order to add to our general knowledge of prehistoric human populations, rather than to address specific questions raised in the research design. This nondestructive approach will include standard metric studies, aging and sexing of the remains, and documentation of pathologies.

Documentary Research

Archival research will be conducted to identify documents pertinent to LA 76140 and the historic occupation of the study area. Types of information being sought include the names, origin, and backgrounds of site residents, date of occupation, and range of economic activities performed there. By comparing this information with the analytic results it should be possible to assess the accuracy of the model developed earlier. In turn, this will permit an assessment of the ability of material remains to predict ethnic identification.

Research Results

The final data recovery and analysis report will be published in the Office of Archaeological Studies *Archaeology Notes* series. The report will present all important excavation, analysis, and interpretive results, and will include photographs, site and feature plans, and data summaries. Field notes, maps, analytic notes, and photographs will be deposited with the Archaeological Records Management System of the State Historic Preservation Division, currently located at the Laboratory of Anthropology in Santa Fe.

If human remains (including any associated burial goods) are recovered, their disposition will be based on consultations carried out in accordance with State regulations. No disposition of the remains will be completed until the wishes of concerned parties have been documented. Unless an alternative disposition is established through consultation, the remains will be submitted to the Museum of New Mexico Archaeological Repository, for physical storage at the forensic laboratory of the Department of Anthropology, University of New Mexico. Other artifacts will be submitted to the MNM Archaeological Repository for storage.

CONCLUSIONS AND RECOMMENDATIONS

Testing was conducted at two sites--LA 76138 contains a two-room Pueblo IV-V structure and associated lithic and ceramic artifact scatter, and LA 76140 is a nineteenth-century homestead. Intact cultural deposits and features were found at both sites, indicating that they have the potential to provide information on local prehistory and history. This suggests that a more intensive phase of data recovery may be necessary. Thus, a plan for recovering this information has been developed and is incorporated into this report. The plan includes research designs for each site, outlining questions that will be addressed with information recovered during more intensive investigations, and the field and analytic procedures that will be followed. These investigations should provide information on the late prehistoric Pueblo farming system, as well as acculturative processes on the Southwestern American frontier.

REFERENCES CITED

- Agogino, George A.
1968 A Brief History of Early Man in the Western High-Plains. In *Early Man in North America*, edited by C. Irwin-Williams, pp. 1-5. Eastern New Mexico University Contributions in Anthropology 1(4):1-5.
- Anschuetz, Kurt F.
1986 *Archaeological Excavation of Two Human Burials within the U.S. 285 Right-of-Way at Pojoaque Pueblo, Santa Fe County, New Mexico*. Laboratory of Anthropology Notes No. 353. Museum of New Mexico, Santa Fe.
- Baltz, E. H., Jr., and G. O. Bachman
1956 Notes on the Geology of the Southeastern Sangre de Cristo Mountains, New Mexico. In *New Mexico Geological Society Guidebook*. Seventh Field Conference, Southeastern Sangre de Cristo Mountains, New Mexico, pp. 96-108.
- Bandelier, Adolph F.
1890 *Final Report of Investigations among the Indians of the Southwestern United States, Carried on Mainly in the Years From 1880 to 1885, Part 1*. Papers of the Archaeological Institute of America 3. Harvard University Press, Cambridge.
1892 *Final Report of Investigations among the Indians of the Southwestern United States, Carried on Mainly in the Years From 1880 to 1885, Part 2*. Papers of the Archaeological Institute of America 4. Harvard University Press, Cambridge.
- Bannon, John Francis
1963 *The Spanish Borderlands Frontier, 1513-1821*. Holt, Rinehart, and Winston, Inc., New York.
- Billington, Ray A.
1963 *America's Frontier Heritage*. Holt, Rinehart, and Winston, Inc., New York.
- Bloch, M.
1966 *French Rural History: An Essay on its Basic Characteristics*. University of California Press, Berkeley.
- Boyer, Jeffrey L.
1988 La Puente: Eighteenth Century Village Life on the Rio Chama Frontier. Paper presented at the 1988 New Mexico Archaeological Council Conference on Current Research on Late Prehistoric and Early Historic New Mexico, Albuquerque.
- Bradfield, Maitland
1971 *The Changing Pattern of Hopi Agriculture*. Royal Anthropological Institute of Great Britain and Ireland Occasional Paper No. 30, London.

- Bray, Warwick
1968 *Everyday Life of the Aztecs*. Dorsett Press, New York.
- Bryan, K., and J. H. Toulouse, Jr.
1943 The San Jose Non-Ceramic Culture and its Relation to a Puebloan Culture in New Mexico. *American Antiquity* 8:269-290.
- Cantu, Caesar C.
1966 *Cortes and the Fall of the Aztec Empire*. Modern World Publishing Co., Los Angeles.
- Carrillo, Charles M.
1988 Santa Rosa de Lima de Abiquiú. Ms. on file at the Laboratory of Anthropology, Museum of New Mexico, Santa Fe.
- Casagrande, Joseph B., Stephen I. Thompson, and Phillip D. Young
1964 Colonization as a Research Frontier: The Ecuadoran Case. In *Process and Pattern in Culture: Essays in Honor of Julian H. Steward*, edited by R. A. Manners, pp. 281-325. Aldine Publishing, Chicago.
- Deagan, Kathleen
1983 *Spanish St. Augustine: The Archaeology of a Colonial Creole Community*. Academic Press, New York.
- Doolittle, Grayson
1973 Culture and Environment in the Cumberland Frontier. *Papers in Anthropology* 14(1):31-43. University of Oklahoma, Norman.
- Ellis, Florence H.
1987 The Long Lost "City" of San Gabriel del Yunque, Second Oldest European Settlement in the United States. In *When Cultures Meet: Remembering San Gabriel del Yunque Oweenge*, pp. 10-38. Sunstone Press, Santa Fe.
- Ellis, Richard N. (editor)
1971 *New Mexico Past and Present*. University of New Mexico Press, Albuquerque.
- Fenneman, Nevin M.
1931 *Physiography of the Western United States*. McGraw-Hill Book Co., Inc., New York.
- Fliedner, Dietrich
1981 *Society in Space and Time, an Attempt to Provide a Theoretical Foundation from an Historical Geographic Point of View*. Selbstverlag des Geographischem Instituts der Universitat des Saarlandes. Saarbrücken.
- Folks, James J.
1975 *Soil Survey of Santa Fe Area, New Mexico--Santa Fe County and Part of Rio Arriba County*. Government Printing Office, Washington, D.C.

- Forbes, Jack D.
1960 The Pueblo Revolt. In *Apache, Navajo, and Spaniard*, by J. D. Forbes, pp. 177-181. University of Oklahoma Press, Norman.
- Ford, Richard I., Albert H. Schroeder, and Stewart L. Peckham
1972 Three Perspectives on Puebloan Prehistory. In *New Perspectives on the Pueblos*, edited by A. Ortiz, pp. 19-40. University of New Mexico Press, Albuquerque.
- Goolsby, Robert S.
1965 Geology of the Largo-Cañoncito Area, Santa Fe County, New Mexico. Unpublished M.A. thesis, Department of Geology, University of New Mexico, Albuquerque.
- Griggs, R. L., and G. E. Hendrickson
1951 *Geology and Ground-Water Resources of San Miguel County, New Mexico*. New Mexico Bureau of Mines and Mineral Resources Ground-Water Report 2.
- Gunnerson, James H.
1969 Apache Archeology in Northeastern New Mexico. *American Antiquity* 34:23-39.

1988 Apaches at Pecos. In *Pecos, Gateway to Pueblos and Plains*, edited by J. V. Bezy and J. P. Sanchez, pp. 40-44. Southwest Parks and Monuments Administration, Tucson.
- Guthe, Carl E.
1917 Field Notes for Excavations at Rowe Ruin. On file at the Laboratory of Anthropology, Santa Fe, New Mexico.
- Hall, G. Emlen
1984 *Four Leagues of Pecos, A Legal History of the Pecos Grant, 1800-1933*. University of New Mexico Press, Albuquerque.
- Hammond, George P., and Agapito Rey
1953 *Don Juan de Oñate, Colonizer of New Mexico, 1595-1628*, vols. 1 and 2. University of New Mexico Press, Albuquerque.

1966 *The Rediscovery of New Mexico 1580-1594: The Explorations of Chamuscado, Espejo, Castaño de Sosa, Morlete, and Leyva de Bonilla and Humana*. University of New Mexico Press, Albuquerque.
- Hayes, Alden C.
1974 *The Four Churches of Pecos*. University of New Mexico Press, Albuquerque.
- Hewett, Edgar Lee
1904 Studies on the Extinct Pueblo of Pecos. *American Anthropologist* 6:426-439.
- Holden, Jane
1955 A Preliminary Report on Arrowhead Ruin. *El Palacio* 62:102-119.

Hyams, Edward, and George Ordish

1963 *The Last of the Incas: The Rise and Fall of an American Empire*. Dorsett Press, New York.

Irwin-Williams, Cynthia

1965 Configurations of Preceramic Development in the Southwestern United States. In *Contributions to Southwestern Prehistory, vol. 4: Proceedings, VII Congress, International Association for Quaternary Research*, edited by C. Irwin-Williams, pp. 1-9. Eastern New Mexico University Contributions in Anthropology 1(4). Portales.

1973 *The Oshara Tradition: Origins of Anasazi Culture*. Eastern New Mexico University Contributions in Anthropology 5(1). Portales.

1979 Post-Pleistocene Archeology, 7000-2000 B.C. In *Handbook of North American Indians, vol. 9, Southwest*, edited by A. Ortiz, pp. 31-42. Smithsonian Institution, Washington, D.C.

Irwin-Williams, Cynthia, and C. Vance Haynes

1970 Climatic Change and Early Population Dynamics in the Southwestern United States. *Quaternary Research* 1(1):59-71.

Jelinek, Arthur J.

1967 *A Prehistoric Sequence in the Middle Pecos Valley, New Mexico*. Museum of Anthropology, Anthropological Paper 31. University of Michigan, Ann Arbor.

Kelly, Robert L.

1988 The Three Sides of a Biface. *American Antiquity* 53:717-734.

Kessel, John L.

1979 *Kiva, Cross, and Crown*. University of New Mexico Press, Albuquerque.

Kidder, Alfred V.

1932 *The Artifacts at Pecos*. Yale University Press, New Haven.

1958 *Pecos, New Mexico: Archaeological Notes*. Papers of the Robert S. Peabody Foundation for Archaeology, Andover, Massachusetts.

1962 *An Introduction to the Study of Southwestern Archaeology*. Yale University Press, New Haven.

Kristof, Ladis K. D.

1959 The Nature of Frontiers and Boundaries. *Annals of the Association of American Geographers* 49:269-282.

Lang, Richard W.

1988 The First Six Millennia. In *Pecos, Gateway to Pueblos and Plains*, edited by J.V. Bezy and J.P. Sanchez, pp. 20-25. Southwest Parks and Monuments Association, Tucson.

- Lent, Stephen C., Erin Tyler, and Vernon Lujan
 1991 Laboratory of Anthropology Site Forms, LA 85495-LA 85508. On file at the Archaeological Records Management System of the New Mexico Historic Preservation Division, Santa Fe.
- Levine, Daisy F.
 1990 Tewa or Hispanic Manufacture? Pottery from 18th and 19th Century Spanish Sites near Abiquiu. In *Clues to the Past: Papers in Honor of William M. Sundt*, edited by M. S. Duran and D. T. Kirkpatrick 173-183. The Archaeological Society of New Mexico, Albuquerque.
- Levine, Frances E., John C. Acklen, Jack B. Bertram, Stephen C. Lent, and Gale McPherson
 1985 *Archeological Excavations at LA 16769*. Public Service Company of New Mexico Archeological Report No. 5. Public Service Company of New Mexico, Albuquerque.
- Levine, Frances, and Charles M. Mobley
 1975 *Archaeological Resources at Los Esteros Lake, New Mexico*. Southern Methodist University Contributions in Anthropology 17, Dallas.
- Lewis, Kenneth E.
 1973 An Archaeological Consideration of the Frontier. *Papers in Anthropology* 14(1):84-103. University of Oklahoma, Norman.
- 1977 Sampling the Archeological Frontier: Regional Models in Historical Archeology. In *Research Strategies in Historical Archeology*, edited by S. South, pp. 151-201. Academic Press, New York.
- Lisenbee, Alvis A., Lee A. Woodward, and James R. Connolly
 1979 Tijeras-Cañoncito Fault System--A Major Zone of Recurrent Movement in North-Central New Mexico. In *New Mexico Geological Society Guidebook*. Thirtieth Field Conference, Santa Fe Country, edited by R. V. Ingersoll, pp. 89-99.
- Lister, Robert H.
 1948 Notes on the Archaeology of the Watrous Valley, New Mexico. *El Palacio* 55:35-41. Santa Fe.
- Marshall, Michael P., John R. Stein, Richard W. Loose, and Judith E. Novotny
 1979 *Anasazi Communities of the San Juan Basin*. Public Service Company of New Mexico and New Mexico Historic Preservation Division, Albuquerque and Santa Fe.
- Martin, Paul S.
 1963 *The Last 10,000 Years*. University of Arizona Press, Tucson.
- Maxwell, Timothy D.
 1985 *Archaeological Sites along State Road 50 Between Glorieta and Pecos, New Mexico, and Proposals for Testing*. Laboratory of Anthropology Notes No. 368. Museum of New Mexico, Santa Fe.

McCrary, Oliver

1983 *An Archaeological Survey of Proposed Waterworks Improvements for the Village of Pecos, San Miguel County, New Mexico*. School of American Research Report 119, Santa Fe.

Mera, H. P.

1935 *Ceramic Clues to the Prehistory of North Central New Mexico*. Laboratory of Anthropology Technical Series, Bulletin 8. Santa Fe.

1940 *Population Changes in the Rio Grande Glaze Paint Area*. Laboratory of Anthropology Technical Series, Bulletin 19. Santa Fe.

Moore, Bruce M.

1978 *Are Pueblo Field Houses a Function of Urbanization?* In *Limited Activity and Occupation Sites*, edited by A.E. Ward, pp. 9-16. Center for Anthropological Studies Contributions to Anthropological Studies 1, Albuquerque.

1980 *Pueblo Isolated Small Structure Sites*. Ph.D. dissertation, Department of Anthropology, Southern Illinois University, Carbondale. University Microfilms, Ann Arbor (8017423).

Moore, James L.

1980 *Archaic Settlement and Subsistence*. In *Human Adaptations in a Marginal Environment: The UII Mitigation Project*, edited by J. L. Moore and J. C. Winter, pp. 358-381. Office of Contract Archeology, University of New Mexico, Albuquerque.

1988 *Spanish Colonial Stone Tool Use*. Paper presented at the 1988 New Mexico Archaeological Council Conference on Current Research on Late Prehistoric and Early Historic New Mexico, Albuquerque.

n.d.a *Prehistoric Agriculture in the Lower Chama Valley*. In *Adaptations on the Anasazi and Spanish Frontiers: Excavations at Five Sites Near Abiquiú, Rio Arriba County, New Mexico*, by J. L. Moore, J. L. Boyer, and D. F. Levine. Office of Archaeological Studies, Museum of New Mexico, Santa Fe [in preparation].

n.d.b *Prehistoric Agriculture in the Taos District*. In *Studying the Taos Frontier: The Pot Creek Data Recovery Project*, by J. L. Boyer, J. L. Moore, and D. F. Levine. Office of Archaeological Studies, Museum of New Mexico [in preparation].

Morain, Stan

1979 *Vegetation Cover Types*. In *New Mexico in Maps*, edited by J. L. Williams and P. E. McAllister, pp. 22-23. Technology Applications Center, University of New Mexico, Albuquerque.

Morrison, Kathleen D.

1987 1984 Rowe Project Site Survey: Preliminary Report. Ms. on file at the Archaeological Records Management System of the New Mexico Historic Preservation Division, Santa Fe.

- Neuman, Robert W.
 1967 Radiocarbon-Dated Archaeological Remains on the Northern and Central High Plains. *American Antiquity* 32:471-486.
- Nordby, Larry
 1981 The Prehistory of the Pecos Indians. In *Exploration*, edited by D.G. Noble, pp. 5-11. Annual Bulletin of the School of American Research, Santa Fe.
 1984 Antecedents to Cicuye. In *Collected Papers in Honor of Harry L. Hadlock*, edited by N. L. Fox, pp. 115-124. Papers of the Archaeological Society of New Mexico 9, Albuquerque.
- Peckham, Stewart
 1988 The Early Pueblo Period. In *Pecos, Gateway to Pueblos and Plains*, edited by J.V. Bezy and J.P. Sanchez, pp. 26-31. Southwest Parks and Monuments Association, Tucson.
- Pilles, Peter J., Jr., and David R. Wilcox
 1978 The Small Sites Conference: An Introduction. In *Limited Activity and Occupation Sites*, edited by A. E. Ward, pp. 1-5. Center for Anthropological Studies Contributions to Anthropological Studies 1, Albuquerque.
- Powers, Robert P., William B. Gillespie, and Stephen H. Lekson
 1983 *The Outlier Survey: A Regional View of Settlement in the San Juan Basin*. Reports of the Chaco Center No. 3. National Park Service Division of Cultural Research, Albuquerque.
- Pratt, Boyd C., and David H. Snow
 1988 *The North Central Regional Overview: Strategies for the Comprehensive Survey of the Architectural and Historic Archaeological Resources of North Central New Mexico*, vol. 1. New Mexico Historic Preservation Division, Santa Fe.
- Preucel, Robert W.
 1989 Seasonal Circulation and Dual Residence in the Puebloan Southwest. Paper presented at the Small Sites in the Big Picture Symposium, 55th annual meeting of the Society for American Archaeology. Las Vegas, Nevada.
- Quintana, Frances Leon, and David H. Snow
 1980 Historical Archeology of the Rito Colorado Valley, New Mexico. *Journal of the West* 19(3):40-50.
- Robbins, Chandler S., Bertel Bruun, and Herbert S. Zim
 1966 *Birds of North America*. Golden Press, New York.
- Rohn, Arthur H.
 1977 *Cultural Change and Continuity on Chapin Mesa*. The Regents Press of Kansas, Lawrence.

1989 Northern San Juan Prehistory. In *Dynamics of Southwest Prehistory*, edited by L. S. Cordell and G. J. Gumerman, pp. 149-177. Smithsonian Institution Press, Washington, D.C.

Sanchez, Joseph P.

1988 Cicuye and the First Spaniards, In *Pecos, Gateway to Pueblos and Plains*, edited by J. V. Bezy and J. P. Sanchez, pp. 32-39. Southwest Parks and Monuments Association, Tucson.

Sando, Joe S.

1979a The Pueblo Revolt. In *Handbook of North American Indians*, vol. 9, *Southwest*, edited by A. Ortiz, pp. 194-197. Smithsonian Institution, Washington, D.C.

1979b Jemez Pueblo. In *Handbook of North American Indians*, vol. 9, *Southwest*, edited by A. Ortiz, pp. 418-429. Smithsonian Institution, Washington, D.C.

Simmons, Marc

1979 History of Pueblo-Spanish Relations to 1821. In *Handbook of North American Indians*, vol. 9, *Southwest*, edited by A. Ortiz, pp. 178-193. Smithsonian Institution, Washington, D.C.

1984 *Following the Santa Fe Trail: A Guide for Modern Travelers*. Ancient City Press, Santa Fe.

Smiley, Terah L., Stanley A. Stubbs, and Bryant Bannister

1953 *A Foundation for the Dating of Some Late Archaeological Sites in the Rio Grande Area, New Mexico, Based on Studies in Tree-Ring Methods and Pottery Analysis*. Laboratory of Tree Ring Research Bulletin 6. University of Arizona, Tucson.

Spielman, Katherine A.

1982 *Inter-Societal Food Acquisition among Egalitarian Societies: An Ecological Study of Plains/Pueblo Interaction in the American Southwest*. Ph.D. dissertation, Department of Anthropology, University of Michigan, Ann Arbor.

1983 Late Prehistoric Exchange between the Southwest and the Southern Plains. *Plains Anthropologist* 28:257-272.

Steffen, Jerome O.

1980 *Comparative Frontiers: A Proposal for Studying the American West*. University of Oklahoma Press, Norman.

Stuart, David P., and Robin E. Farwell

1983 Out of Phase: Late Pithouse Occupations in the Highlands of New Mexico. In *High-Altitude Adaptations in the Southwest*, edited by J. C. Winter, pp. 115-158. USDA Forest Service Southwestern Region Report No. 2, Santa Fe.

- Stuart, David, and Rory P. Gauthier
 1981 *Prehistoric New Mexico: Background for Survey*. New Mexico Historic Preservation Division, Santa Fe.
- Swagerty, William R.
 1988 Indian Trade in the Trans-Mississippi West to 1870. In *Handbook of North American Indians*, vol. 4, edited by W. E. Washburn, pp. 351-374. Smithsonian Institution, Washington, D.C.
- Turner, Frederick J.
 1893 The Significance of the Frontier in American History. In *Annual Report of the American Historical Association for the Year 1893*, pp. 199-227. Washington, D.C.
- Tuan, Yi Fu, Cyril E. Everard, Jerold G. Widdison, and Ivan Bennett
 1973 *The Climate of New Mexico* (revised edition). New Mexico State Planning Office, Santa Fe.
- Utley, Robert M.
 1988 Indian-United States Military Situation, 1848-1891. In *Handbook Of North American Indians*, vol. 4, edited by W. E. Washburn, pp. 163-184. Smithsonian Institution, Washington, D.C.
- Van Ness, John R.
 1980 The Juan Bautista Grant: Was it a Community Land Grant? In *Spanish and Mexican Land Grants in New Mexico and Colorado*, edited by J. R. Van Ness and C. M. Van Ness, pp. 107-116. Center for Land Grant Studies, Santa Fe.
- Vierra, Bradley J.
 1980 A Preliminary Ethnographic Model of the Southwestern Archaic Settlement System. In *Human Adaptations in a Marginal Environment: The UII Mitigation Project*, edited by J. L. Moore and J. C. Winter, pp. 351-357. Office of Contract Archeology, University of New Mexico, Albuquerque.
- Wait, Walter K., and Larry V. Nordby
 1979 Research Design: Rowe Pueblo Ruin Project. Ms. on file at the National Park Service Regional Office, Santa Fe.
- Wendorf, Fred, and John P. Miller
 1959 Artifacts from High Mountain Sites in the Sangre de Cristo Range, New Mexico. *El Palacio* 66:37-53.
- Wendorf, Fred, and Erik Reed
 1955 An Alternative Reconstruction of Northern Rio Grande Prehistory. *El Palacio* 62:131-173.

Wilcox, David R.

- 1978 The Theoretical Significance of Fieldhouses. In *Limited Activity and Occupation Sites*, edited by A. E. Ward, pp. 25-32. Center for Anthropological Studies Contributions to Anthropological Studies 1, Albuquerque.

Williams, Jerry L., and Howard Morgan

- 1979 Frost Conditions. In *New Mexico in Maps*, edited by J. L. Williams and P. E. McAllister, pp. 12-13. Technology Applications Center, University of New Mexico, Albuquerque.

Winther, Oscar Osburn

- 1964 *The Transportation Frontier: Trans-Mississippi West, 1865-1890*. Holt, Rinehart, and Winston, Inc., New York.

Wiseman, Regge N.

- 1988 The La Fonda Parking Lot Site (LA 54000) and Early Spanish Occupation in New Mexico. Paper presented at the 1988 New Mexico Archaeological Council Conference on Current Research on Late Prehistoric and Early Historic New Mexico, Albuquerque.

Woodward, Lee A., and Raymond V. Ingersoll

- 1979 Phanerozoic Tectonic Setting of Santa Fe Country. In *New Mexico Geological Society Guidebook*. Thirtieth Field Conference, Santa Fe Country, edited by R. V. Ingersoll, pp. 51-57.

Zamora, Dorothy A.

- 1990 *Resurvey of State Road 50 and Testing Proposal for the Pecos Project, San Miguel and Santa Fe Counties, New Mexico*. Laboratory of Anthropology Notes No. 502. Museum of New Mexico, Santa Fe.

APPENDIX 2. PREHISTORIC SITES NEAR PROJECT AREA

Rowe Survey (Morrison 1987)

LA #	Size-m ²	No. of Features	Feature Descriptions	Ceramics	Obsidian Dates
69264	15,000	3	1. Undescribed rubble mound 2. U-shaped rubble mound 3. Lithic and ceramic artifact scatter	Wiyo B/w Galisteo B/w Glaze A Glaze C-D Glaze E-f	770±317 B.C. 517±303 B.C. A.D. 1234±151 A.D. 1346±140
69265	?	3	1. Rubble mound--3 m diameter 2. Rectangular room--3 x 3.5 m 3. Lithic and ceramic scatter	Glaze A Glaze C-D Glaze E-F	A.D. 210±257 A.D. 611±227 A.D. 1048±188 A.D. 1589±126
69266	17,500	1	1. Lithic and ceramic scatter	Glaze C-D Glaze E-F	2658±409 B.C. A.D. 651±222 A.D. 688±221
69267	25,000	1	1. Lithic and ceramic scatter	Glaze E-F	-----
69268	7,500	2	1. Rockshelter with petroglyphs 2. Lithic scatter	-----	-----
69269	12,000	7	1. 3-room structure foundation 2. 2-room structure foundation 3. 2-room structure foundation 4. 1-room structure foundation 5. 1-room structure foundation 6. Lithic scatter 7. Check dam system (5 dams)	-----	-----
69270	12,000	3	1. Rubble mound--4 x 4 m 2. Check dam system (5+ dams) 3. Lithic and ceramic scatter	Glaze B (1 sherd)	-----
69271	16	1	1. U-shaped structure--4 x 4 m	-----	-----
69272	ca. 540	2	1. 2-room masonry roomblock--12 x 5 m 2. 2-room masonry room block--9 x 4 m	-----	-----
69273	150	3	1. 1-room masonry structure--6 x 5 m 2. Lithic and ceramic scatter 3. Lithic scatter	St. John's Polychrome	-----
69274	228	3	1. 2-3 room structure--3.5 x 3 m 2. Possible check dam 3. Lithic and ceramic scatter	Glaze B Glaze C-D Glaze E-F	-----
LA #	Size-m ²	No. of Features	Feature Descriptions	Ceramics	Obsidian Dates
69275	20,000	1	1. Lithic and ceramic scatter	Galisteo B/w glazes	-----
69276	84	1	1. 1-3 room structure (jacal?)	-----	-----

LA #	Size-m ²	No. of Features	Feature Descriptions	Ceramics	Obsidian Dates
69277	4000	1	1. Lithic and ceramic scatter	-----	122±278 B.C. 68±275 B.C. A.D. 79±266 A.D. 628±255 A.D. 738±216 A.D. 1271±166
69278	49	3	1. 1-room masonry structure-5 x 5 m 2. Lithic and ceramic scatter 3. External hearth	glazes	-----
69279	48	1	1. Pictograph panel	-----	-----
69280	12,000	1	1. Lithic and ceramic scatter	-----	-----
69281	170	7	1-7. Seven square masonry foundations (av. 1.5 x 2 m); very low (possibly grids?)	glazeware	-----
69282	78,750	1	1. Lithic and ceramic scatter	glazeware	A.D. 602±228 A.D. 1070±187 A.D. 1187±175 A.D. 1385±152 A.D. 1500±138
69283	80	2	1. 2-room masonry structure-8 x 4 m 2. Lithic and ceramic scatter	-----	-----
69284	6,000	1	1. Lithic scatter	-----	-----
69285	1,110	1	1. Lithic and ceramic scatter	Rowe B/w Abiquiu B/w Glaze B	-----
69286	2,200	1	1. Lithic and ceramic scatter	Rowe B/w Los Padillas G/p Glaze C-D Glaze E-F	2098±385 B.C. 1408±352 B.C. A.D. 449±239
69287	60	4	1. Rockshelter 2. Lithic scatter 3. Masonry structure-2.5 m tall walls 4. Pictographs	-----	-----
LA #	Size-m ²	No. of Features	Feature Descriptions	Ceramics	Obsidian Dates
69288	525	2	1. Rubble mound-10 x 10 m 2. Lithic and ceramic scatter	Los Padillas G/p Glaze A Glaze C-D Glaze E-F Sankawi B/c Tewa Poly	-----
69289	2,943 945	LOCUS-1:2 LOCUS-2:1	1. 4+ room masonry structure 2. Lithic and ceramic scatter 1. Lithic and ceramic scatter	Galisteo B/w Chupadero B/w	2562±405 B.C. 770±317 B.C. A.D. 1182±156 A.D. 1380±154

LA #	Size-m ²	No. of Features	Feature Descriptions	Ceramics	Obsidian Dates
69290	1,380	1	1. Lithic and ceramic scatter	Galisteo B/w Los Padillas G/p Glaze A Glaze B	-----
69291	6,768	3	1. Rubble mound-23 x 19 m 2. 1-room foundation-4.5 x 3.5 m (jacal?) 3. Lithic and ceramic scatter	Wiyo B/w Glaze A Glaze C-D Glaze E-f	A.D. 1521 ± 136 A.D. 1705 ± 107
69292	675	3	1. 1-room structure (?) - 8 x 8 m 2. Lithic scatter 3. Historic artifact scatter	historic?	-----
69293	1,680	3	1. 1-room masonry structure-3 x 3 m 2. 1-room masonry structure-3 x 2 m 3. Lithic and ceramic scatter	Rowe B/w Glaze C-D	4966 ± 446 B.C. 1153 ± 338 B.C. 1048 ± 333 B.C. 198 ± 283 B.C.
69294	14,552	2	1. 1-room masonry structure-6 x 5 m 2. Lithic and ceramic scatter	Samta Fe B/w Abiquiu B/w Glaze C-d	2083 ± 384 B.C. A.D. 335 ± 246 A.D. 421 ± 241 A.D. 440 ± 240 A.D. 513 ± 234 A.D. 654 ± 224 A.D. 679 ± 221 A.D. 1070 ± 187 A.D. 1414 ± 149 A.D. 1584 ± 126
69295	7,200	5	1. Jacal structure remains-12 x 6.5 m 2. Hearth--4 x 2 m (assoc. with F#1) 3. Jacal structure remains 4. Jacal structure remains 5. Lithic and ceramic scatter	-----	4084 ± 467 B.C. 1477 ± 355 B.C. 1399 ± 314 B.C. A.D. 119 ± 262

LA #	Size-m ²	No. of Features	Feature Descriptions	Ceramics	Obsidian Dates
69296	12	1	1. Contour terrace	-----	-----
69297	20	1	1. Contour terrace	-----	-----
69298	ca. 117	3	1. 1-room masonry structure-6 x 4 m 2. Possible check dam 3. Lithic and ceramic scatter	glazewares	-----
69299	375	2	1. 1-room masonry structure-3 x 3 m 2. Lithic and ceramic scatter	glazewares	-----
69300	9,000	2	1. Rock alignment-9 m long 2. Lithic and ceramic scatter	whiteware	3902 ± 460 B.C. 1259 ± 344 B.C. 400 ± 296 B.C. A.D. 6 ± 270 A.D. 779 ± 212 A.D. 1077 ± 166

69301	ca. 180	3	1. Rock shelter with petroglyphs and lithic and ceramic scatter-4 x 2 m 2. Rock shelter with petroglyphs and lithic and ceramic scatter-4.5 x 4 m 3. Pictograph panel	whiteware	-----
69302	7,920	2	1. 1-room masonry structure-3.5 x 3 m 2. Lithic and ceramic scatter	Glaze A Glaze C-D Glaze E-F	A.D. 486±237 A.D. 992±172 A.D. 1367±138
69303	3,000	2	1. Contour terrace-20 m long 2. Lithic scatter	-----	-----
69304	392	3	1. Rubble mound-9 x 6.5 m 2. 1-room masonry structure-6 x 5 m 3. Lithic and ceramic scatter	glazewares	-----
69305	9,000	4	1. 1-room masonry structure-6 x 4.5 m 2. 1-room masonry structure-3 x 2.5 m 3. Lithic and ceramic scatter 4. Historic artifact scatter	Santa Fe B/w Abiquiu B/w Chupadero Glaze A	-----
69306	40,000	9-11	1. Rock wall-10 x 1 m 2. Adobe mound-12 x 6 m 3-11. 6 to 8 circular to square mounds and rings of cobbles	Wiyo B/w Abiquiu B/w Glaze C-D	-----
69307	10,710	2	1. Extensive grid system--100+ grids 2. Lithic and ceramic scatter	Los Padillas G/p	-----
69308	56	2	1. 1-room masonry structure-5 x 4 m 2. Lithic and ceramic scatter	glazewares	-----
69309	12	1	1. 1-room masonry structure-4 x 3 m	-----	-----
LA #	Size-m ²	No. of Features	Feature Descriptions	Ceramics	Obsidian Dates
69310	ca. 150	4	1. U-shaped masonry structure-8 x 6 m 2. U-shaped masonry structure-7 x 5 m 3. 2 bedrock mortars 4. Lithic and ceramic scatter	glazewares	-----
69311	ca. 60	3	1. 1-room masonry structure-4 x 4 m 2. 3 stone alignments (agricultural?) 3. Lithic and ceramic scatter-6 x 6 m	glazewares	-----

MNM Highway Survey (Maxwell 1985; Lent et al. 1991)

LA #	Size-m ²	No. of Features	Feature Descriptions	Ceramics	Obsidian Dates
32455	<100	2	1. 1-room masonry structure (round) 2. Lithic scatter	Glaze E	-----
49184	4,800	1	1. Lithic and ceramic scatter	Kapo black	-----
49185	375	2	1. Lithic and ceramic scatter 2. Check dam-11 m long	Glaze E	-----

LA #	Size-m ²	No. of Features	Feature Descriptions	Ceramics	Obsidian Dates
49186	90	2	1. Lithic scatter 2. Possible structure-5 x 5 m	-----	-----
49187	600	3	1. Rock shelter with possible storage bin, hearth 2. Lithic and ceramic scatter	-----	-----
49188	20	3	1. Rock shelter with possible wall 2. Bedrock mortars or metates 3. Toehold	-----	-----
49189	100	1	1. Rock shelter with possible wall	Glaze A-B	-----

LA #	Size-m ²	No. of Features	Feature Descriptions	Ceramics	Obsidian Dates
85495	12,500.	2	1. Fieldhouse-3 x 3 m 2. Lithic and ceramic scatter (Archaic point)	Santa Fe B/w Glaze D	-----
85496	1,680	1	1. Lithic and ceramic scatter (Archaic point)	Santa Fe B/w Glaze C	-----
85497	2.16	2	1. Unknown rock alignment 2. Lithic scatter	-----	-----

LA #	Size-m ²	No. of Features	Feature Descriptions	Ceramics	Obsidian Dates
85500*	1,950	3	1. Fieldhouse-4 x 1.3 m 2. Lithic and ceramic scatter 3. Bedrock mortars (4)	Glaze A	-----
85501	1,920	3	1. Lithic scatter (En Medio point) 2. Ceramic and lithic (?) scatter 3. Concentration of fire-cracked rock	?	-----
85502	120	1	1. Lithic and ceramic scatter	whitewares	-----
85503	3,000	3	1. Lithic and ceramic scatter 2. Possible pithouse depression-6 x 6 m 3. Fire-cracked rock concentrations (2)	Glaze D	-----
85504	945	2	1. Lithic and ceramic scatter 2. Historic wagon road	Santa Fe B/w	-----
85505	288	1	1. Lithic scatter	-----	-----
85506	330	1	1. Lithic and ceramic scatter	glazewares	-----
85507*	2,835	5	1. Fieldhouse 2. Hearth 3. Grids 4. Rock piles 5. Lithic scatter	-----	-----
85508	1,600	4	1. Fieldhouse-3 x 3 m 2. Lithic scatter (Archaic?) 3. Historic hearth 4. Wagon ruts	Pohoge Poly	-----

*possibly recorded during Rowe survey (Morrison 1987)

Forest Service Surveys

LA #	Size-m ²	No. of Features	Feature Descriptions	Ceramics	Obsidian Dates
57213	400	1	1. Lithic and ceramic scatter	-----	-----
75616	?	2	1. 1-2 room structure 2. Lithic and ceramic scatter	-----	-----
64849	23,800	15	1. Fieldhouse 2. Fieldhouse 3-15. Historic structures	Glaze E	-----
64850	2,200	1	1. Lithic and ceramic scatter	Glaze E	-----

LA #	Size-m ²	No. of Features	Feature Descriptions	Ceramics	Obsidian Dates
64851	400	3	1. 1-room masonry structure 2. Lithic and ceramic scatter 3. Possible check dam	Wiyo B/w Glaze E	-----
64852	350	1	1. Lithic scatter (Pueblo? points)	-----	-----
64852	800 ?	1 2	1. Lithic scatter 1-2. Historic structures	-----	-----