

MUSEUM OF NEW MEXICO

OFFICE OF ARCHAEOLOGICAL STUDIES

**U.S. 285 SEVEN RIVERS PROJECT:
PLAN FOR DATA RECOVERY AT FOUR ARCHAEOLOGICAL SITES ALONG
SOUTH SEVEN RIVERS, CENTRAL EDDY COUNTY, NEW MEXICO**

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ARCHAEOLOGY NOTES 190

ADMINISTRATIVE SUMMARY

Four prehistoric and historic cultural resource sites are within proposed highway project WIPP-285-1(27)50, a bridge replacement project along U.S. 285 at Seven Rivers, Eddy County, New Mexico (Levine 1996). This document presents a data recovery plan for the treatment of those sites.

MNM Project 41.614 (Seven Rivers Project)
NMSHTD Project WIPP-285-1(27)50 (CN 2097); JPA J00122

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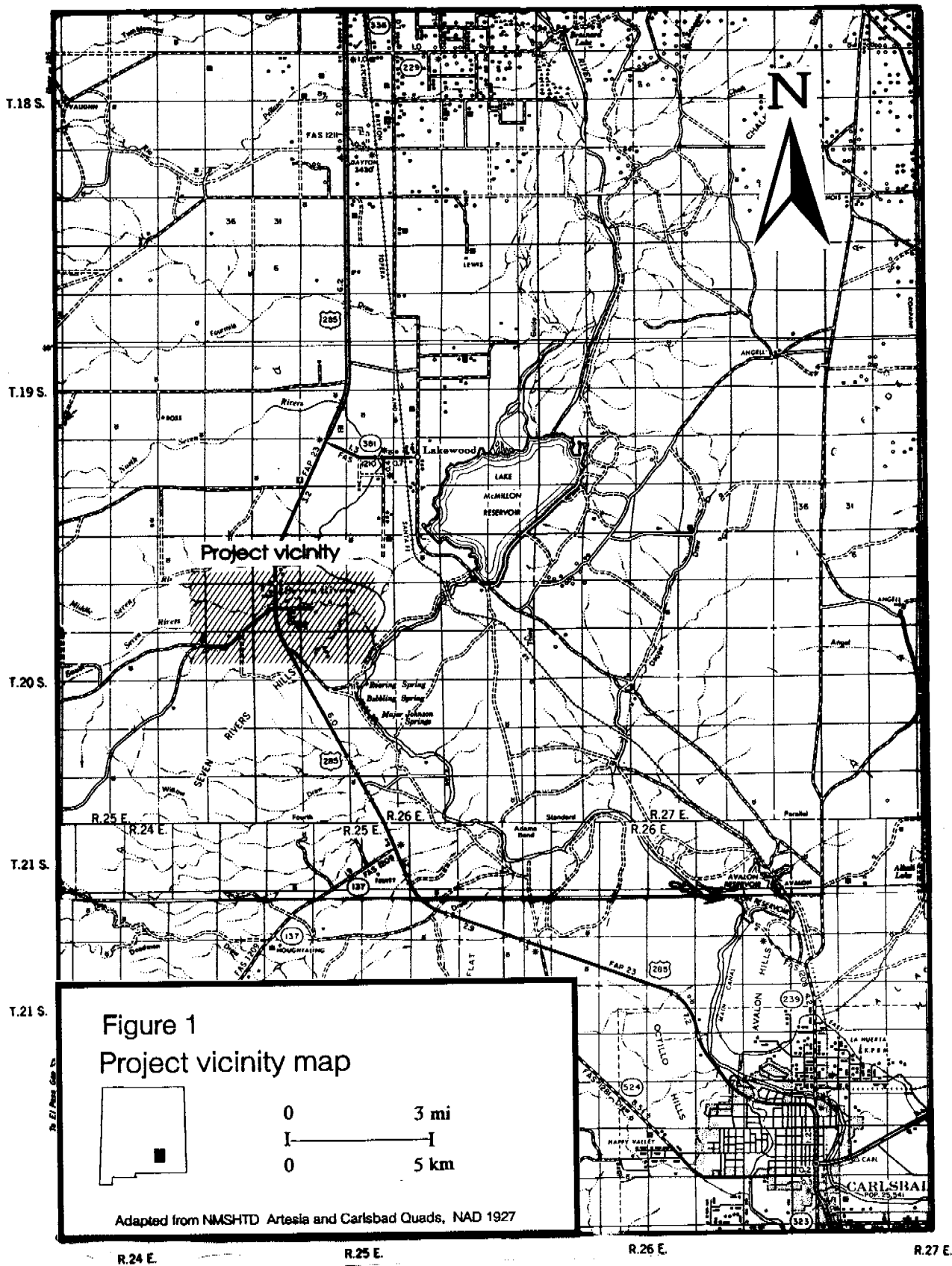
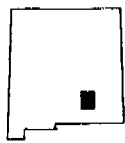


Figure 1
Project vicinity map



0 3 mi
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 0 5 km

Adapted from NMSHTD Artesia and Carlsbad Quads, NAD 1927

R.24 E. R.25 E. R.26 E. R.27 E.

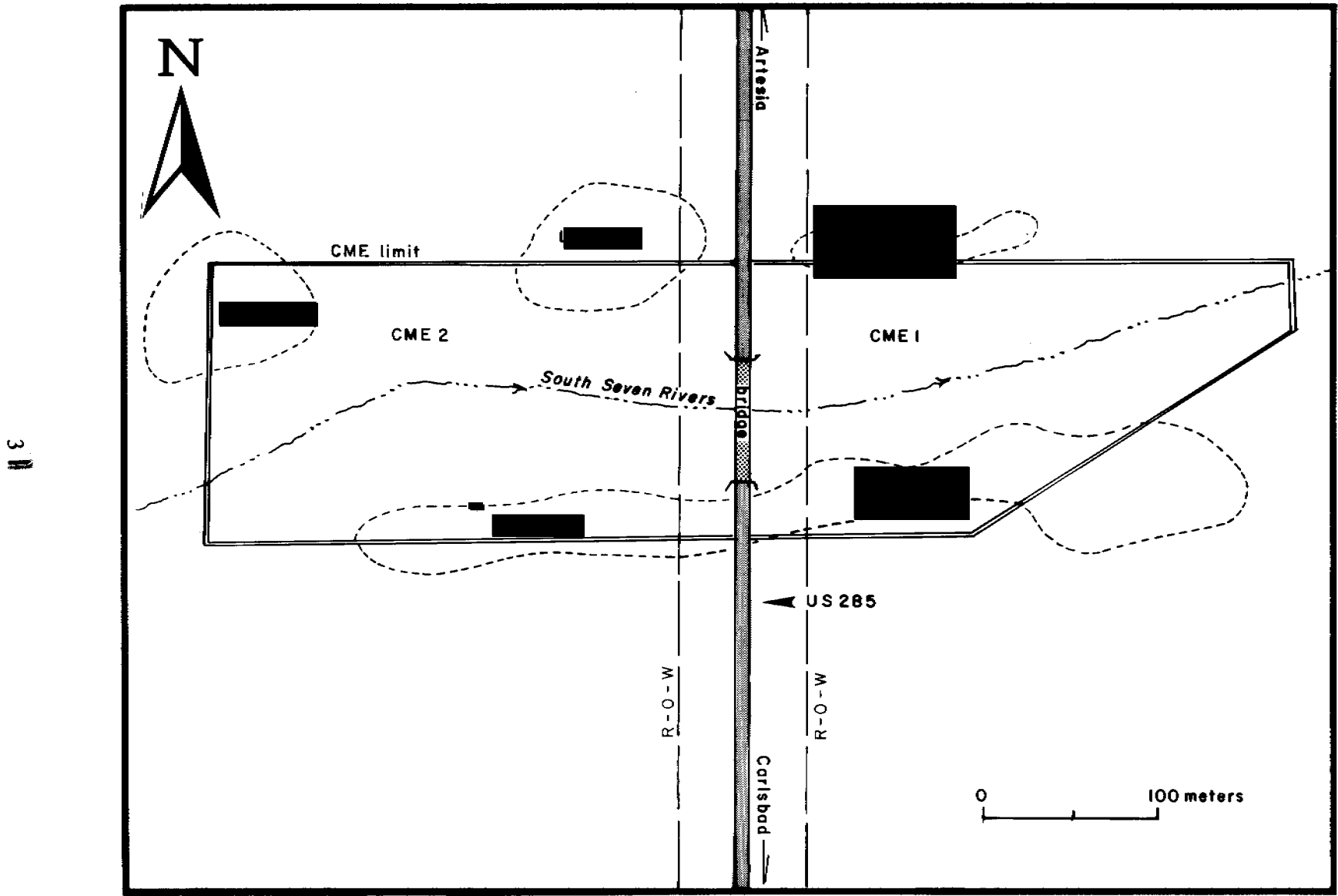


Figure 2. The four project sites relative to CMEs 1 and 2.

NATURAL ENVIRONMENT

In some ways the physical appearance of the Pecos Valley, excluding the towns and farms, has not changed much over the past 100 years, especially to the casual eye. It was, and still is, a plainslike environment with broad expanses of grass and scrubland, and trees that are limited to water courses. To the naturalist and the ecologist, however, the changes have been profound. As attested by the reports of pioneers (Shinkle 1966), the biotic wealth of the land prior to A.D. 1900 was remarkable. Specifics about the Pecos Valley environment, documented between the 1880s and the present, are summarized below.

The project sites are situated along the channel of the South Seven Rivers, 4 to 5 km west of where that stream enters the Pecos River. The sites sit on the first terrace above the bed of South Seven Rivers at an elevation of 1,005 m above mean sea level.

The surface geology of the project area consists of mixed alluvial sediments deposited by the Pecos River. Outcrops of the Seven Rivers and the Queens formations (Permian) occur southwest, west, and northwest of the sites (Dane and Bachman 1965).

Soils in the project area belong to the Calciustolls-Rock Land Association. These thermic soils are shallow and rocky and occur on "strongly sloping and rolling to very steep uplands underlain mainly by limestone bedrock" (Maker et al. 1974). Very limited acreages of soils belonging to the Pachic Calciustolls, Pachic Haplustolls, and Cumulic Haplustolls occur along the course of the South Seven Rivers, but these tracts are too small for anything except garden farming. Annual precipitation of 11-13 inches in the Artesia-Carlsbad region is generally insufficient for dryland farming. Thus, growing crops in the vicinity of the project sites would be impossible except perhaps during exceedingly wet periods and then only on a small-scale basis along the course of the South Seven Rivers below the sites.

The South Seven Rivers today is an intermittent stream that heads in the east-central foothills of the Guadalupe Mountains. However, as recently as the late 1800s, each of the Seven Rivers was fed by its own spring, though we have no direct information on how reliable they were. Judging by the size of the South Seven Rivers channel today, water flow was probably abundant and probably perennial.

According to pioneer accounts (Shinkle 1966), the vegetation of the Pecos Valley at the time of Euro-American settlement consisted of a grama-dominated grassland with trees common only along certain watercourses such as the Rio Hondo. Kuchler (1964) posits that the potential natural vegetation of the project area was the creosote bush-tarbush association, consisting of "fairly dense to very open vegetation of shrubs, dwarf shrubs and grass." In terms of Dick-Peddie's classification, the association is Chihuahuan Desert Scrub (1993).

One of the natural attractions of the Pecos Valley was the variety and abundance of wildlife. While not as abundant today as in the recent past, antelope, cottontails, jackrabbits, and other species used by prehistoric peoples are still fairly common. Until the late 1800s, the Pecos River formed the western boundary of the range of the southern Great Plains bison herd, though small herds and individuals frequently crossed the river. The Pecos River is a flyway for ducks,

geese, and many other migratory species.

The climate of the project area today is characterized by mild winters and hot summers. The normal mean January temperature is 5.1 degrees C; that of July is 26.3 degrees C; and the yearly mean is approximately 15.9 degrees C (Gabin and Lesperance 1977). The average frost-free season exceeds 200 days (Tuan et al. 1973).

Precipitation is currently summer dominant. The mean normalized annual amount is 305 mm, with 203 mm falling in the months of April through September, and only 102 mm in the months of October through March (U.S. Department of Commerce 1965).

CULTURAL SETTING

The following culture-history outline of southeastern New Mexico is distilled from a number of sources. Sources for the prehistoric period include Stuart and Gauthier (1981; a general study of New Mexico archaeology), Sebastian and Larralde (1989; an overview of east-central and southeastern New Mexico), Jelinek (1967; the Pecos River north of Roswell), Katz and Katz (1985a; the Pecos River south of Roswell), and Leslie (1979; the region east of the Pecos River and especially the southeastern corner of New Mexico). The primary references used for the historic period are Katz and Katz (1985b) and Shinkle (1966). The reader desiring more information is referred to those volumes.

Human occupation of southeastern New Mexico began with the Llano complex ("Clovis Man") of the Paleoindian period, which dates at least 13,000 years ago. These people and their successors of the Folsom period hunted large mammals (so-called megafauna, such as mammoths and extinct forms of bison) and maintained a nomadic or seminomadic lifestyle. Although most accounts of Paleoindians refer to them as big-game hunters, it is a virtual certainty that the people collected and consumed wild vegetal foods and small animals as well as large animals.

The retreat of the Pleistocene glaciers and resultant warming of the more southerly latitudes resulted in a shift in human adaptation to what archaeologists call the Archaic period. This hunting and gathering adaptation was evidently more eclectic than the Paleoindian period and focused on smaller animals such as deer and rabbits. The appearance of grinding tools and specialized burned-rock features suggests a greater reliance on plant foods.

In the project area, an Archaic sequence (including hunter-gatherers dating to the pottery period), developed by the Katzes (Katz and Katz 1985a), starts with the Middle Archaic, rather than the Early Archaic, suggesting that there may have been an occupational hiatus between the Paleoindian and the Avalon phase (3000-1000 B.C.). Little is known about the peoples of the Avalon phase other than the fact that they inhabited the floodplain near the river channel during at least part of the year, camped and constructed hearths in the open, and consumed one or more species of freshwater shellfish. The subsistence orientation at these sites was clearly riverine. Projectile points are currently unknown for this phase.

Late Archaic peoples of the succeeding McMillan phase (1000 B.C. to A.D. 1) are better known in that more sites with more artifacts have been documented. Sites contain relatively small hearths (1-m-diameter clusters of small rocks) and burned-rock rings. Previously named projectile point styles associated with the McMillan include the Darl and the Palmillas types. Subsistence involved exploiting both riverine and upland plant and animal species.

The terminal Archaic Brantley phase (A.D. 1 to 750) continued the previous patterns and evidenced a greater use of burned-rock rings. Although this suggests that certain upland resources such as agave and sotol were becoming more important in the diet, the ratio of riverine to upland sites remained the same, with the emphasis still on floodplain living. Projectile point types commonly associated with the Brantley phase include the previously known San Pedro style; a newly described provisional type, the Pecos point; and several less standardized, but nevertheless familiar, styles of points commonly found in the region.

Occupation of the floodplain environment reached its zenith during the Globe phase (A.D. 750 to 1150) in the Carlsbad locale. At this time, four major changes occur--the appearance of pottery, the bow and arrow, and rock habitation structures (the stone circle or piled-rock structure), and a shift in the primary subsistence focus from the riverine system to the uplands. Projectile point styles are dominated by the corner-notched arrow tips called Scallorn. In many ways, the Globe phase appears to have been transitional between earlier and later adaptive patterns.

During the succeeding Oriental phase (A.D. 1150 to 1450), occupation along the river in the Carlsbad area continued to diminish. The people who remained in the area used painted pottery such as Chupadero Black-on-white, Three Rivers Red-on-terracotta, and El Paso Polychrome imported from areas to the west and northwest. Otherwise, they retained their essentially Archaic, hunter-gatherer lifestyle. Why the local culture of Carlsbad/Guadalupe Mountains region did not continue to develop along the same lines as those to the north and west remains to be determined.

The Phenix phase (A.D. 1450 to 1540) and the Seven Rivers phase (A.D. post-1540) are predicated on projectile point styles only (Garza-like and Toyah-like in the former and metal points in the latter), but Katz and Katz admit that distinguishing between the two may be dubious in practice. They were able to assign only one site to each phase, indicating that Native American use of the riverine habitat in the Carlsbad area was minimal, mostly oriented towards hunting and perhaps succulent plant exploitation, and focused mainly (it seems) on Rocky Arroyo.

Where many of the people went, assuming that a diminution of sites and cultural remains indicates at least partial abandonment, also remains to be determined. The period represented by the Phenix and Seven Rivers phases (the latter including the early Spanish explorations in the late 1500s) is unknown archaeologically. Abandoned *rancherías* described by early Spanish explorers for the Seven Rivers region certainly indicate the presence of hunter-gatherers during the protohistoric and early historic periods (Schroeder and Matson 1965), but the inhabitants (possibly Jumanos or Apaches; Hickerson 1994) effectively disappeared as an identifiable people before more detailed accounts and relationships could be recorded.

From Spanish contact until after the American Civil War, roaming Apaches, Comanches, Kiowas, and other Plains tribes kept Euro-American settlement of southeastern New Mexico in abeyance. Following the Civil War, westward mass movement of Americans and eastward drifting of small groups of New Mexico Hispanics led to settlement of the region. Cattle-ranching was the first economic activity to start up, but by about 1890, drought had all but closed it out. The village of Seven Rivers just east of the project area was founded about 1885, and rapidly became a haven for outlaws escaping justice in Texas. The turn towards law and order was completed when artesian water was discovered at Roswell in 1891, and its development throughout the valley promoted widespread irrigation and a rapid influx of people. The railroad reached Carlsbad in 1891, irretrievably setting the course for urbanization of the area. At the turn of the century, the area's economy became firmly based in agriculture, stockraising, and in the mid-twentieth century, the production of oil and gas.

PREVIOUS ARCHAEOLOGICAL WORK IN THE PROJECT AREA

Except for a number of small-scale contract archaeological projects associated with oil and gas exploration, archaeological investigations in the project area have been few in number. The list below includes some of the more significant investigations. Except where noted, the sites are prehistoric.

- * Applegarth 1976: Doctoral dissertation for the University of Wisconsin. Excavation of several caves and shelters in the Guadalupe Mountains in New Mexico.
- * Ferdon 1946: Excavation of Hermit's Cave in Last Chance Canyon of the Guadalupe Mountains in New Mexico.
- * Gallagher and Bearden 1980: First season's excavations by Southern Methodist University at open sites in the Brantley Reservoir on the Pecos River between Carlsbad and Artesia, New Mexico.
- * Henderson 1976: Survey report for the Brantley Dam and Reservoir site on the Pecos River between Carlsbad and Artesia, New Mexico.
- * Howard, E. B. 1930, 1932, 1935: Excavations at several caves in the Guadalupe Mountains, New Mexico and Texas.
- * Katz, Paul 1978: Survey and assessment of sites in Guadalupe National Park, Texas.
- * Katz and Katz 1985a, 1985b: Second season's excavations and cultural synthesis of prehistoric and historic resources in the Brantley Reservoir on the Pecos River between Carlsbad and Artesia, New Mexico.
- * Lord and Reynolds 1985: Excavation of three open sites in the Waste Isolation Pilot Project area east of the Pecos River in southeastern Eddy County, New Mexico.
- * Mallouf 1985: Master's thesis for the University of Texas at Austin. Cultural synthesis of the eastern Trans-Pecos Texas, including the Guadalupe Mountains and adjacent Pecos River of New Mexico.
- * Mera 1938: Survey and excavations in caves and open sites in the Guadalupe Mountains and in the open country east of the Pecos River, all in New Mexico.
- * Riches 1968: Master's thesis for the University of Wisconsin. Survey of caves, shelters, and open sites in the Guadalupe Mountains.
- * Roney 1985: Master's thesis for Eastern New Mexico University. Based on excavations at Hooper Canyon Cave in the Guadalupe Mountains and survey of open sites in the upper Rocky Arroyo.

- * Sebastian and Larralde 1989: Cultural overview, assessment, and synthesis of the prehistory and history of the Roswell District, Bureau of Land Management.

SITE DESCRIPTIONS

LA 8053

LA 8053 has two components, a large prehistoric camp site and a turn-of-the-century homestead and conglomerate quarry (Fig. 3). The site sits [REDACTED]

[REDACTED] Overall site size is 70 m north-south by 80 m east-west. LA 8053 was originally recorded and collected in 1963 by Kenneth Honea for the Highway Cultural Inventory Project (NMCRIS files, Museum of New Mexico).

The prehistoric component of LA 8053 is quite large, extending [REDACTED] [REDACTED] [REDACTED] [REDACTED] include at least five hearths, a thin scatter of pottery sherds and lithic artifacts, and, in the east-central part of the site, a large scatter of burned rocks or possible hearths that are partly buried by a thin soil mantle. The site has probably been surface collected over the years, for very few pottery sherds and lithic artifacts were observed during the several visits made during the planning phase of this project. The pottery indicates an Oriental phase (A.D. 1150-1450) occupation.

The historic component consists of a series of rocks arranged in a rough square, probably as a foundation for a movable frame building. A nearby scatter of glass, china, and metal fragments indicate turn-of-the-century occupation, perhaps associated with the conglomerate quarry. Component size is 25-by-25 m. Both the rock outline and the historic trash evidently straddle (partly within and partly outside) the north line of the proposed CME-2.

The author visually studied the site several times over the course of seven months and under varying conditions of natural light. These studies--of site setting, surface characteristics, and disturbances (animal trails, rodent tunnel backdirt piles, and erosion channels)--suggest that the cultural depth of the site varies from surficial to 30 cm. That part of the site lying within the existing right-of-way has been disturbed by one or more utility trenches.

The southern 30 percent of LA 8053 lies within the construction and access zone of CME-2 for the stabilization of the drainage channel and banks of the South Seven Rivers. This area contains remains of both the prehistoric and the historic components. Actual site area to be involved measures 25 m north-south by 80 m east-west, or approximately 2,000 sq m.

The prehistoric components within the proposed construction zone at LA 8053 include at least one hearth, a sherd area, and dispersed lithic artifacts and burned rocks. Burned rocks protruding from eolian sand deposits probably indicate the presence of more hearths within the project area. Investigation of these features will inform on small camp-site formation and associated activities of the Oriental phase (A.D. 1150-1450) of the Guadalupe-Brantley culture sequence.

The historic components within the proposed construction zone at LA 8053 include the house foundation, part of the trash accumulation, and the conglomerate quarry. Archaeological

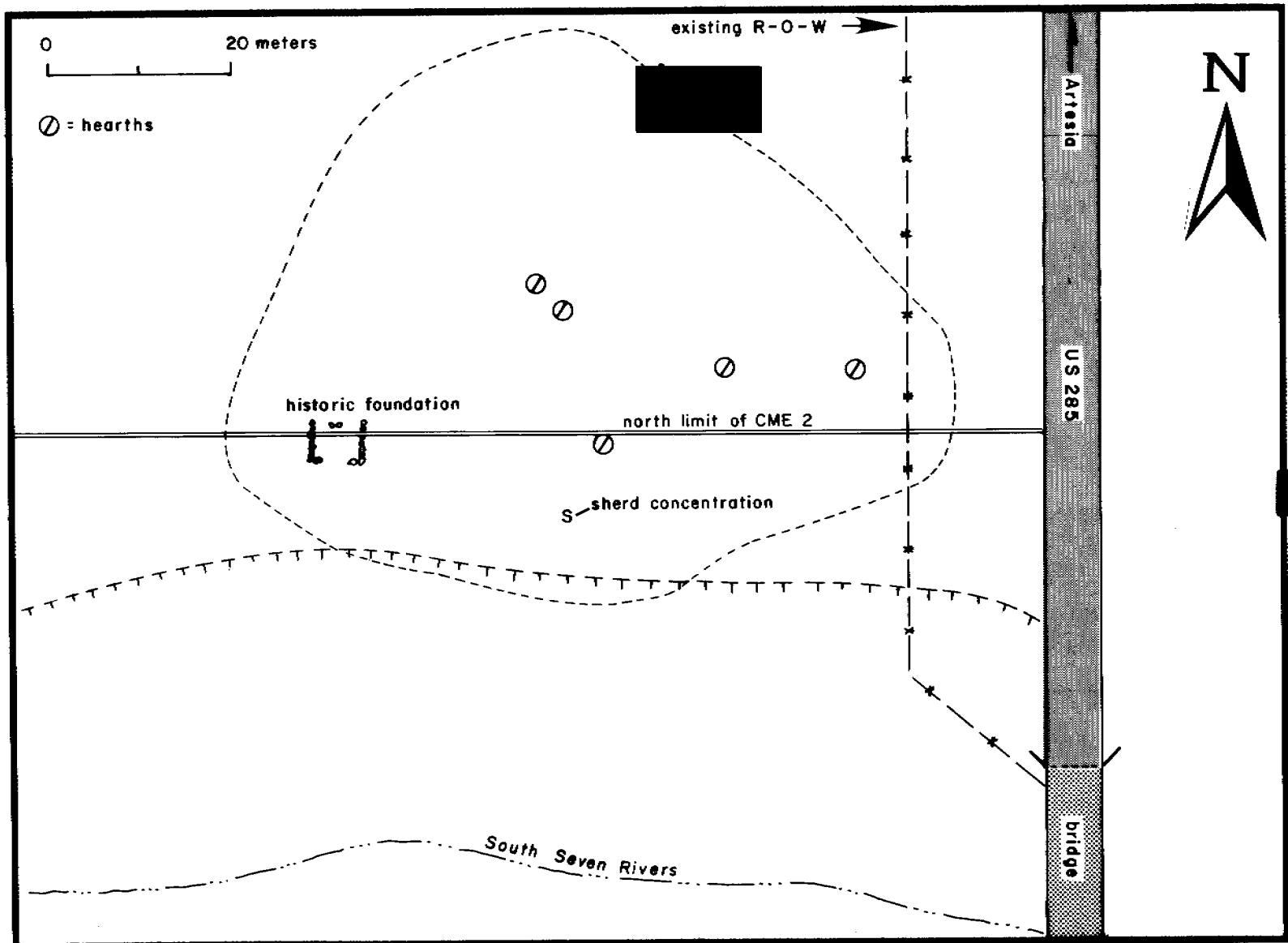


Figure 3. LA 8053 sketch map.

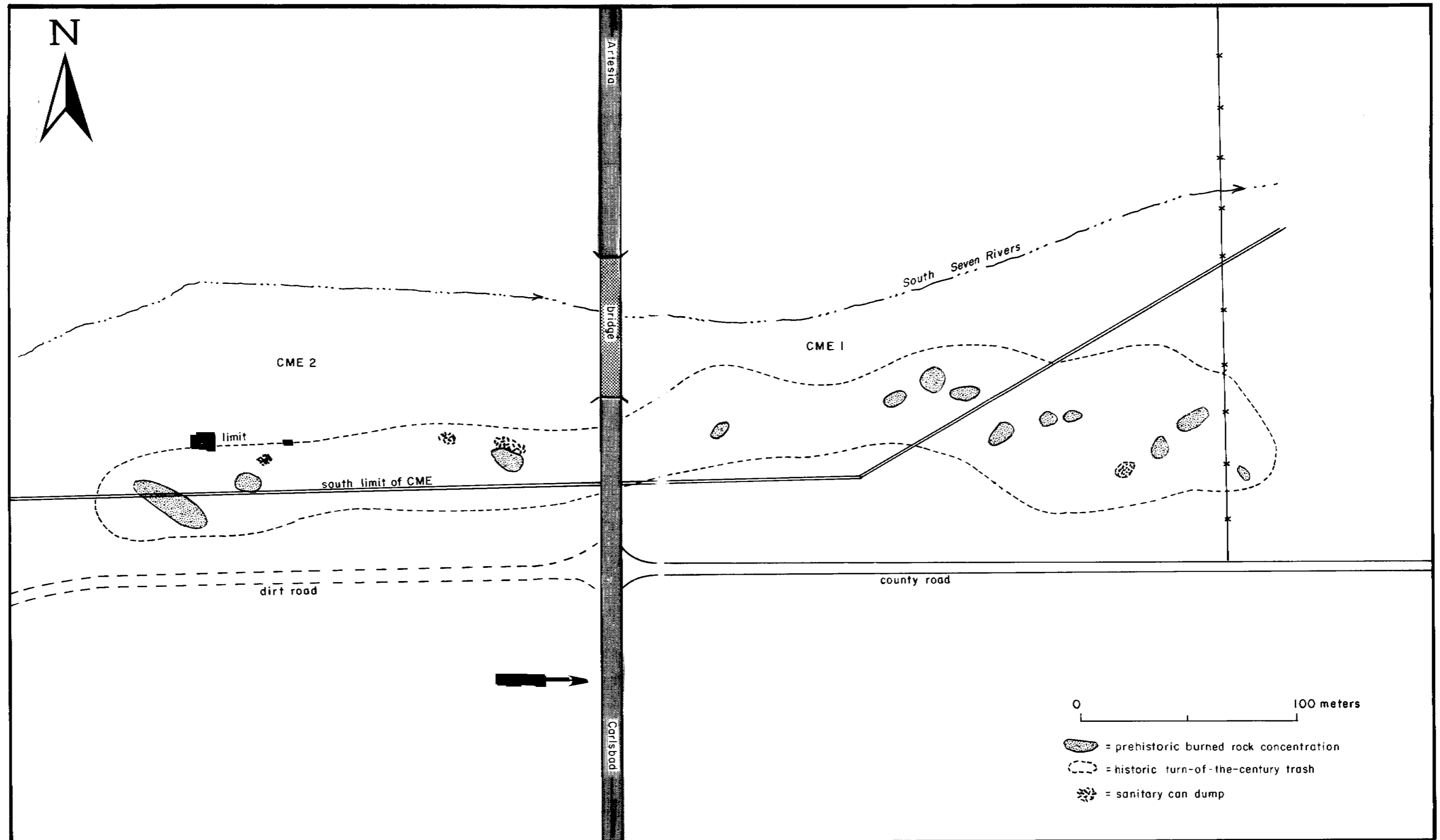


Figure 4. LA 38264 (SMU 45) sketch map.

and archival investigation of these features will determine whether or not the house was associated with the quarry and will document turn-of-the-century occupation and activities at an outlying homestead of the dispersed Seven Rivers community.

LA 38264 (SMU 45)

This site has numerous prehistoric and historic components (Fig. 4). The eastern part (east of U.S. 285) of this long, narrow, multicomponent site was originally recorded in 1974 as X29ED45 (published also as SMU 45) by Southern Methodist University. The western part (west of U.S. 285) was recorded in March 1996 by NMSHTD. [REDACTED]

[REDACTED] Total site length (east and west parts combined) is 500 m, maximum width is 70 m, and average width is 40 m. Today, very little evidence of the site remains within the present highway right-of-way because of the earthwork connected with building the original bridge.

The prehistoric components consist of burned-rock concentrations that date, at least in part, to the Globe phase (A.D. 750-1150). All concentrations have associated lithic artifacts, and at least one has associated pottery. One burned-rock concentration in the east part of the site is slightly mounded; a dark stain measuring 1-by-2 m near the center probably represents a baking pit. The areas among the burned-rock concentrations [REDACTED] are characterized by a thin scatter of burned rocks and lithic artifacts. West of U.S. 285 the burned-rock and artifact concentrations are discrete and generally lack interstitial artifacts and burned rock.

The historic components consist of four small dumps of turn-of-the-century trash. All represent secondary trash deposits created when trash located elsewhere is collected, transported to a new location (LA 38264 in this case), and dumped. These particular dumps are closely circumscribed; very little scatter of the items suggests that they may represent individual wagon or truck loads.

Over a period of seven months, the author visually studied the site several different times under varying conditions of natural light. These studies--of site setting, surface characteristics, and disturbances (animal trails, rodent tunnel backdirt piles, and erosion channels)--suggest that the cultural depth of the site varies from surficial to 30 cm, except any pits or hearths that would have been dug into the aboriginal ground surface.

About 70 percent of LA 38264, involving tracts on both sides of U.S. 285, lies within the construction and access zones of CMEs 1 and 2 for the stabilization of the drainage channel and banks of the South Seven Rivers. This area contains remains of both the prehistoric and the historic components. Actual site area to be involved measures 25 m north-south by 215 m east-west, or approximately 5,375 sq m.

The prehistoric components within the proposed construction zone at LA 38264 include at least six major burned-rock features (including the main mound), lithic and pottery artifacts, and scattered burned rocks. Burned rocks protruding from eolian sand deposits may indicate the presence of more hearths within the project area. Investigation of these features will inform on food preparation associated with the burned-rock mound, camp-site formation, extra-regional

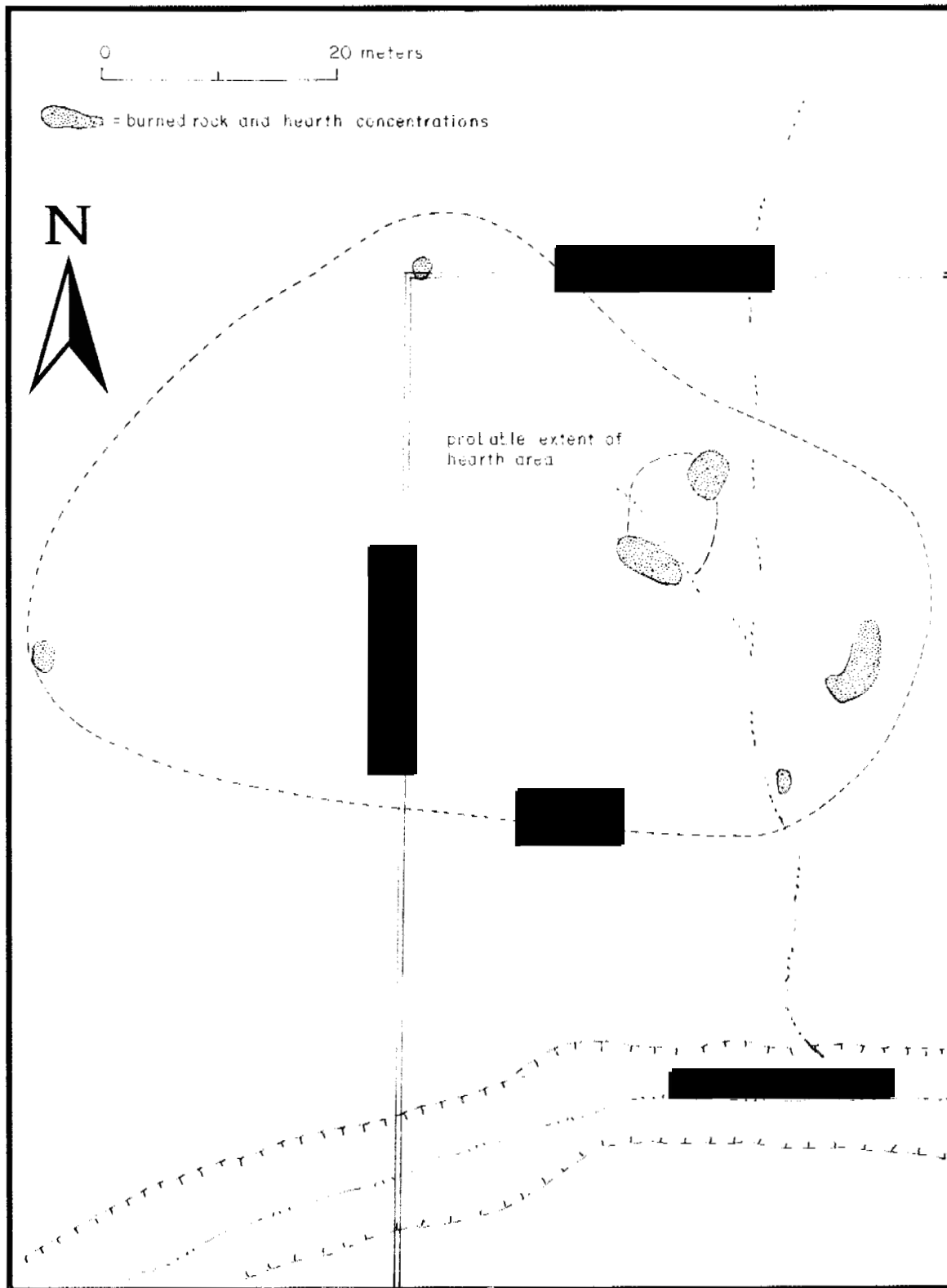


Figure 5. LA 112349 (SMU 44) sketch map.

exchange (presence of obsidian), subsistence practices, and associated activities of the Globe phase (A.D. 750-1150) of the Guadalupe-Brantley culture sequence.

The historic components within the proposed construction zone at LA 38264 include three trash accumulations that appear to represent single episodes of dumping dating to the turn-of-the-century. Archaeological investigation of these features will provide time-capsule-like glimpses of life in the dispersed Seven Rivers community. Although the dumps cannot be tied to specific house sites, they represent the materials that had been removed from homestead locations and cannot therefore be accounted for by investigations of those sites. As an example, nearby LA 38233 had two well-made rock houses but lacked artifacts by which to date the occupations, identify the inhabitants, and document their lives (Katz and Katz 1985b:144).

LA 112349 (SMU 44)

This probable multicomponent site (Fig. 5) was originally recorded, tested, and partly collected (grab sample) in 1974 as X29ED44 (published also as SMU-44) by Southern Methodist University. The site is [REDACTED]. Several small arroyos segment the site into a number of small tracts and provide excellent cross sections of the site and some of the features. Overall site size is 75 m north-south by 100 m east-west.

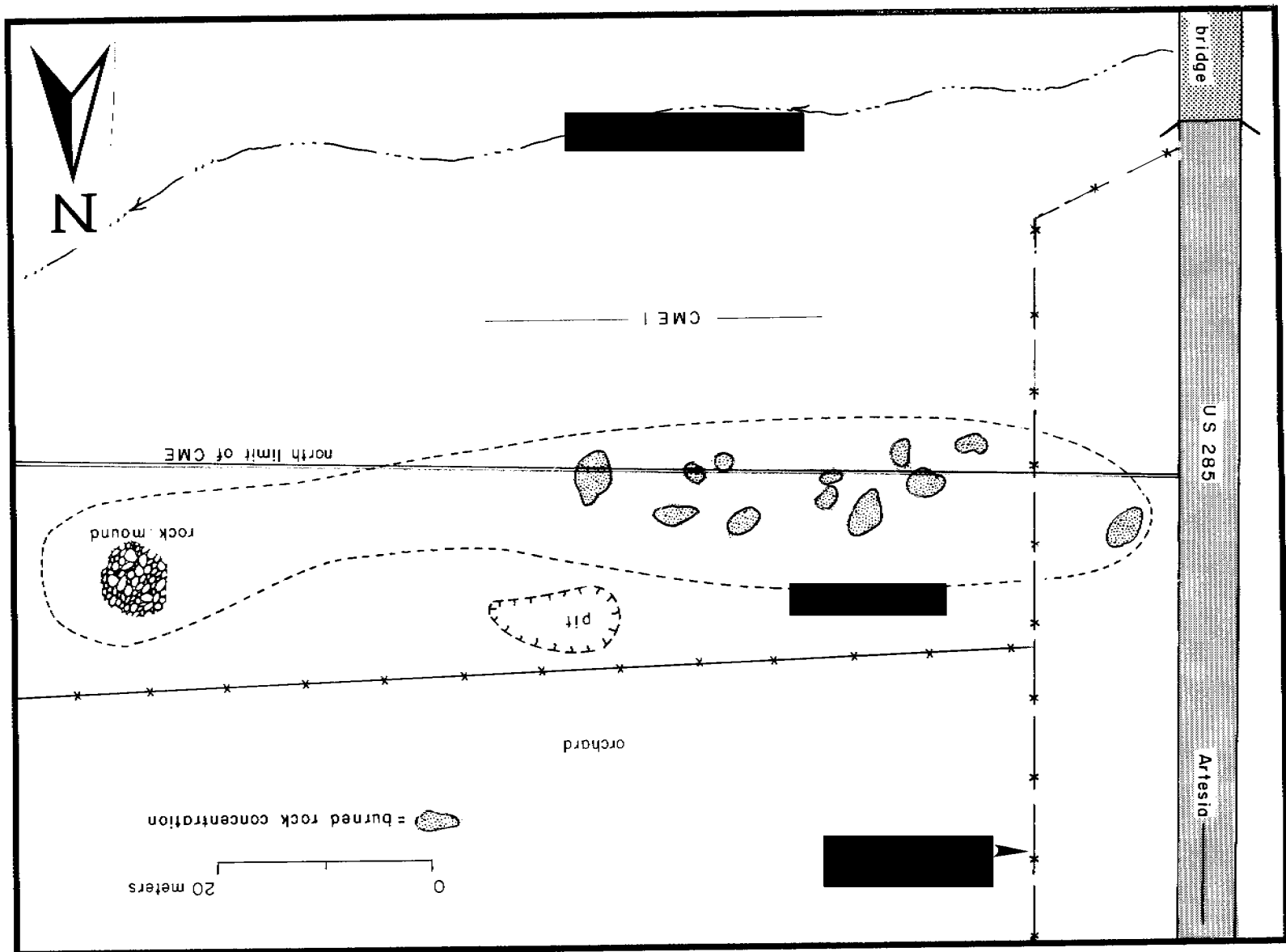
The site has six semi-isolated burned-rock concentrations and hearths with associated prehistoric artifacts. One concentration, measuring 10-by-15 m, is covered with grass turf and burned rock is exposed around the edges. The interior deposits are probably intact and have a depth of 15 to 30 cm. The occupation(s) belong, at least in part, to the Brantley phase (A.D. 1-750) of the terminal Archaic period. This phase assignment is based on a projectile point collected by SMU that is now stored in the Archaeological Research Collections of the Museum of New Mexico.

The author visually studied the site several different times over the course of two months and under varying conditions of natural light. These studies--of site setting, surface characteristics, and disturbances (mainly erosion channels)--suggest that the cultural depth of the site varies from surficial to 30 cm, except any pits or hearths that would have been dug into the aboriginal ground surface.

About 50 percent of LA 112349 lies within the construction and access zone of CME-2 for the stabilization of the drainage channel and banks of the South Seven Rivers. This area contains prehistoric remains. Actual site area to be involved measures 60 m north-south by 60 m east-west, or approximately 3,600 sq m.

Prehistoric features within the proposed construction zone at LA 112349 include at least five burned-rock features and associated lithic artifacts. Two of the burned-rock features may be part of a single, larger burned-rock feature. Burned rocks protruding from aeolian sand deposits may indicate the presence of more hearths within the project area. Investigation of these features will inform on temporary-camp activities and subsistence practices of the Brantley (A.D. 1-750) or perhaps Globe (A.D. 750-1150) phase of the Guadalupe-Brantley culture sequence.

Figure 6. LA 112630 (Orchard Site) sketch map.



LA 112630 (Orchard Site)

This probable multicomponent site was first recorded in March 1996 by the NMSHTD (Fig. 6). It [REDACTED] on [REDACTED] of the [REDACTED] and the orchard immediately north of the site is uncertain.

The site has a dozen burned-rock concentrations and hearths with associated lithic artifacts. One concentration, measuring 10 m in diameter, is a roughly circular mound that may represent a baking feature. The interior deposits are probably intact and have an estimated depth of 30 to 50+ cm. The areas among the burned-rock concentrations are characterized by a thin scatter of burned rocks and lithic artifacts. No temporally diagnostic artifacts were noted, but burned-rock sites in nearby Texas have generally been found to belong to the Archaic period. A Late Prehistoric (pottery period) occupation is also possible; the nearby site of LA 38264, also a burned-rock site, produced at least one sherd. Thus, we expect that LA 112630 may have been occupied during the Brantley phase (terminal Archaic, A.D. 1-750) or perhaps the Globe phase (A.D. 750-1150).

A very thin scatter of glass and metal fragments that appear to be roadside trash was noted at the west end of the site near U.S. 285. Purple glass is present, indicating a turn-of-the-century date for some of the material.

The author has only briefly studied this site because it was found late in the planning process. It is very similar to LA 38264, however, in that both are burned-rock sites with lithic artifacts, is located on the edge and slope of the first terrace, is fairly well exposed to visual examination, and appears to lack significant cultural depth. The deepest part of the site is probably the rock mound at the east end of the site, but this feature lies outside the NMSHTD project zone and will be temporarily fenced for protection. If other pits, hearths, or features exist elsewhere in the site, we anticipate that they might be as deep as 30 to 50 cm.

About 20 percent of LA 112630 lies within the construction and access zone of CME-2 for the stabilization of the drainage channel and banks of the South Seven Rivers. This area contains prehistoric remains. Actual site area to be involved measures 5 m north-south by 70 m east-west. The exception is at the west end, within the existing right-of-way, where an area measuring 12-by-15 m, lies within the proposed construction zone. Total site area within the proposed construction zone is approximately 500 sq m.

Prehistoric features within the proposed construction zone at LA 112630 include at least five burned-rock concentrations in their entirety and parts of up to four others, as well as their associated lithic artifacts. Burned rocks protruding from eolian sand deposits may indicate the presence of more hearths within the project area. Investigation of these features will inform on temporary camp activities and subsistence practices dating to as yet undefined phases. The similarity of the features at this site to those of LA 38264 just across the river to the south suggests a Globe phase (A.D. 750-1150) occupation here as well.

DATA RECOVERY PLAN FOR PREHISTORIC COMPONENTS

Taxonomic Considerations

Katz and Katz (1985a) provide an excellent outline of prehistoric cultural developments in the Guadalupe Mountains-Brantley region. But the Katzes would be the first to admit that this sequence, which covers Paleoindian through early historic Native American periods, requires verification and elaboration. The last two periods--Globe (A.D. 750-1150) and Oriental (A.D. 1150-1450)--are not as well known as earlier ones, largely because aboriginal use of the Brantley Project area had decreased markedly in favor of the Guadalupe Mountains and their foothills west of the Pecos River. It is perhaps fortunate that two of our project sites represent the Globe and Oriental phases and lie between Brantley and the foothills of the Guadalupe Mountains. They provide an excellent opportunity to begin the process of fleshing out the details of these phases and of verifying or modifying the shift in subsistence emphasis posited by the Katzes.

As discussed in more detail below, horticulture evidently was not practiced prehistorically in the Guadalupe-Brantley region. This fact, plus other characteristics, have led Robert Mallouf (1985) to suggest that the prehistoric remains of the southern Guadalupe Mountains are more closely associated with the Trans-Pecos culture area of west Texas (the western "arm" of the state, except El Paso County) than with the Jornada-Mogollon to the west and north. We concur with Mallouf. Drawing on the Katzes work at Brantley, we suggest that the same applies to Brantley as well, including the sites being considered for the present project. A formal line of demarcation between the Trans-Pecos (including the Guadalupe-Brantley region) and the Jornada-Mogollon remains to be defined, but this fact is not important here.

The implications of the taxonomic assignment of the Guadalupe-Brantley region to the Trans-Pecos are several. First, as far as can be ascertained at present, the peoples inhabiting the Trans-Pecos--with the exception of those at La Junta de los Rios on the Rio Grande (present-day Presidio, Texas)--lived an Archaiclike, hunter-gatherer life-style throughout the prehistoric and historic periods. Many late prehistoric sites in the Trans-Pecos produce small amounts of pottery, but all of it was probably traded in from nearby regions. Most or all of the pottery on Guadalupe-Brantley sites came from the Sierra Blanca and El Paso regions to the northwest and west, respectively.

Theoretical Perspective on Hunter-Gatherer Subsistence Systems

Past research in the Guadalupe-Brantley region, as in the Trans-Pecos in general, indicates that baked succulents such as lechuguilla and sotol were a fundamental aspect of pottery period (Late Prehistoric) subsistence (Greer 1965, 1967, 1968; Roney 1985; Katz and Katz 1985a). Archaeological remains of baking ovens usually take the form of midden rings or circles of burned rock surrounding central pits, though burned rock mounds of other shapes are also known (S. Katz, pers. comm. 1996; R. Phippen, pers. comm. 1996). Midden circles date as early as the Middle Archaic period in Texas but are more common in later time periods. Most dated

ovens in the eastern Trans-Pecos, including the Guadalupe Mountains, belong to the post-A.D. 500 pottery period (Roney 1985:144). Since these succulents provide a reliable, year-round source of carbohydrates, they were understandably important to prehistoric and historic diets and probably obviated the value of, or need for, many other carbohydrate sources including corn (Sebastian and Larralde 1989; Roney 1985).

W. H. Wills (1988:54-55) points out that succulents are usually scattered across the landscape rather than clumped, which probably affected humans in yet another way. He posits that the scattered nature and year-round availability of these resources in the Trans-Pecos led to the retention of a more nomadic, "forager" pattern, rather than a less-nomadic, logistically organized pattern (Binford 1980). In simplest terms, foragers move to the food, and collectors move the food to the people. Collectors do this by means of task groups that are sent out to obtain specific resources and return them to the group, a behavior warranted by resources that occur in clumped or patchlike distributions. The primary differences between collector and forager life-styles are the degrees and ways in which people plan, organize, and conduct their food-quest in response to resource distributions and seasons of availability.

In theory, forager and collector sites should have fairly distinctive attributes. These might be summarized as follows:

Forager sites, because people are moved to the resources, are inhabited for shorter periods of time, have smaller accumulations of trash, and similar ranges of artifact types, all because the same general activities are carried out at each. Because they are occupied for relatively short periods of time (days or few weeks), relatively few items (manufacturing debris, broken artifacts, etc.) should be left behind. Sites should be similar, and their archaeological visibility should be subtle, perhaps even inconspicuous.

Collectors send out work parties to set up temporary special-activity sites, collect the target resource(s), and take the food back to long-term base camps. The characteristics of both should be as follows:

Base camps are generally quite visible archaeologically because they are used for a wide range of daily activities, resulting in the accumulation of a wide range of artifact types, activity areas, and refuse deposits. Some form of structure, whether ephemeral or more substantial in construction, is usually present, as are pits for the storage of food and other items. Base camps are generally used over long periods of time (several months) each year for several years, sometimes in sequential years and sometimes in staggered years or sets of years. A logistically organized group generally has only one or two base camps that it uses during a given year.

Special activity sites, on the other hand, are created during collecting expeditions, might be used only once, and are almost invisible archaeologically because they are used for only short periods, have little or no accumulation of nonperishable debris and broken artifacts, and have limited artifact inventories that reflect comparatively few activities.

While we generally agree with Wills's proposition, we, like Sebastian and Larralde (1989) and Collins (1991:8), emphasize the view that these strategies--foragers and collectors--are two ends of a continuum, not a dichotomy. In a given year or over a series of years, some groups may actually employ both strategies because of factors relating to season, climatic regime, economic success, demography, competition, and other factors (see Boyd et al. 1993 for a recent discussion). Sebastian and Larralde present an example of a "mixed" forager/collector strategy in the concept of "serial foraging." Using the Archaic peoples of southeastern New Mexico as an example, they define serial foraging as follows (Sebastian and Larralde 1989:55-56):

A strategy of **serial foraging** involves a small residential group that moves into the general vicinity of an abundant resource and camps there, uses the target resource and other hunted and gathered resources encountered in the general area until the target resource is gone, or until another desired resource is known to be available, and then moves on to the next scheduled procurement area. Such a strategy could be expected to create a great deal of redundancy in the archaeological record, an endless series of small, residential camps from which daily hunting-and-gathering parties move out over the surrounding terrain, returning to process and consume the acquired foods each evening. If the resources were randomly distributed, all the sites would look generally the same. But since many of the resources appear in the same place year after year or in some other cyclical pattern, some sites tend to be reoccupied.

Reoccupied sites, then, would be a clustering of small, single-event, serial-foraging sites. But, Sebastian and Larralde (1989:56) envisage a complicating factor:

The only exception to the rule of basically redundant but sometimes overlapping small campsites would be the winter camps. Given the relatively brief winters of the Roswell District, many of the sites would, on the surface, be no different in appearance from reoccupied short-term camps. Excavation of such sites might recover resources indicating a winter seasonal occupation or features indicative of storage, however. If we were able to differentiate single, large-group occupations from multiple, small-group occupations, we might find that winter sites differ from warm season camps in that they were occupied by larger groups.

In the above scenario, the settlement types of serial foragers should then start taking on the appearance of collectors' sites. While this introduces some difficulty in archaeological studies, it probably approximates reality to a greater degree and certainly seems to make better sense with respect to the archaeological record of southeastern New Mexico as we become increasingly familiar with it.

In addition to feature and artifact content of sites, Collins (1991:7-8) suggests biological correlates of forager and collector sites, particularly those involving burned rock middens. He suggests that the difference between the two might be signaled by whether the plant species processed are r-selected or not. That is, collectors would focus on r-selected species that are available in large numbers/amounts during short periods of time, requiring some form of preparation and storage for long-term benefit to humans. Foragers, on the other hand, would rely mostly on those plant species that are available throughout the year, precluding the need for storage but usually requiring greater mobility because their distribution across the landscape is

general, not patchy. Collins suggests that animal species might also be conducive to this type of analysis, but because animals are mobile, they are not particularly useful in this regard.

Before leaving the subject of subsistence strategies, it is appropriate to touch on the subjects of gardening-farming and food storage. The evidence for prehistoric horticulture in the Guadalupe-Brantley region is minimal at present. Roney (1985:44) states that corn was recovered from only three sites, all of them caves in the Guadalupe Mountains, but in each case, few remains were found. The Pratt Cave example (now published as Schroeder 1983:67) involves one or more corn kernels recovered from the vicinity of a hearth. Since two chile seeds were recovered from a lower level in the same test, it seems likely that the corn was introduced during the historic period by Apaches, rather than during Archaic times as suggested by Roney. According to Roney, the proveniences and temporal associations of the other two reports of corn are also uncertain. This leads us to conclude that horticulture either was not practiced by the prehistoric inhabitants of the Guadalupe or was practiced on only a very limited scale. Clarification of this point is needed.

Storage, usually in the form of pits, is believed to be a key signal as to the existence and identification of base camps and habitation sites. The storage of quantities of foodstuffs is a characteristic of logistically organized subsistence systems. Generally speaking, storage implies a location that is easily protected or otherwise secure from theft. Sebastian and Larralde (1989:86) advance the interesting hypothesis that, because some resource patches are spread over the landscape and create a logistical problem for exploitation, some people may actually have cached foods in the collection areas and then moved their families from cache to cache as needed throughout the winter season. This constitutes yet another variation on the forager theme. But while it may actually reflect the situation in southeastern New Mexico, it also has the strong potential for confusing the interpretation of archaeological remains.

So how does one come to grips with this problem? Collins (1991:7-8), in discussing research on burned-rock middens in Texas, provides us with a test for determining whether a forager system or a collector system prevailed during the occupation of a specific site or set of sites. He posits:

Therefore, complex components associated with burned rock middens which evidence quantities of remains of any one or more r-selected resources to the near exclusion of other kinds of resources imply, at least to some degree, the adaptive characteristics listed above and would favor an interpretation that burned rock middens were specialized food preparation features. Mesquite beans, prickly pear tunas, all deciduous nuts such as pecans and acorns, and psoralea are examples of r-selected plant foods. The geographic distribution of burned rock middens [in Texas] does not encompass the range of any notable r-selected animal species, however, seasonal availability of some animals, such as bison or migratory waterfowl could sometimes trigger behavior similar to that of r-selected resource exploitation, but the availability of such resources is not sufficiently reliable to result in the establishment of the same adaptive pattern.

In contrast, plant and animal foods that are edible and available for all or much of the year (sotol, prickly pear pads, lechuguilla, antelope, rabbits, deer, bison in some areas, fish, mussels, turkey, and others) can be exploited in the

more generalized foraging strategy and have different behavioral correlates. Evidence that foods of this kind provided the principal staples of groups responsible for burned rock middens would be evidence that these were not specialized food processing facilities, and that those responsible may have been foragers.

Data Recovery Questions

The investigations proposed for the project sites will be directed towards answering basic questions about settlement and subsistence behavior in the north end of the Trans-Pecos culture area. The main thrust will focus on documenting and validating the culture sequence recently formulated and outlined by Paul and Susana Katz (1985a), expressed as follows.

All four sites have prehistoric components. Judging by surface manifestations, some are Archaic and others Late Prehistoric in time. Feature types tentatively identified include hearths, baking features, burned-rock mounds, burned-rock scatters, and artifact scatters. The proposed data recovery project will investigate approximately 30 of these features. Part of the effort will also focus on finding and excavating any pits or other features currently masked by the extensive burned-rock concentrations. Every effort will be made to recover and record information pertinent to the research outlined below and the specific questions that follow.

- (1) Evaluate (verify or modify) our perception of the cultural content of the Brantley, Globe, and Oriental phases, and where possible, augment the criteria by which the phases can be distinguished. These phases span the terminal Archaic through the Late Prehistoric periods in the Brantley sequence (Katz and Katz 1985a).
- (2) Evaluate (substantiate, refute, or modify) the subsistence trend outlined by the Katz' (1985a) for the Brantley area. The Katz' believe that a major subsistence shift took place during the prehistoric sequence. Riverine resources such as mussels were important foods during the Avalon, McMillan, and Brantley phases (Middle Archaic through terminal Archaic), and nonriverine resources were largely supplemental. But starting in the Brantley phase, and continuing throughout the Globe, Oriental, and Phenix phases (the entire Late Prehistoric period), upland resources became more important and riverine resources less important. While this is better conceived as a change in emphasis, rather than a sharp change from one set of resources to another, it led to a markedly reduced human presence along the Pecos River.

Although the Katzes' reconstruction of the settlement and subsistence patterns appears justified by their data, we believe that the number of sites and components investigated by them are relatively few in number and, being concentrated near the Pecos River channel, do not fully represent the river valley occupation. Our project sites, being closer to the edge of the river valley, should permit us to fine-tune our perceptions of the entire riverine settlement.

- (3) Determine whether the inhabitants of the Guadalupe-Brantley region farmed and if so, determine how prominently cultigens figured in the diet relative to wild foods. Given

proximity to horticultural peoples of the Southwest, it is surprising that prehistoric peoples in the Guadalupe-Brantley region did not farm. But before this impression can be confirmed, we must use modern techniques to investigate the matter. Assuming that they did not farm, we then need to determine whether the reasons are cultural, demographic, climatic, or some combination of these. Could it be that the introduction/perfection of a new food processing technology (succulent baking) precluded the need for, or usefulness of, the adoption of farming, as has been suggested?

1. Are the prehistoric components of the project sites base camps/habitation sites, special activity sites, or some combination?

The project sites--LA 8053, 38264, 112349, and 112630--all have hearths, and LA 38264 has one or more baking pits. But are storage pits, other kinds of pits (for processing foods), and other types of thermal features also present? It is virtually guaranteed that all four sites were occupied more than once during the prehistoric period. Assuming so, we need to discover not only what kinds of features are present, but also which ones were contemporaneous and which were not. Were the activities or site function during each component the same or different?

At this stage in the investigations we have few observational data and facts by which to judge the answers to these questions. More intensive work will probably greatly modify our perceptions and interpretations of the prehistoric components at all of the project sites. The minimal data available suggest that two or more components are present at all sites and probably represent two or more phases in the Katzes' sequence. The validity of this expectation requires confirmation. To do this, we will need to discover, isolate, and study features and artifacts belonging to separate occupations (components).

Once individual components are defined, we can then proceed to document the activities that took place at each. The cultural features (storage pits, other types of pits, hearths, baking pits, etc.), associated artifactual materials, and the patterning of these remains are critical in defining site types through an analysis of the activities represented. Important subsidiary studies will assist in determining site type, as well as overall subsistence patterns, and include floral, faunal, and artifactual data, as discussed below.

2. What artifact assemblages are present at the project sites? What types of tools and manufacture debris are present. What are the relative abundances of the various types? On the basis of the artifacts, what types of activities were performed at the sites? How do these assemblages compare with those from other sites in the region?

The project sites (LA 8053, 38264, 112349, and 112630) have all produced lithic artifacts. Sites LA 8053 and 38264 have also produced pottery. Intensive surface investigation and excavation will probably produce other artifact types (projectile points, bifaces, ground stone, ornaments, etc.) as well.

The types of artifacts at a site help define the kinds of activities that took place at each specific location (component). Manos and metates imply grinding plant foods, projectile points imply hunting, and scrapers imply hide dressing. Multipurpose tools such as hammerstones, awls,

and drills, and manufacture debris such as chipped lithic debris, shell fragments, and some types of fragmentary artifacts, imply a host of generalized activities involving the manufacture or maintenance of items associated with day-to-day living. A wide range of artifact and debris types imply a base camp/habitation situation, and fewer artifact and debris types imply special activity sites. The percentages of each category will provide a *very rough* index to the relative frequency of occurrence of each activity at the site.

Caution is required in interpreting the data in this manner because of the effects of tool use-life on artifact assemblage composition (Schlanger 1990). This line of interpretation makes several assumptions about the data and the activities they represent, and the technique greatly simplifies a number of complex variables and conditions.

With these details worked out, we can then compare the project sites with other sites in the Guadalupe-Brantley region. Sites to be used in this comparison include cave, shelter, and open sites investigated by the Katzes (1985a) and Southern Methodist University (Henderson 1976; Gallagher and Bearden 1980; Roney 1985; Applegarth 1976).

3. What plants and animals were being processed or consumed at the project sites? What biotic communities were being exploited? Were the inhabitants of the sites exploiting all available biotic communities or only selected ones? Were cultigens being grown and consumed? During which season or seasons were the sites occupied?

The project sites (LA 8053, 38264, 112349, and 112630) all have the potential of producing burned plant remains and possibly some animal bone. Much activity involving cooking took place at all of the sites, as attested by numerous hearths, baking pits, burned-rock concentrations, and copious quantities of burned rocks scattered about the sites.

Plant and animal remains recovered at archaeological sites provide first line evidence for reconstructing various aspects of the human food quest. Animal bones and the pollen and charred remnants of plants will be studied to identify the species present and the biotic zones exploited, characterize the diet and food preparation techniques, and provide insights into the effects of taphonomic processes on the archaeological record. Floral and faunal data also have the potential of providing data on season of the year that they were collected or hunted. Although only certain plant and animal remains provide seasonal data, they are very useful in helping define the time of the year the sites were occupied. Since it is unlikely that the data from the project sites constitute a total view of the diet throughout the year or through time, it will be necessary to compare these results with those of other projects in the region to gain a better understanding of the total subsistence system.

As mentioned in an earlier section of this document, it is imperative that we establish whether or not domestic plants were grown in the Guadalupe-Brantley region. Leslie's (1979) assessment of the structural sites in the vicinity of Hobbs in far southeastern New Mexico, though without benefit of flotation and pollen recovery techniques, suggests that corn was not being grown east of the Pecos River within New Mexico. The WIPP Project (Lord and Reynolds 1985), located between Leslie's sites and the Pecos River, excavated three nonstructural sites but failed to find evidence of cultigens in flotation and pollen samples. On the other hand, corn was clearly being grown within the Pecos Valley at Roswell (Kelley 1984, Appendix 6; Rocek and Speth

1986; Wiseman 1985) and probably near Fort Sumner as well (Jelinek 1967). Thus, if cultigens are documented for the project sites, then the relative quantities may help us determine if the site occupants were farmers or full-time hunter-gatherers. Relatively large numbers of domestic remains would indicate that the people were farmers. Small amounts of cultigens would be less clear, for hunter-gatherers could have obtained them in trade from farmers.

4. What exotic materials or items at the sites indicate exchange or mobility?

Project site LA 38264 has already produced an obsidian flake. Intensive surface investigation and excavation at this and the other three sites (LA 8053, 112349, and 112630) may well produce more examples of imported materials. At the present time, some scholars also believe that all pottery is intrusive to the Seven Rivers region in that it was produced in the Sierra Blanca and traded into Seven Rivers. Since exotic or trade materials are by their very nature generally few in number in any site, concerted effort has to be made to recover them.

Materials and artifacts not naturally available in a region are indicative of either exchange relationships with other people or a mobility pattern that permits a group to acquire these items during their yearly round. Judging which situation is applicable to the project sites is difficult and will require careful comparison with data from the Roswell region. If we can determine whether the site occupants acquired the goods through trade or by direct access, we will gain perspective on the territory they used and therefore on the identity of the people themselves.

The absence of exotic materials is another matter entirely. In small sites and sites of short occupation, the absence of exotics can be misleading simply because such items may not have had time to find their way into the archaeological record. Or, perhaps the occupants simply did not acquire exotic materials. Either way, we may never know at any specific site. But this is precisely where comparisons with other assemblages in the region and the long-term accumulation of excavation data from numerous sites, both large and small and of all types, is necessary for acquiring perspective and, eventually, resolving the problem.

5. What are the dates of occupation at the various project sites?

Since it is likely that all four sites were occupied on one or more occasions during the prehistoric period, dating individual features and components is crucial. At the individual feature level, we need to determine which are contemporaneous (or approximately so) and which are not. This will enable us to define the dates of each component and the activities performed at the different time periods at the sites. This in turn will permit documentation of site and region use through time, whether or not these uses changed through time, and if they did change, the directions, intensity, and, hopefully, the reasons for those changes. Dating information will also permit us to assess the Katzes' chronology, phase sequence, and postulated cultural changes for the Guadalupe-Brantley region.

The dating situation is critical in southeastern New Mexico where dendrochronology, the most accurate and preferred dating technique, works poorly or not at all (W. Robinson, pers. comm. 1975). Few absolute dates derived by other techniques are currently available (Sebastian and Larralde 1989). Recent advances in radiocarbon dating make it the most viable technique for southeastern New Mexico at the present time. Obsidian hydration and thermoluminescence have

been tried in the region, but because these techniques are fraught with problems and are not generally reliable, they will not be used in this study.

During excavation, charcoal will be recovered from as many features and cultural situations as possible. Because of the importance of dating the project sites, we will submit both very small samples (for accelerator mass spectrometry analysis) and bulk samples (carbon-stained sands) for dating if necessary.

DATA RECOVERY PLAN FOR HISTORIC COMPONENTS

Katz and Katz (1985b), following on the work of Southern Methodist University (Henderson 1976; Gallagher and Bearden 1980), studied two dozen historic sites at Brantley prior to construction of the reservoir. Virtually all of these sites were Euro-American and date to the late 1800s and early 1900s. Ranches, farms, commercial-irrigation projects, and the old town site and cemetery of Seven Rivers were investigated. It is clear that, at least in the days prior to 1900, ranchers and farmers within a 30-km radius of the townsite of Seven Rivers considered themselves to be part of that community. LA 8053 lies within 5 km of the original Seven Rivers townsite, well within that community area.

Historic remains in the proposed NMSHTD project zone include one component at LA 8053 and three components at LA 38264. All three historic components at LA 38264 are trash dumps. They are so circumscribed that they may have been dumped from wagons or early trucks. The historic component at LA 8053 is more complex and may be either the remains of a homestead or an "office" associated with the nearby conglomerate quarry. The scant trash associated with this component indicates a short occupation, unless of course, some of the materials were hauled off and dumped elsewhere. All four components have purple glass, indicating turn-of-the-century activities.

Our investigation of the historic component at LA 8053 will have two phases, archaeological and archival. The archaeological work will include mapping the site, inventorying artifacts, collecting diagnostic pieces, and excavating around the rock outline for functional indicators. The rock outline suggests a structure of a type reminiscent of some turn-of-the-century buildings in the Roswell area. Those wooden frame buildings had skids and were moved from location to location as needed for schools, dwellings, and the like (E. C. Williams, pers. comm. 1992).

Archival work for LA 8053 will examine homestead documents, land titles, tax records, and any other records that might shed light on owners, site functions, and dates of occupation or use. Archaeological and archival results will then be compared for matching and contrasting information in an effort to correlate the archaeological remains with specific individuals and documentable site functions. The final effort will place the component in local and regional perspective through comparison with the results obtained by Katz and Katz (1985b) in their study of the Seven Rivers community.

Our investigation of the three historic trash dumps at LA 38264 will focus on each dump as a time capsule of information. Although we cannot correlate any of the dumps with known historic habitations, we can document each dump in terms of cultural content, infer function represented at the source location, and date each dump. These data can then be correlated with the culture history of the Seven Rivers community as outlined by the Katzes (1985b).

In investigating these dumps, we are interested in methodological possibilities as well as in historical data. The ranching economy was the mainstay of 1880s Seven Rivers. When the drought hit in the late 1880s, those aspects of Seven Rivers associated with ranching dried up as well. In the early 1890s, the railroad by-passed Seven Rivers, ending any chances of filling out

the town plat with homes and businesses. Yet, soon after the ranching bust and the coming of the railroad, J. J. Hagerman, Pat Garrett, C. B. Eddy, and others undertook an ambitious, privately funded, commercial irrigation project that also eventually failed shortly after 1900.

In what ways are these episodes of hopes and dreams and failures reflected at any one time in the archaeological record? As time capsules, like shipwrecks, the LA 38264 trash dumps may provide us with information on the activities and materials available during short slices of time during those fast-paced changes. More specifically, the dumps should reflect the goods and materials available to local residents prior, during, or after one or more of the major events of the region (end of the reign of the ranching industry, coming of the railroad, advent of commercial irrigation). Which of these periods are represented by the dumps? Do differences among the dumps reflect changes in the sources of goods, source regions (midwest versus east coast), or the quality of goods (greater or lesser availability of money)? To answer these questions, we will need to inventory each dump and date them as precisely as possible.

POTENTIAL OF THE PROJECT SITES FOR ANSWERING THE DATA RECOVERY QUESTIONS

LA 8053

The hearths and artifact scatters at this site are generally well spaced, providing a good opportunity to isolate each activity or component and analyze it separately. This should permit better definition of relative temporal placement and differentiation of activities associated with each locus. Pottery sherds are relatively numerous at this site and provide a good opportunity for dating the various features. Excavation will determine whether these features contain burned materials suitable for absolute dating and for reconstruction of subsistence practices.

The historic house foundation and associated trash constitute the most substantive remains belonging to this period to be investigated by this project. Although we will analyze the artifactual materials and their interrelations, we anticipate that the majority of information acquired for this component and period will be gained through archival research.

LA 38264 (SMU 45)

The primary features of interest at this site are the burned-rock concentrations, at least some of which appear to have associated baking pits. One probable baking pit has already been found, and others may be present. One sherd and the fill of this pit hold promise for dating some of the individual features as well as recovering plant and perhaps animal remains for determining feature function and subsistence practices. An obsidian flake noted among the lithic artifacts will inform on extra-areal contacts and movements of the site occupants.

The historic trash dumps will provide "snapshots" or vignettes of information about activities and occupations dating to the turn-of-the-century in the Seven Rivers vicinity. While the immediate origins of the materials (i.e., the houses from which they came) cannot be ascertained, we will still gain glimpses into the lives of Seven Rivers villagers during the crucial period of agricultural development in this part of territorial New Mexico about the time of statehood.

LA 112349 (SMU 44)

The hearths and one burned-rock concentration at this site are also well spaced, providing a good opportunity to investigate, analyze, and compare each feature separately. The potential recovery of charred plant remains from the hearths and burned-rock concentration may permit individual dating of some of the features as well as documentation of individual locus activities and subsistence practices. The provenience of the projectile point collected by SMU is currently unknown, making it only generally useful as a dating tool.

LA 112630 (Orchard Site)

The burned-rock concentrations at this site are fairly well spaced and should provide a good opportunity to investigate, analyze, and compare each feature separately. The potential recovery of charred plant remains from the hearths and burned-rock concentration may permit individual dating of some of the features as well as documentation of individual locus activities and subsistence practices.

EXCAVATION PROCEDURES

The first activity will be to map all four sites into a single system, including topography and nonsite areas. This will be accomplished with an EDM or "total station." At that time, we will establish multiple subdatums within each site and set the outlines for individual site grids based on 5-by-5-m squares. These can then be broken down into smaller units for investigation in detail.

Next, surface artifacts will be pinflagged, recorded, and collected. Collection unit size will be flexible and will depend on the number, concentration, and location of artifacts relative to the features. If only a few artifacts are located near a given feature, they will be piece-plotted. If numerous artifacts are densely packed near a feature, they will then be collected in a grid unit of appropriate size (generally 1-by-1 or 2-by-2 m grids).

Excavations will center on individual features and will include the surrounding area up to 5 m from the edge of the feature. Hand tools will be used to excavate in 1-by-1-m squares, and all fill will be screened through 1/8-inch wire mesh. Scattered burned rocks will be mapped individually, but concentrations will be mapped schematically.

Vertical excavation control will not be necessary in most instances because, by all indications, most features are sitting on or within a few centimeters of the modern surface. If we should encounter situations of cultural depth, either 5- or 10-cm arbitrary levels will be maintained from locally designated subdatums. Stratified fills are not anticipated, but if some are found, they will be excavated by individual stratum as determined from vertical tests.

Cultural features such as hearths, pits, and perhaps even structures are anticipated. When found, each feature will be excavated separately. Special attention will be given to obtaining soil samples for dating, flotation analysis, and pollen analysis from features.

During the excavations, photographs, drawings, and notes will be made as needed to document work progress, impressions, initial interpretations, features, and details uncovered during the work. Subsidiary maps will be prepared for each excavation area and will include all cultural features, excavation units, and modern features (highway markers, fence lines, etc.).

Although we have no direct evidence for cultural deposits deeper than 30 cm at any of the sites, we will use a backhoe if we discover circumstances that warrant deep excavations.

Human Remains and Sensitive Objects

We do not anticipate finding human remains at any of the project sites. If we do, we will treat them with sensitivity and will abide by stipulations resulting from consultations between the officials of appropriate Native American groups, the New Mexico Historic Preservation Division, the NMSHTD, and the OAS. Also, the conditions outlined in the following documents will be met: Historic Preservation Division Rule 89-1 ("Regulations for the Issuance of Permits to

Excavate Unmarked Human Burials in the State of New Mexico"); and Museum of New Mexico Rule 11, as amended April 2, 1991 ("Collection, Display, and Repatriation of Culturally Sensitive Materials").

Human remains or sensitive materials identified and recovered will not be handled or photographed in the field except as part of scientific data recovery by authorized persons. Photographs of human remains and other sensitive materials will not be allowed by or released to the news media, the general public, or other unauthorized persons. The only person authorized to take photographs of human remains and sensitive materials is the person designated by the project supervisor to take documentary photographs as part of the data recovery plan.

LABORATORY STUDY

Artifact Preparation for Analysis and Sampling Considerations

All items except bone will be washed in water. Animal and human bone will be dry brushed to remove dirt but will not be washed.

All collections from all proveniences will be sorted to general artifact type (lithic debitage, sherds, formal artifacts, etc.), tabulated, and scrutinized for rare or unusual artifact types and materials. If the items in a particular artifact class number in the tens of thousands, a sample will be drawn for detailed analysis. Otherwise, all items from each site will be analyzed.

Where sampling is necessary, primary consideration will be given to items from critical proveniences--structure floors, bottom fills of other types of features, use surfaces, stratified contexts, datable locations, and proximity to features. The types of proveniences most likely to be excluded from the analysis are excavations for ascertaining site peripheries (for example, backhoe trenches), exploratory excavations that have negative results (do not locate activity areas, culturally meaningful deposits, or features), and surface collections.

Analyses

Animal Bone

The animal bone analysis will provide several types of information pertinent to answering research questions. Paramount for our purposes, it will inform us about the species present, the relative proportions of species taken (the "mix"), hunting strategies, and seasonality.

Faunal remains will be analyzed for species, age, season of death, taphonomy, and evidence of butchering, cooking, and consumption. An attempt will be made to determine which elements were used by the prehistoric occupants of the sites and which were post-occupational intrusives.

Chipped Stone Debitage

A key aspect of the analysis of the chipped stone debris will be to reconstruct the core reduction technology. We need to know what the sizes, shapes, and internal imperfections of the raw material units were and how they affected the sizes, shapes, and other characteristics of the end products, the flakes, and ultimately, the artifacts produced from them. This exercise is necessary because of the nature of the raw materials available to the prehistoric people in southeastern New Mexico and will be useful in looking for and evaluating similarities and differences in metric and nonmetric attributes of flakes, cores, and chipped stone artifacts throughout the region. The chipped stone analysis will permit us to answer research questions about artifact production technology and exchange, mobility, and social relations.

The chipped stone debris will be analyzed for type (core, flake, angular debris), subtype (types of cores and flakes), material, metric dimensions (length, width, thickness, weight), platform characteristics, cortex, termination type, heat treatment, intentional retouch, and use wear.

Dating

Each radiocarbon sample will first be sorted by plant species and then grouped by photosynthetic pathway (3C, 4C, CAM, etc.). The samples will then be submitted to Beta-Analytic, Inc., for dating. AMS and bulk-sediment techniques will be used if necessary.

Formal Artifacts

All artifacts typable to traditional categories of curated tools (projectile points, drills, manos, metates, etc.) will be analyzed according to assumed anticipated primary function. We readily acknowledge that many individual artifacts were ultimately used in a variety of ways, but the primary function, judged by design characteristics (shape, material, etc.), will be the main criteria for assignment. In some cases, artifacts were put to secondary uses after they were no longer needed or functioned properly in their primary roles. By analyzing artifacts and assemblages from the standpoint of anticipated primary roles or needs, we can ascertain what activities the people expected to perform, and probably did perform, at a given location. Use-wear studies and other evidence for secondary uses can assist us in discerning actual uses. The two kinds of evidence, then, can give us a more complete picture of the functions of the individual features as well as the sites.

Formal artifacts will be analyzed for type (primary function inferred from design characteristics), material (stone, bone, shell, pottery, etc.), metric dimensions (length, width, thickness, weight), use wear, and other attributes that have merit (burning, breakage type, pigment, etc.).

Historic Artifacts

Historic artifacts will be inventoried in the field, but only those requiring further identification will be collected. The historic artifact assemblage will help date the components. Because of the short time periods represented, especially by the trash dumps, the historic assemblages may provide insights into shifts in quality, quantities, and origins of goods made available after the railroad entered southeastern New Mexico.

Human Remains

Laboratory treatment of human remains and sensitive materials will follow the stipulations resulting from consultations between the officials of appropriate Native American groups, the New Mexico Historic Preservation Division, the NMSHTD, and OAS. Also, the conditions outlined in the following documents will be followed: Historic Preservation Division Rule 89-1

("Regulations for the Issuance of Permits to Excavate Unmarked Human Burials in the State of New Mexico"); Museum of New Mexico Rule 11, as amended April 2, 1991 ("Collection, Display, and Repatriation of Culturally Sensitive Materials"); and New Mexico statutes pertaining to the treatment of human remains (pursuant to Section 18-6-11.2 NMSA 1978).

Human remains or sensitive materials identified and recovered will not be handled or photographed in the laboratory except as part of scientific data recovery by authorized persons. Photographs of human remains and other sensitive materials will not be allowed by or released to the news media, the general public, or other unauthorized persons. The only person authorized to take photographs of human remains and sensitive materials is the person designated by the project supervisor to take documentary photographs as part of the data recovery plan.

Subject to consultation, the following nondestructive observations and studies will be conducted if human remains are recovered during the excavations: standard anthropometrics, gender, age, pathologies, and anomalies.

If the bone is sufficiently well preserved, and depending on the results of consultations with the appropriate agencies, destructive studies may be undertaken. The samples for these studies will be of two types: (1) a minimum of two dime-sized pieces of bone from each individual represented, and (2) one cross section of the end of one long bone. The dime-sized pieces will be ground for chemical analysis.

Overall, the proposed studies will yield information on stature, gender, diet, health, nutritional status, and genetic relationships to regional and extraregional peoples. This information will then be compared and contrasted to the results obtained by Rocek and Speth (1986) in their study of burials from the Henderson site, a Late Prehistoric farming village near Roswell.

Plant Materials

Plant remains, as documented through pollen, microscopic plant fragments from flotation samples, and macroremains (large enough to be seen with the unaided eye), will also provide several other types of information pertinent to answering the research questions. They will inform us on wild species collected, domesticated species grown, the relative proportions of wild and domestic species used (the "mix"), wild-plant collecting strategies, and seasonality.

The floral materials will be analyzed to lowest taxonomic order possible and plant part represented. An attempt will be made to determine which remains were used by the prehistoric occupants of the sites and which were post-occupation intrusives.

Pottery

Pottery in sites like those being studied here is important for three reasons, all of which will inform on research concerning exchange, social relations, and dating. It provides a relative date for the occupation, indicates socio-economic ties with pottery-producing villages, and documents certain activities (food service, cooking, storage, etc.) that may have taken place at the sites.

The analysis will monitor several attributes, including temper, paste, surface finish, vessel form, and pottery type. The degree of success in the analysis will rely heavily on the nature of the sherds themselves and the natural processes they have undergone since the site was occupied.

The sherds observed at the project sites appear to be fairly typical of pottery found in southeastern New Mexico--they are so small that the identification of vessel form and function will be difficult in many cases. One positive aspect is that the surfaces of the sherds are intact, indicating recent exposure to the elements and promising valuable information about the pottery. It also signals the presence of intact cultural deposits at the site. Surface attributes of pottery are critical for proper identification of type, time period, and cultural affiliation.

Data Integration and Interpretation

Once all of the analyses have been completed, the results will be synthesized and used to address research question 1. Pertinent sites in the region, as reported in the archaeological literature, will be compared to the project sites to gain perspective on regional culture dynamics.

Publication of Findings

The final report will be prepared and published in the *Archaeology Notes* series of the Office of Archaeological Studies, Museum of New Mexico.

Disposition of Collections and Records

All collections, except human remains and grave goods, will be submitted to the Museum of New Mexico Archaeological Research Collections. Human remains and grave goods will be repositied according to understandings reached through consultation with the appropriate governmental agencies and Native American group(s) to be determined by the SHPO and the NMSHTD.

All paper records and photographs will be submitted to the Archeological Records Management Section at the Laboratory of Anthropology, Museum of New Mexico, in Santa Fe.

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Rule No. 11 POLICY ON COLLECTION, DISPLAY Adopted: 01/17/91
AND REPATRIATION OF CULTURALLY
SENSITIVE MATERIALS

I. INTRODUCTION

The policy of the Museum of New Mexico is to collect, care for, and interpret materials in a manner that respects the diversity of human cultures and religions.

Culturally sensitive materials include material culture as well as the broader ethical issues which surround their use, care, and interpretation by the Museum. The Museum's responsibility and obligation are to recognize and respond to ethical concerns.

II. DEFINITIONS;

- A. "Culturally sensitive materials" are objects or materials whose treatment or use is a matter of profound concern to living peoples; they may include, but are not limited to:
1. "Human remains and their associated funerary objects" shall mean objects that, as a part of the death rite or ceremony of a culture, are reasonably believed to have been placed with individual human remains either at the time of death or later;
 2. "Sacred objects" shall mean specific items which are needed by traditional religious leaders for the practice of an ongoing religion by present-day adherents;
 3. Photographs, art works, and other depictions of human remains or religious objects, and sacred or religious events; and

- 4. Museum records, including notes, books, drawings, and photographic and other images relating to such culturally sensitive materials, objects, and remains.

- B. "Concerned party" is a museum-recognized representative of a tribe, community, or an organization linked to culturally sensitive materials by ties of culture, descent, and/or geography. In the case of a federally recognized indian tribe, the representative shall be tribally-authorized.

- C. "Repatriation" is the return of culturally sensitive materials to concerned parties. Repatriation is a collaborative process that empowers people and removes the stigma of cultural paternalism which hinders museums in their attempts to interpret people and cultures with respect, dignity, and accuracy. Repatriation is a partnership created through dialogue based upon cooperation and mutual trust between the Museum and the concerned party.

- D. The Museum of New Mexico's Committee on Sensitive Materials is the committee, appointed by the Director of the Museum of New Mexico, that shall serve as the Museum of New Mexico's advisory body on issues relating to the care and treatment of sensitive materials.

III. IDENTIFICATION OF CONCERNED PARTIES

- A. The Museum shall initiate action to identify potentially concerned parties who may have an interest in culturally sensitive material in the museum's collections.

- B. The Museum encourages concerned parties to identify themselves and shall seek out those individuals or groups whom the Museum believes to be concerned parties.

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- C. The Museum's sensitive materials committee shall review all disputed individual claims of concerned-party status in consultation with the tribe, community, or organization which the individual(s) claims to represent. The Museum's sensitive materials committee shall assist, when necessary, in designating concerned parties who have an interest in culturally sensitive materials contained in the collections of the Museum of New Mexico.
- D. The Museum shall provide an inventory of pertinent culturally sensitive materials to recognized concerned parties.
- E. The Museum shall work with concerned parties to determine the appropriate use, care and procedures for culturally sensitive materials which best balance the needs of all parties involved.

IV. IDENTIFICATION AND TREATMENT OF CULTURALLY SENSITIVE MATERIALS

- A. Within five years of the date of adoption of this policy, each Museum unit shall survey to the extent possible (in consultation with concerned parties, if appropriate) its collections to determine items or material which may be culturally sensitive materials. The Museum unit shall submit to the Director of the Museum of New Mexico an inventory of all potentially culturally sensitive materials. The inventory shall include to the extent possible the object's name, date and type of accession, catalogue number, and cultural identification. Within six months of submission of its inventory to the Director of the Museum of New Mexico, each Museum unit shall then develop and submit, a plan to establish a dialogue with concerned parties to determine appropriate treatment of culturally sensitive items or materials held by the unit.

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- B. As part of its treatment plans for culturally sensitive materials, the Museum reserves the right to restrict access to, or use of, those materials to the general public. The Museum staff shall allow identified concerned parties access to culturally sensitive materials.
- C. Conservation treatment shall not be performed on identified culturally sensitive materials without consulting concerned parties.
- D. The Museum shall not place human remains on exhibition. The Museum may continue to retain culturally sensitive materials. If culturally sensitive materials, other than human remains, are exhibited, then a good-faith effort to obtain the advice and counsel of the proper concerned party shall be made.
- E. All human skeletal remains held by the Museum shall be treated as human remains and are de facto sensitive materials. The Museum shall discourage the further collection of human remains; however, it will accept human remains as part of its mandated responsibilities as the State Archaeological Repository. At its own initiation or at the request of a concerned party, the Museum may accept human remains to retrieve them from the private sector and furthermore, may accept human remains with the explicit purpose of returning them to a concerned party.

IV. REPATRIATION OF CULTURALLY SENSITIVE MATERIALS

- A. On a case-by-case basis, the Museum shall seek guidance from recognized, concerned parties regarding the identification, proper care, and possible disposition of culturally sensitive materials.

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- B. Negotiations concerning culturally sensitive materials shall be conducted with professional discretion. Collaboration and openness with concerned parties are the goals of these dialogues, not publicity. If concerned parties desire publicity, then it will be carried out in collaboration with them.
- C. The Museum shall have the final responsibility of making a determination of culturally sensitive materials subject to the appeal process as outlined under section VII A.
- D. The Museum of New Mexico accepts repatriation as one of several appropriate actions for culturally sensitive materials only if such a course of action results from consultation with designated concerned parties as described in Section III of this policy.
- E. The Museum may accept or hold culturally sensitive materials for inclusion in its permanent collections.
- F. The Museum may temporarily accept culturally sensitive materials to assist efforts to repatriate them to the proper concerned party.
- G. To initiate repatriation of culturally sensitive materials, the Museum of New Mexico's current deaccession policy shall be followed. The curator working with the concerned party shall complete all preparations for deaccession through the Museum Collections Committee and Director before negotiations begin.
- H. Repatriation negotiations may also result in, but are not limited to, the retention of objects with no restrictions on use, care, and/or exhibition; the retention of objects with restrictions on use, care and/or exhibition; the lending of objects either permanently or temporarily for use to a community; and the holding in trust of culturally sensitive materials for the concerned party.

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- I. When repatriation of culturally sensitive materials occurs, the Museum reserves the right to retain associated museum records but shall consider each request for such records on an individual basis.

VI. ONGOING RECOVERY OR ACCEPTANCE OF ARCHAEOLOGICAL MATERIALS

- A. In providing sponsored archaeological research or repository functions, the Museum shall work with agencies that regulate the inventory, scientific study, collection, curation, and/or disposition of archaeological materials to ensure, to the extent possible under the law, that these mandated functions are provided in a manner that respects the religious and cultural beliefs of concerned parties.
- B. When entering into agreements for the acceptance of, or continued care for, archaeological repository collections, the Museum may issue such stipulations as are necessary to ensure that the collection, treatment, and disposition of the collections include adequate consultation with concerned parties and are otherwise consistent with this Policy.
- C. In addition to the mandated treatment of research sites and remains and in those actions where treatment is not mandated, defined, or regulated by laws, regulations, or permit stipulations, the Museum shall use the following independent guidelines in recovering or accepting archaeological materials:
 1. Prior to undertaking any archaeological studies at sites with an apparent relationship to concerned parties, the Museum shall ensure that proper consultation with the concerned parties has taken place.

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2. When so requested by concerned parties, the Museum shall include an observer, chosen by the concerned party, in the crew of an archaeological study.
3. The Museum shall not remove human remains and their associated funerary objects or materials from their original context nor conduct any destructive studies on such remains, objects, and materials, except as part of procedures determined to be appropriate through consultation with concerned parties, if any.
4. The Museum reserves the right to restrict general public viewing of in situ human remains and associated funerary objects or items of a sacred nature and further shall not allow the public to take or prepare images or records of such objects, materials, or items, except as part of procedures determined to be appropriate through consultation with concerned parties. Photographic and other images of human remains shall be created and used for scientific records only.
5. The Museum reserves the absolute right to limit or deny access to archaeological remains being excavated, analyzed, or curated if access to these remains would violate religious practices.