Cultural Resource

Across the Desert Floor

Cultural Resource Investigations Along US 54, Otero County, New Mexico

Volume I
Context and
Site Descriptions

New Mexico State Highway and Transportation Department

Technical Series 2002-1

TRC

Taschek Environmental Consulting

ACROSS THE DESERT FLOOR
CULTURAL RESOURCE INVESTIGATIONS ALONG US 54
OTERO COUNTY, NEW MEXICO
Volume I

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Taschek Environmental Consulting

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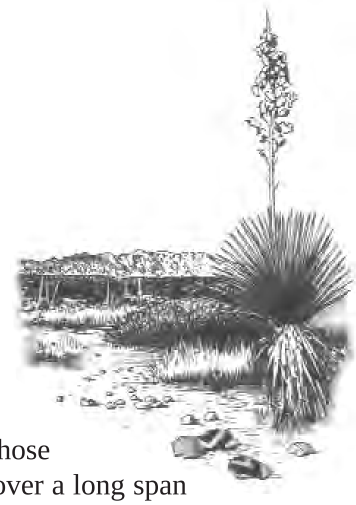
ABSTRACT

Archaeological testing and data recovery investigations were conducted by TRC at 22 sites along US 54 in Otero County, New Mexico. These sites include Jaca (LA 6829), Orogrande 1 (LA 128699), Orogrande 2 (LA 128700), Orogrande North (LA 128708), LA 110358, LA 115255, LA 115256, LA 115257, LA 115258, LA 115259, LA 115260, LA 115261, LA 115262, LA 115263, LA 115264, LA 115265, LA 126178, LA 126181, LA 128701, LA 128707, LA 128709, and LA 128710. Eleven of these sites were tested only and were not treated during the data recovery phase (LA 110358, LA 115255, LA 115257, LA 115258, LA 115261, LA 115264, LA 126178, LA 128701, LA 128707, LA 128709, and LA 128710). Two of these sites, LA 115255 and LA 128709, were determined eligible to the National Register of Historic Places (NRHP), while the rest were deemed not eligible. LA 115255 was completly avoided by a re-design of the construction right-of-way, and significant cultural resources at LA 128709 were all located outside of the small corner of the site impacted by the construction project.

Eleven sites were treated during the data recovery phase (Jaca [LA 6829], Orogrande 1 [LA 128699], Orogrande 2 [LA 128700], Orogrande North [LA 128708], LA 115256, LA 115259, LA 115260, LA 115262, LA 115263, LA 115265, and LA 126181). These sites produced significant cultural resources spanning in time from the Late Archaic period to the early portion of the El Paso phase. A wealth of diagnostic artifacts, along with 73 radiocarbon dates, provided abundant chronological data on these sites. Historic remains, most of which were associated with the town of Orogrande, were also documented at some of these sites. These sites varied considerably in terms of size, numbers of features, and density of remains. Jaca (LA 6829) was, by far, the largest and most productive site, with a primary component dating from the late Doña Ana phase to early El Paso phase. Orogrande 1 (LA 128699) was the second largest site, with both Late Archaic and Mesilla-phase components, although this site appears to be a palimpsest of many small occupations whose debris accumulated over a long span of time. The other sites were all considerably smaller, although they still varied in terms of size and numbers of features, and most of these yielded significant chronological and other archaeological data.



The Late Archaic and Mesilla-phase components all appear to be the remains of small-scale, seasonal, and/or short-term occupations. One Late Archaic pithouse was uncovered at Orogrande 1 (LA 128699), and four Mesilla-phase structures were also encountered at this site. One (and possibly another) Mesilla-phase pithouse was excavated at LA 115262, a basin-floor site. Unfortunately, preservation conditions at the Late Archaic and Mesilla-phase sites were not especially good, and the recovered botanical remains in general tell us little about subsistence patterns associated with these occupations.

Late Formative components were identified at several of the US 54 data recovery sites, and most of these date from the poorly known Doña Ana phase. At the Jaca site (LA 6829), the intensive Late Formative occupation spans the late Doña Ana phase to the very early portion of the El Paso phase, and this was the only site to contain a recognizable occupation from the latter phase. This site is especially significant, in that it straddles the temporal boundary between these two phases, a situation that has not been clearly documented elsewhere in the Jornada Mogollon region. Despite its short occupational duration, a detailed internal chronology of the site was constructed based on stratigraphic, ceramic, and radiocarbon evidence.

Abstract

Excavations at Jaca turned up a major surprise, in that the vast majority of the 18 structures uncovered at the site consist of simple, informal pithouses. One formal pithouse was also present, and directly on top of this a large, rectangular, communal structure was built. This structure appears to have been part of a room block, which includes an adjacent structure to the west that only barely extended into the investigated right-of-way. Dating from the Doña Ana/El Paso phase transition, this room block is one of the earliest documented cases of pueblo construction in the Jornada Mogollon region. Even while this room block was constructed and occupied, however, simple pithouses continued in use at the site. Following abandonment of the room block, pithouses continued to be built and used at Jaca. Recovered botanical remains from this site included large quantities of maize (present in macrobotanical, pollen, and phytolith samples), along with beans and a domesticated gourd.

Among the other Doña Ana-phase sites along US 54, LA 115260 also yielded especially significant data. Although among the smaller sites, LA 115260 contained a buried midden deposit and high density of features, indicating an intensive occupation. Aborted excavations at this site uncovered plastered floors that appear to mark substantial structures. Preservation conditions at this site were exceptionally good, and it yielded the largest faunal assemblage from any of the US 54 sites, and maize was recovered from the botanical materials. Adjacent site LA 115265 also yielded maize remains, and is probably part of the same, early Doña Ana-phase community that includes LA 115260. These sites are unusual for Late Formative agricultural settlements, in that they are located within a basin-floor playa.

Although none of the historic remains at the data recovery sites were deemed significant to the NRHP, most of these materials are associated with the historic town of Orogrande. A century ago this was booming mining center, but was almost completely abandoned in the early twentieth century. Because so many of the investigated sites were located in and around historic Orogrande, archival and oral historical research surrounding this town's history were carried out as part of this project, and a narrative account of the town and its mining district is presented in this report.

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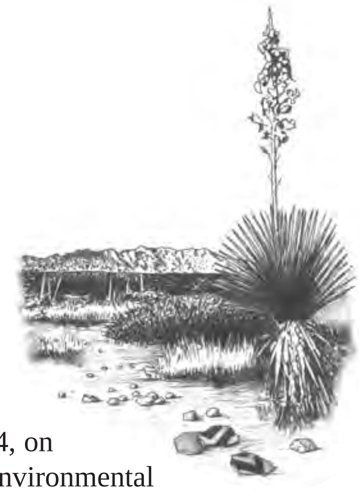
Chapter 1

INTRODUCTION

Jim A. Railey



Introduction and Project History

In the mid-1990s, the New Mexico State Highway and Transportation Department (NMSHTD) initiated plans to improve U.S. Highway 54 (hereafter US 54), from milepost 0 at the Texas state line north of El Paso, to milepost 55 between Orogrande and Alamogordo, New Mexico (Figure 1.1). The project will entail the widening of this segment of US 54 from a two-lane to a four-lane highway, along with intersection and drainage improvements. The project corridor crosses federal lands administered by the Bureau of Land Management (BLM) and the U.S. Army at Fort Bliss, along with existing NMSHTD right-of-way, and lands acquired by the NMSHTD from private sources and easements obtained from the BLM. Funds provided by the FHWA were used for the project.

Because this project is a federal undertaking, highway construction was preceded by assessments of the environmental resources to be affected. As part of this effort, cultural resource investigations were carried out in several phases. In 1996 and 1997, Cibola Research, on behalf of Marron and Associates, Inc. and NMSHTD, conducted a cultural resources survey of the US 54 corridor from the state line to Alamogordo (Marshall and Marshall 1998). This survey covered 103.6 km (64.4 miles) along US 54, but excluded a segment in and near Orogrande, where NMSHTD acquisitions were, at the time, undetermined. This project also incorporated the results of an earlier survey, between mileposts 5.0 and 18.0, carried out by Wiseman (1995). Altogether, Marshall and Marshall identified 19 "cultural resources" (i.e., sites) and 105 "cultural localities" (i.e., isolated occurrences).

In 1999, Archaeological Services by Laura Michalik (ASLM) carried out additional cultural resources inventory surveys along US 54, on behalf of Taschek Environmental Consulting (TEC) and the NMSHTD (Michalik 1999, 2000). The areas surveyed included potential right-of-way segments in and around Orogrande (not previously surveyed by Cibola Research), and various proposed facilities outside the highway corridor (including drainage ponds, border patrol facilities, and maintenance easements). In addition, this effort surveyed vacant lots and standing buildings along US 54 in Orogrande. In all, ASLM documented 20 new archaeological sites, three previously recorded sites, 54 isolated occurrences (IOs), and 19 standing structures.

Also in 1999, TEC, on behalf of Molzen Cobin and Associates, contracted with TRC to conduct testing investigations at 13 archaeological sites along US 54 (TRC project 26599; Acklen *et al.* 1999). TRC carried out the fieldwork November 8–23, 1999, in collaboration with SWCA. The investigations involved sites documented by Cibola Research and ASLM. Subsequently, TEC contracted with TRC to conduct testing investigations at eight additional archaeological sites in and around Orogrande (TRC project 30112; Graves *et al.* 2000). The fieldwork for this project was carried out August 24–September 20, 2000. The purpose of the testing phase was to evaluate the eligibility status of the tested sites with respect to National Register of Historic Places (NRHP) criteria, and to make treatment recommendations. Of the 21 sites tested, one had been previously determined eligible to the NRHP (LA 6829), 12 were recommended eligible, and nine sites were recommended not eligible. Among the 13 eligible sites, 11 were recommended for data recovery investigations, and two for avoidance (Table 1.1).

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Table 1.1 US 54 Sites, Showing TRC Project Numbers and Eligibility Status

LA #	Testing Project #	Data Recovery Project #	NRHP Eligibility
6829	26599	27836	Eligible
110358	26599	—	Not Eligible
115255	26599	—	Eligible (Avoided)
115256	26599	27836	Eligible
115257	26599	—	Not Eligible
115258	30112	—	Not Eligible
115259	26599	27836	Eligible
115260	26599	27836	Eligible
115261	26599	—	Not Eligible
115262	26599	27836	Eligible
115263	26599	27836	Eligible
115264	26599	—	Not Eligible
115265	26599	27836	Eligible
126178	26599	—	Not Eligible
126181	26599	27836	Eligible
128699	30112	31577	Eligible
128700	30112	31577, 34165	Eligible
128701	30112	—	Not Eligible
128707	30112	—	Not Eligible
128708	30112	31577	Eligible
128709	30112	—	Eligible (Avoided)
128710	30112	—	Not Eligible

Data recovery plans were prepared and included in the two testing reports. In addition to data recovery at the 11 sites, historical research into the town of Orogrande was recommended as part of the data recovery phase, in part to provide a context for LA 115258, a railroad grade that was not otherwise recommended for further treatment.

Like the testing phase, data recovery investigations were carried out by TRC as part of two different projects, again on behalf of TEC and Molzen Cobin and Associates. TRC project 27836 involved excavations at the eight sites recommended for data recovery by Acklen *et al.* (1999). Fieldwork for this project was conducted between February 7 and May 25, 2000, in collaboration with SWCA (Acklen 2000). Data recovery at the three sites in Orogrande was performed under TRC project 31577 (Acklen *et al.* 2001). Fieldwork for this project took place March 5–May 17, 2001, by TRC crews in collaboration with archaeologists from TEC. Finally, in December 2001 excavations were carried out by TRC and TEC in a small portion of LA 128700 not originally slated for data recovery (TRC project 34165). Laboratory processing was carried out by TRC and SWCA, with some assistance from TEC. Post-field tasks were conducted as part of the aforementioned TRC data recovery projects, along with TRC project 33639, which was devoted strictly to analysis of data recovery results and report preparation.

The US 54 investigations were performed in compliance with federal legislation protecting cultural resources, including the National Historic Preservation Act of 1966, as amended (PL 89–665), and the Archaeological Resource Protection Act of 1979 (PL 96–95). TRC's data recovery fieldwork was authorized under Special Use Permits 45–8152–00–22 (TRC project 27836) and 45–8152–00–24 (TRC project 31577), issued by the BLM. TRC prepared data recovery plans (Acklen *et al.* 1999; Graves *et al.* 2000), which were approved in advance of the final phase of fieldwork. The Federal Highway Administration (FHWA) served as the lead federal agency for this

undertaking, and the projects also involved consultation with, and review by, the BLM and Fort Bliss. Pamela Smith of the Las Cruces office served as the BLM point of contact. The Fort Bliss point of contact was Dr. Bret J. Ruby, and Fort Bliss archaeologist James Bowman was also instrumental in coordinating these projects.

Funding for the research was provided by the NMSHTD. Laurel Wallace and Blake Roxlau, NMSHTD archaeologists, coordinated the planning and implementation of the projects, and Ms. Wallace served as the NMSHTD point of contact. The US 54 investigations were carried out under NMSHTD Project Numbers MIP-054–1(30) 23, CN 3776; MIP-054–1(31)30, CN 2992; MIP-054–1(30)00, CN 3391; and P-054–1(30)07, CN 3775.

At TRC, John C. Acklen managed the planning, fieldwork, laboratory processing, and initial portions of the research, analysis, and report preparation tasks. Following the departure of Mr. Acklen from TRC in August 2001, Dr. Jim A. Railey assumed TRC's management of the US 54 projects, and Dr. Howard Higgins became Principal Investigator. At TEC, Camille Sayer, Dr. Richard M. Reycraft, and Gerry Raymond in turn oversaw management of the US 54 cultural resources effort, under the direction of TEC's Principal, John Taschek. Anthony Martinez served as principal investigator for SWCA.

Timothy Graves of TRC directed all testing and data recovery field efforts, with the exception of TRC project 34165. Bruce Boeke served as total station mapping specialist on all TRC field projects, and as crew chief for TRC projects 27836 and 31577. Valerie Provencio served as crew chief on TRC project 26599. Grant Smith was the project geomorphologist. TRC field crew members and other assistants include Juan Arias, Michael Okies, Gilbert Gonzales, Cullom, Timothy Marshall, Don Lloyd, Greg White, Christopher Carlson, Mark Sechrist, and Timothy Antonio. John Acklen also oversaw portions of the fieldwork, and Dr. Jim A. Railey spent a day in the field at LA 6829. Robert Swain, Marie Brown, and Tod Roberts supervised SWCA crews, and they were assisted by crewmembers Edith Wyndham, Trace Stuart, Tomas Morales, William Penner, Hollis Lawrence, and Billy Crews. Dr. Richard Reycraft of TEC served as Quality Assurance officer and safety officer during the data recovery at Orogrande (TRC project 31577), and Gerry Raymond of TEC supervised the supplemental fieldwork at LA 128700 (TRC project 34165). Anthony Martinez collected archaeomagnetic samples in the field and directed the laboratory processing conducted by SWCA. Martha Yduarte, TRC–El Paso, directed in-field laboratory processing, and Jonathan Van Hoose oversaw the lab and database at TRC's Albuquerque office. Gwyneth Duncan and Catherine Heyne participated in the design and implementation of the project database, with Clarissa Hoover providing crucial guidance.

The following individuals undertook analyses of the artifact assemblages and other remains: Lori Reed and Joell Goff of Animas Ceramic Consulting (ceramics), Jonathan Van Hoose and Lance Lundquist of TRC (chipped stone and ground stone), Dr. Steven Shackely of the University of California at Berkeley (obsidian sourcing), Gwyneth Duncan (faunal remains and historic artifacts), Thomas O'Laughlin of the Albuquerque Museum (macrobotanical remains), Dr. John G. Jones of Texas A&M University (pollen), Dr. Steven Bozarth of the University of Kansas (phytoliths), John Torres of Lithic Analysis (human remains), Dee Jones-Bartholomew of TRC (human and faunal remains), Dr. Mary Malainey and Dr. K. L. Malisza of Winnipeg (lipid residues), and Barbara Winsborough of Winsborough Consulting (diatoms). Beta Analytic processed the radiocarbon samples, and Dr. Eric Blinman of the Museum of New Mexico, Office of Archaeological Studies processed the archaeomagnetic samples. Dr. Jim A. Railey conducted archival and oral history research into the town of Orogrande, and Dr. Richard Holmes and Gwyneth Duncan also contributed to the archival search.

At the TRC-Albuquerque office, Rita Garrett administered TRC's financial activities for the

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US 54 projects. Document production was carried out under the direction of Karen Laney, who was succeeded by Anjali Solomon. They were ably assisted by Maya Gallegos, Lisa O'Neal, Jodi Chapman, and Daniel Teck. The multitude of maps in the report are the work of Jewel Paschke, David Strein, Gregory Grady, and Rene Essiembre of TRC-Albuquerque's CAD/GIS department, and Dr. Jim A. Railey oversaw graphics production for the report and produced all of the artifact illustrations and many of the maps as well.

Organization of the Report

This report is divided into three volumes, including 33 chapters, a bibliography, appendices, and a separately bound site location volume (distribution of the latter is restricted). Following this introduction, the environmental setting and regional cultural history are presented in Chapters 2 and 3. Chapter 4 presents the Research Orientation that served as a guide for the investigations, and Chapter 5 describes the general methods used in the fieldwork, laboratory processing, and analysis. Investigations at the individual data recovery sites, along with site-specific results, are presented in Chapters 6–16. Sites that were tested only are grouped by both temporal and geographic themes and are presented in Chapters 17–19. The results of analyses of artifacts and other remains are presented in Chapters 20–29, including individual chapters on ceramics, lithic artifacts, obsidian sourcing, faunal remains, paleoethnobotany, phytoliths, diatoms, lipid residues, and human remains. Three chapters are devoted to the interpretation of the prehistoric remains, including feature analysis (Chapter 30), and houses and settlement patterns (Chapter 31). Chapter 32 presents a history of Orogrande and its associated mining district. A summary of the project findings, along with management recommendations, is presented in Chapter 33. The appendices include (A) Radiocarbon Data, (B) Ceramic Petrographic Analysis, (C) Ceramic Neutron Activation Analysis, (D) Additional Lithic Data, (E) Additional Faunal Data, (F) Additional Macrobotanical Data, (G) Jaca Site (LA 6829) Features, (H) Orogrande 1 (LA 128699) Features, (I) Archaeomagnetic Letter, (J) Additional Human Remains Data, and (K) Site Location Information.

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Chapter 2

Environmental Setting

John C. Acklen, Grant D. Smith, Jim A. Railey, and Timothy B. Graves

Physiography

The US 54 project area lies within the Mexican Highland section (Bolson Subsection) of the Basin and Range physiographic province of North America. This province extends in an arc from Trans-Pecos Texas, southern New Mexico, and northern Chihuahua, continuing westward and northward into Arizona, southern California, Nevada, western Utah, and small portions of northern California, southeastern Oregon, and southern Idaho (Fenneman 1931; Thornbury 1965). The Basin and Range province represents an area where the continental crust was compressed and then stretched, resulting in mountain-building followed by widespread normal faulting and the formation of graben-type basins. Typical of the Basin and Range province, the project area is characterized by north-south trending, block-faulted mountain ranges separated by linear graben basins. These structural basins, or bolsons, formed closed, internally drained sediment traps that were the site of tremendous deposition of sediment eroded from the flanking ranges during the Cenozoic period. Elevations across the area range from less than 4,000 feet (1,219 m) along the Rio Grande at El Paso to more than 8,800 feet (2,682 m) along the crest of the Organ Mountains.

The principal landforms of the US 54 project include the Tularosa Valley and Hueco Bolson, which represent two contiguous graben basins underlain by thick Cenozoic sediments. These basins are flanked by several block-faulted mountain ranges and highlands including the Hueco Mountains, Sacramento Mountains, and Otero Mesa on the east and Franklin/Organ/San Andres Mountain chain on the west.

Satterwhite and Ehlen (1980) identify four principal landform units for the area:

1) mountain,
2) alluvial fan,
3) basin, and
4) wash.

These are further divided into sub-units. There are three mountain sub-units, including

1) the relatively smooth, eastward-sloping surface of Otero Mesa;
2) dissected hills formed primarily on sedimentary rocks in the Hueco Mountains, along the Otero Mesa escarpment, in parts of the southern Sacramento Mountains, and on the margins of the Franklin, Jarilla, and Organ mountains; and
3) rugged, sharp-crested mountains typically developed on jointed intrusive igneous rocks, which make up most of the Organ and Jarilla mountains, parts of the Franklin Mountains, and occasional isolated landforms along the eastern margin of the basins.

The alluvial fan landscape unit is subdivided into six sub-units:

1) primary, high-elevation fans, which are predominantly gravelly, moderately to strongly dissected, situated near the mountain front, and typified by channeled, bypassing drainage;
2) secondary, high-elevation fans, which are also dissected, gravelly, characterized by bypassing drainage, and situated near the mountain front, but are lower and more restricted in area than the preceding class;

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3) intermediate elevation fans, which lie below the higher fans and are typified by finer deposits, less dissection, and dendritic distributary drainage;

4) low-elevation fan/aprons that grade into the basin floor, which are fine-grained, show little dissection, and exhibit distinct distributary drainage;

5) fans covered with eolian sands; and

6) high-elevation, anomalous fans, which occur primarily as gravelly, low-gradient, south-trending fans originating in the southern Sacramento Mountains and aggrading on Otero Mesa close to the mountain front.

The basin landscape unit is subdivided into four sub-units:

1) mesquite coppice dunes that cover the majority of the basin floor;

2) larger dunes that are concentrated on the eastern side of the bolson adjacent to the distal fans;

3) low, smooth areas, consisting of level, low-lying surfaces (probably largely dry playas); and

4) small, irregular depressions (which also probably represent basin playas).

The wash landscape unit is not subdivided, but includes U- and V-shaped gullies on the uplands and upper fans; deeper, rectilinear-shaped arroyos on the proximal and medial fans; and shallow, broad, dendritic distributaries on the lower fan surfaces. Well-formed channels are essentially absent on the basin floor.

One of the major features of this vast province is the Chihuahuan Desert, which covers 453,215 km^2 (MacMahon 1985:24). The project area lies within the northern portion of this desert.

Bedrock Geology and Lithic Resources

The closest sources of bedrock material to the study area are found in the Organ Mountains to the west, the Franklin Mountains to the southwest, and the Jarilla Mountains, located in the south-central Tularosa Basin. Other sources of lithic materials include pebble- to cobble-sized materials along portions of the basin floor from ancestral Rio Grande deposits.

A wide spectrum of rock is found in the Organs. The Precambrian rocks include igneous intrusives (granite and diorite), metamorphic rocks (schist), Paleozoic limestones, and other sedimentary rocks. Cretaceous and Tertiary conglomerates also occur in the Organs, along with volcanic extrusives. Multiple Tertiary intrusions of quartz monzonite form the jagged crest along the northern part of the range (Barnes 1983; Church *et al.* 1996; Denison and Hetherington 1969; Nelson and Haigh 1958). Potential chipped stone lithic resources from the Organs include Mississippian age cherts, Tertiary rhyolites, and welded tuffs. Ground stone sources originating in the Organs include chlorite schist (with a source at Mineral Hill in the northern Organs) and igneous rocks. Any of these materials would also have been available at secondary sources within the alluvial fans flanking the Organ Mountains.

The Franklin Mountains are composed of sedimentary, igneous, and metamorphic rock ranging in age from the Precambrian to the Tertiary times (Church *et al.* 1996:7–9). Precambrian-age rocks include igneous intrusives (granite, diorite, rhyolite and basalts), Lenoria quartzite (metamorphosed sandstone, siltstone, and shale), and Castner limestone (limestone, hornfels, and diabase). Cambrian deposits include the Bliss sandstone formation with sandstones, quartzites, and siltstone. Ordovician deposits, which include bedrock closest to the southern end of US 54, consist of El Paso limestone and the Montoya dolomite formations with limestone, dolomite, and chert deposits. Silurian age deposits include the Fusselman dolomite for-

mation that contains some chert nodules. Devonian deposits include the Canutillo and Percha shale formations consisting of marl, chert, and shale. Mississippian age deposits are the Las Cruces limestone, Rancheria, and Helms formations (including various limestones and cherts). Pennsylvanian period deposits are characterized by the Magdelena formation (consisting of limestone, shale, siltstone, and chert). Permian age deposits include the Hueco limestone formation (including fossiliferous limestone, marly siltstone, and cherty limestone). Cretaceous deposits include a conglomerate formation of limestone, shale, and sandstone. Tertiary age deposits are also closest to the project area and include a felsite sill formation that is fine-grained with inclusions of quartz and ferromagnesium minerals.

The Jarilla Mountains are composed of Pennsylvanian and Permian age sedimentary rocks, often metamorphosed by igneous intrusives. These deposits contain cherty limestones, limestone, siltstone, shale, and conglomerates (Church *et al.* 1996:12). Metamorphism of these deposits has changed the local sandstone to a metaquartzite and marbleized the limestone (Church *et al.* 1996:13). Igneous and metamorphic activity within the mountain range has also produced turquoise deposits that were exploited by both prehistoric and historic populations (Carmichael 1986:37; White 1968:15). Metal ores are also present; the geological history of these is discussed further in Chapter 32.

Alluvial deposits from the ancestral Rio Grande represent another major local source of lithic raw material in the study area. Referred to as the Santa Fe Group, these sediments include the Camp Rice Formation, and are distributed throughout parts of the Tularosa Valley and are present west of US 54. Measuring up to 18-m thick, the Santa Fe Group contains gravel deposits composed of chert, quartzite, obsidian, basalt, rhyolite, and other materials from the northern ranges in New Mexico (Church *et al.* 1996). Although some cobbles occur within the deposits, most of the available lithic materials are pebble sized. Of the lithic sources in the Santa Fe gravels, the most sought-after were obsidian nodules (originally derived from the Jemez Mountains, Obsidian Ridge, Polvadera Peak, and other non-local sources), whose glassy character made them especially prized for the production of projectile points and other small tools (Church *et al.* 1996:91).

Basin Floor Geology and Pedogenesis

The floor of the Tularosa Basin was formed through a complex, evolutionary history involving tectonic movements in the earth's crust, deposition of fluvial and lacustrine sediments, pedogenesis on stabilized surfaces, and reworking of surface sediments through eolian processes. Extensional stress of the earth's crust during the middle to late Tertiary produced the area's graben basins that hosted lakes of various sizes during a time when there was widespread deposition of colluvial, alluvial, fluvial, and lacustrine deposits. During most of this time, the Tularosa Basin and Hueco Bolson appear to have been separate basins with nearly parallel depositional histories.

Tertiary and Early Quaternary Deposition and Soil Formation

Much of the surface and near-surface deposits on the basin floor were ultimately derived from fluvial sediments deposited by the ancestral Rio Grande. Sometime between one and two million years ago, the Rio Grande entered the southern Tularosa Valley through Fillmore Pass, a gap between the Franklin and Organ mountains. At that time, the Rio Grande deposited considerable fluvial sediments into the southern Tularosa Valley—sediments that contained small, rounded gravels of non-local lithic materials (including cherts and obsidian). These deposits have been classified as the Camp Rice Formation fluvial facies (Gile *et al.* 1981; Monger and Buck 1995). About 720,000 years ago, the Rio Grande began entrenching into these sediments. The stabilized upper surface of the Camp Rice Formation is referred to as the La Mesa geomorphic surface (Seager *et al.* 1987; Monger 1993; Monger and

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Buck 1995:23). This surface has sediments with strongly developed calcareous horizons of La Mesa calcrete, often referred to as “the caliche.” Meanwhile, formation of the alluvial fans around the Organ Mountains led to deposition of sediments classified as Jornada I and II, which have some eolian counterparts on the basin floor (see below). Lacustrine deposits within playas dating from this period are identified as the Petts Tank Formation.

Late Quaternary Deposits

The late Pleistocene of the Tularosa Basin is represented by Isaack’s Ranch alluvium. In areal distribution, Isaack’s Ranch sediments are largely restricted to alluvial fans on the flank of the Organ Mountains (Monger 1993). Eolian sediments matching the pedologic characteristics of Isaack’s Ranch alluvium have been observed in other places on the basin floor, however. In terms of visibility, the Isaack’s Ranch sediments are often exposed in interdunal areas and arroyos. These sediments are typically a red, gravelly clay loam that exhibits both argillic and calcareous pedogenic accumulations. Carbonates occur as common (10–15 percent) nodules that are dispersed throughout the paleosol. This amount of carbonate is classified as a Stage II accumulation. In the basin and within the region, radiocarbon dating of sediments that contain Stage II carbonate accumulations has yielded dates from the late Pleistocene or older (Gile *et al.* 1966; Machette 1985; Monger 1993). More specifically, Monger (1993) has dated the Isaack’s Ranch alluvium from 8000–15,000 B.P.

Deposition of the Isaack’s Ranch sediments is followed by an erosional episode (dating probably between 9000 and 7000 B.P.) that exposes both Isaack’s Ranch and earlier Camp Rice deposits and left deflated accumulations of carbonates on the erosional surface. This erosional episode is followed by further eolian activity that leads to the formation of the Holocene Organ deposits. These deposits are originally defined as alluvial fan sediments on the flanks of the Organ Mountains (Ruhe 1964, 1967), and they serve as the source material for eolian deposits within the basin. Monger (1993) applies an Organ sequence (Organ units I, II, and III) to the eolian sediment on the basin floor. These Organ sediments typically cap the Isaack’s Ranch or earlier Camp Rice deposits.

The slightly calcareous Organ I eolian unit is the earliest of the three sediments. As opposed to the poorly sorted alluvium in the Isaack’s Ranch sediments, the Organ I eolian deposits are relatively well sorted. Their texture is typically a fine sandy loam as opposed to the Isaack’s Ranch gravelly clay loam. In addition, their hue (10YR5/3 vs. 7.5YR5/3) is not as red as the Isaack’s Ranch alluvium. Pedogenic development in the Organ I sediments is indicated by the presence of weak clay bridges between sand grains and by a Stage I carbonate accumulation (common filaments). Both of these characteristics match those attributed to the Organ I sediments by Monger (1993). The age of this unit is thought to be 7000–2100 B.P. In general, the Organ I sediments lack a preserved A horizon and only exhibit the remnants of a calcareous Bk horizon. The lack of the surface soil horizon is an indicator that this unit was widely eroded prior to its burial, most likely by subsequent eolian activity. With respect to archeological materials, this deflation suggests that Middle to Late Archaic components may be concentrated on the surface of the Organ I sediments. This statement applies both to interdunal surfaces, where materials may currently be visible and to the substratum beneath adjacent coppice dunes. Within the dunes, the Organ I sediments may be buried by a meter or more of younger sediments, but the typical lack of an A horizon still indicates that this unit was largely eroded prior to its burial. Isolated remnants of Organ I, A horizons are, however, sporadically preserved within a few coppice dunes.

Representing the early portions of the late Holocene (1100–2100 B.P.) are the Organ II sediments, which were deposited by both alluvial and eolian processes. The Organ II sediments appear

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to be the most ephemeral in distribution and preservation. Though Organ II alluvium is relatively common in the fans flanking the Organ and Franklin mountains, these eolian deposits appear to be largely limited to these areas. In the majority of the coppice dune areas of the basin, Organ I and III deposits are the only Holocene units that are preserved. Where present, though, the Organ II sediments form a distinct stratigraphic break. The texture of this intermediate Holocene unit is quite variable—everything from coarse sand to a fine sandy loam may be present. The coarser sediments tend to be closer to alluvial channel areas, which reflects the alluvial winnowing of fine sediments. What distinguishes the Organ II sediments are the weak Stage I carbonate accumulations (Bk horizon with few, fine carbonate filaments). Such weak accumulations are typically associated with sediments dating from 1000–4500 B.P. (Machette 1985; Karlstrom 1988). Monger (1993) further refines the basin sequence by proposing that Organ II sediments date from 2100–1100 B.P. In archaeological terms, the Organ II sediments may contain Late Archaic and Formative components. As with the Organ I sediments, the lack of a preserved A horizon indicates partial erosion of this unit. The result is that multiple cultural components may be concentrated on the surface of the Bk horizon. Where the Organ II sediments have been completely eroded, these components will be concentrated on the Organ I surface.

The final unit is Organ III, which dates from 100–1100 B.P. It is also represented in alluvial fan and eolian sediments. Organ III sediments, though variable in color across the basin, typically consist of a fine sandy loam that lacks pedogenic carbonate accumulations. Pedogenic development within this unit is typically limited to a slightly firmer consistency and slightly higher chromas than the overlying sediments. As a result of these properties, this unit is classified as a Bw (cambic) horizon. As is typical of the other Organ eolian units in the basin, Organ III sediments usually lack an A horizon and appear to be eroded. A few examples of preserved Organ III A horizons have been observed in the southern to southeastern portion of the basin south of the Tobin Wells area and in the Nations East Well vicinity (Graves and Turnbow 1998; Sechrist *et al.* 1999). Thus the preservation of Organ III sediments is variable. Where the A horizon is present, the likelihood that cultural materials are preserved *in situ* is high. In terms of surface distribution, the Organ III sediments are often exposed on interdunal surfaces and visible near the base of many of the coppice dunes. Given the proposed age of 100–1100 B.P. for this unit, the potential for cultural materials includes those from the Mesilla, Doña Ana, and El Paso phases.

The most recent deposits within the basin are the historic sands. These loose, laminated sands comprise the majority of the mesquite coppice dunes and form a thin mantle in interdunes. The historic sands lack any significant evidence of soil formation and, in some cases, are still mobile today. Monger (1993) and several other researchers have suggested that these sediments date after A.D. 1850. This time frame coincides with the end of the Little Ice Age and roughly correlates to the introduction of cattle in the area. Whether one or both of these factors contributed to the mobilization of dune sand at this time continues to be a matter of some debate. Given the age of this unit, its archaeological potential is limited to historic materials, though it may thinly bury cultural materials of greater antiquity.

Climate

Current Conditions

Located in the Chihuahuan Desert, the El Paso area averages 20.1 cm (just more than 8 inches) of precipitation per year. Nearly half of this precipitation occurs in the months of July, August, and September in the form of scattered thunderstorms (U.S. Department of Commerce 1969). High temperatures range from 35.2°C (95.4°F) in June to 13.5°C (56.3°F) in January. The mean annual temperature ranges 14.4°F–18.9°F (58–66°F; Godfrey *et al.* 1973). The Chihuahuan

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Desert is considered a "cold desert" with the average temperature under 23.9°C (75°F).

Paleoenvironment and Paleoclimate

Paleoclimatic research in the Chihuahuan Desert in general, and the Tularosa Valley in particular, has documented changing environmental conditions dating from the Pleistocene through the Late Holocene (Beck 1996; Bryant and Holloway 1985; Hall 1985; Van Devender 1990; Van Devender and Bradley 1985, 1990; Wells 1966). Often these variable environmental conditions are correlated with cultural and demographic changes beginning with the early Paleoindian period, which is associated with the Late Pleistocene epoch (Hall 1985; Johnson 1986; Martin 1963; Wells 1966). The Late Pleistocene in the northern Chihuahuan Desert is characterized by cool summers and mild wet winters (Van Devender 1990). According to Van Devender (1990:125), "The most likely explanation of mild winter temperatures in the late Wisconsin is the blocking of arctic air masses by the continental glaciers and virtual elimination of the 'blue northers' in the Chihuahuan Desert." Although some summer rains occurred during the late Wisconsin period, modern plants are absent. The wetter and higher mountain elevations sustained stands of pine-juniper, while the lower, drier slopes supported juniper-oak forests. Inhabiting the study area during the Late Pleistocene were horses, camels, four-horned antelope, pronghorn, deer, and bison. Fossil remains of these and other taxa are found in several sites, such as Anthony's Cave, Wylde, Conkling Cavern, Fosberg Cave, and Pendejo Cave (Harris 1977, 1985, 1995; MacNeish 1992). Other paleoecological studies indicate that extant species of animals moved to higher and cooler latitudes as a response to warmer and drier conditions in the southern Jornada region following the end of the Pleistocene (Harris 1985; Van Devender and Bradley 1990).

The transition from the Late Pleistocene to the Early Holocene involved the onset of a warmer and drier climate. Winter rain continued to fall in greater amounts than today, but the amount of summer rain increased along with summer temperatures (Van Devender 1990:126). About 10,000 years ago, there was a brief return to a cooler and wetter climate, but this was soon followed by warmer and more arid conditions with the expiration of the winter rainfall pattern (Bryant and Holloway 1985; Van Devender 1990:126). Correlated with this shifting winter precipitation pattern was the onset of intense winter freezes that discouraged the growth of subtropical desert scrub plants in the Tularosa Valley. Instead, extensive grasslands began covering the basin floors. This change in winter precipitation corresponded with summer monsoonal rainfall, which by the Late Holocene became the modern pattern for the study area. Winter freezes were reduced in terms of the number of days, and this (combined with adequate summer rainfall and the occurrence of more frequent droughts) brought about a shift in vegetation. This shift involved a proliferation of xeric plants, including creosote bush, soaptree yucca, snakeweed, skunkbush, tasajillo, honey mesquite, Mormon tea, garbancillo, croton, datil, sotol, and hedgehog cactus.

More recent paleoenvironmental investigations have shed doubt on some earlier interpretations. In a review of Van Devender's (1990) data on woodrat midden deposits from Hueco Tanks, Bishops Cap, and the Sacramento Mountains, Hall (1999:23) concluded that:

> …piñon pine dropped out by 10 ka, scrub oak dropped out by 7 ka (although it still inhabits the Hueco Mountains in places), and juniper dropped by 6 ka. Modern-day desert scrub vegetation was established by 4 ka, based on macrofossils, with the appearance of lechugilla, ocotillo, and creosote.

Some juniper and scrub oak stands have been documented on north-facing slopes of the Franklin Mountains, Hueco Mountains, and the

Otero Mesa Escarpment. These stands tend to be sporadic, historic in age, and frequently associated with springs (Graves *et al.* 1997). Wood remains from numerous archaeological features throughout the central Hueco Bolson predominately consists of mesquite and saltbush (Graves and Peterson 1994; O'Laughlin 1978). Investigations within the Tularosa Valley have yielded a prevalence of the same species (Toll 1991:395; Doleman *et al.* 1991). Such findings indicate that, beginning in the Middle Archaic period, the Tularosa and Hueco basins are dominated by desert scrub vegetation.

Water Resources

Surface water is a critical but scarce resource within the Tularosa Valley/Hueco Bolson. The basin floor is dotted with small playas created by normal faulting (Abbott *et al.* 1996). Typically water exists in playas only for short periods after heavy rains. Having gradually accumulated fine-grain silt and clay sediments, some of the playas have an impermeable floor, but the high evapotranspiration rate of the Chihuahuan Desert soon removes all of the surface water from these temporary ponds. Within the study area, primary conduits for water delivery are alluvial fans that drain the eastern flanks of the Jarilla Mountains (see Figure 1.1). Playas are present along most of the US 54 project corridor.

Permanent water sources are available within numerous springs in the Franklin, Organ and Sacramento Mountains, and even along the Otero Mesa escarpment (Graves *et al.* 1997), although all of these springs are located more than 10 miles from the nearest site along US 54.

Subsurface water does not appear to have been directly accessible to human inhabitants of the basin. The only groundwater close to the surface may collect on the relatively impermeable La Mesa calcrete. Even then, the water source was only a few centimeters thick. Such groundwater, however, may have been important to vegetation on the bolson floor and thus may have influenced human activity in the area (see Abbott *et al.* 1996). Use of this water source by prehistoric people, however, has not been demonstrated. Artificial basins to capture and store potable runoff, similar to dirt tanks used by historic and modern-day ranchers, were excavated by late prehistoric inhabitants (Scarborough 1988)

Utilization of deep, subsurface water is limited to historic inhabitants. The remains of historic wells such as Nations East (41EP3264) and Sand Tank attest to this utilization. Groundwater in the Tularosa Valley/Hueco Bolson is associated with aquifers in middle Pleistocene and older Camp Rice and Fort Hancock formation sediments (Cliett 1969; Knowles and Kennedy 1958; Meinzer and Hare 1915). The mineral content of the groundwater increases with depth, with brackish water occurring within a few hundred feet of the bolson floor. Abbott *et al.* (1996) report that fresh water is present in the Camp Rice formation, but the older and deeper Fort Hancock formation yields highly saline water only.

Other surface water is located in the mountainous area peripheral to the basin. These sources include numerous springs to the west in the Organ Mountains at Soledad Canyon, Dripping Springs, Globe Spring, Texas Canyon Spring, Aguirre Springs, and Rock House Springs. Sources in the Franklin Mountains include Whispering, Indian, and Mundy springs. Off Otero Mesa, surface water survey include an unnamed canyon above the Quick Homestead. Sources in the Sacramento Mountains are numerous, although these are the farthest from the project area. Surface flow from the springs may have extended farther during moist climatic intervals. Additional, now dry, springs (including many unidentified ones) may have flowed during moist climatic intervals; and some of these may have been more accessible to basin inhabitants, especially those living close to the Jarilla Mountains. Spring activity in the mountains and basin has been negatively affected by historic and modern water usage, which has caused substantial lowering of the water table from the late historic period to the present (Orr

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and Riser 1992; Knowles and Kennedy 1958). Surface water sources to the northeast of the range have been noted north of the Jarilla Mountains within a series of mound springs (Carmichael 1986:37).

Modern Floral and Faunal Communities

As noted above, the Chihuahuan Desert is divided into two districts based on plant distributions: the northern Larrea-Yucca section and the southern succulent plant desert (Shelford 1963:374). In general, the Chihuahuan Desert plants have fewer leaves with straighter stems than plants in the three other North American deserts.

The northern Chihuahuan Desert plants have adapted to slightly more arid conditions with creosote bush (*Larrea tridentata*) and soaptree yucca (*Yucca elata*) being the dominant species.

Creosote bush is more likely to thrive in well-drained sites with calcareous soils. Honey mesquite (*Prosopis glandulosa*), another common plant of the region, grows best in sandy soils along arroyos or the margins of playas. Other woody plants found in this desert region include Mormon tea (*Ephedra* sp.) and prickly pear (*Opuntia phaeacantha*). Table 2.1 presents a summary of the flora observed by the US 54 crew during the fieldwork.

Table 2.1 Vegetation Observed in the Study Area

Scientific Name	Common Name
Shrubs	
Larrea tridentata	Creosote bush
Ziziphus obtusifolia	Lotebush or graythorn
Yucca elata	Soaptree yucca
Ephedra trifurca	Long-leaf ephedra
Prosopis glandulosa	Honey mesquite
Proboscidea altheaefolia	Devil’s claw
Grasses	
Erioneuron pulchellum	Fluffgrass
Aristida spp.	Three-awns
Bouteloua aristoides	Needle grama
Sporobolus spp.	Dropseed alkali sacaton
Bouteloua barbata	Six-weeks grama
Forbs	
Amrisia acanthocarpa	Flatspine ragweed
Boerhavia coccinea	Scarlet spiderling
Dimorphocarpa wislizenii	Spectaclepod
Euphorbia spp.	Spurge
Helianthus petiolaris	Prairie sunflower
Hoffmanseggia drepanocarpa	Sicklepod rushpea
Mentzelia multiflora	Desert mentzelia
Proboscidea althaeifolia	Sand devil’s claw
Psilostrophe tagetina	Paperflower
Senna bahunioides	Two-leafed senna
Solanum elaeagnifolia	Purple nightshade

The Chihuahuan Desert supports a wide array of animal species (Tables 2.2 and 2.3). These range from the horse lubber grasshopper (*Taeniopoda eques*), which is black with yellow markings on its head and back and rose-colored wings, to an occasional pronghorn antelope (*Antilocapra americana*), the fastest animal in North America. More common mammals include the black-tailed jackrabbit (*Lepus californicus*), desert cottontail (*Sylvilagus audubonii*), and coyote (*Canis latrans*). Pronghorn prefer areas with abundant grasses and forbs and are often found in grassland/desert transition zones.

In many areas of western North America, pronghorn were hunted prehistorically by a surround method, which involves almost everyone in a band or even several bands. Even after the acquisition of horses, the Comanche continue to use the surround as a primary means of hunting antelope (Wallace and Hoebel 1952:67–68).

A variety of bird species are present, but birds are limited in number within the Chihuahuan Desert. Only 30 breeding species occur throughout the desert, with only 10–12 species in the more extreme desert biome. One hundred acres may support only 70 breeding pairs of birds. The animals most frequently observed in the area are listed in Table 2.3.

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Table 2.2 Expected Fauna in the Sand Coppice Dune Areas

Scientific Name	Common Name
Mammals	
Urocyon cinereoargenteus	Gray fox
Vulpes velox	Kit fox
Canis latrans	Coyote
Sylvilagus audubonii	Desert cottontail
Lepus californicus	Jackrabbit
Taxidea taxus	Badger
Dipodomys spp.	Kangaroo rat
Perognathus spp.	Pocket mice
Chaetodipus spp.	Pocket mice
Neotoma spp.	Woodrats
Birds	
Amphispiza bilineata	Black-throated sparrow
Carpodacus mexicanus	House finch
Toxstoma crissale	Crissal thrasher
Lanius ludovicianus ludovicianus	Loggerhead shrike
Zenaida macroura	Mourning dove
Geococcyx californianus	Greater roadrunner
Circus cyaneus	Northern harrier
Buteo jamaicensis	Red-tail hawk
Athene cunicularia	Burrowing owl
Falco mexicanus	Prairie Falcon
Reptiles	
Cnemidophorus spp.	Whiptails
Crotaphytus wislizenii	Leopard lizard
Uta stansburiana	Desert side-blotched lizard
Cnemidophorus neomexicanus	New Mexico whiptail lizard
Cnemidophorus tessallatus	Checkered whiptail lizard
Crotaphytus collaris	Common collared lizard
Crotaphytus bicinctores	Black collard lizard
Gambelia wislizenii	Leopard lizard
Uta stansburiana	Desert side-blotched lizard
Phrynosoma cornutum	Texas Horned lizard
Crotalus viridis	Prairie Rattler
Lampropeltis getula	King snake
Sistrurus catenatus	Massasauga
Crotalus atrox	Western Diamondback
Pituophis melanoleuca sayi	Bullsnake

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Table 2.3 Fauna Most Frequently Observed in the Study Area

Scientific Name	Common Name	Season	Observed
Bubo virginianus	Great horned owl	Spring/Summer/Autumn	Frequent
Carvidae carvus	Black crow	Spring/Summer/Autumn/Winter	Frequent
Lepus californicus	Black-tailed jackrabbit	Spring/Summer/Autumn/Winter	Frequent
Athene cunicularia	Burrowing owl	Spring/Summer/Autumn/Winter	Frequent
Sylvilagus auduboni	Cottontail rabbit	Spring/Summer/Autumn/Winter	Constant
Canis latrans	Coyote	Spring/Summer/Autumn/Winter	Occasionally
Canis domesticus	Domestic dogs	Spring/Summer/Autumn/Winter	Constant
n/a	Lizards: longnose, lesser, Texas horned	Spring/Summer/Autumn/Winter	Constant
Mus spp.	Mice	Spring/Summer/Autumn	Occasionally
Zenaida asitica	Mourning dove	Spring/Summer/Autumn	Frequent
Odocoileus hemonius	Mule deer	Spring/Summer/Autumn	Occasionally
Falco Mexicanus	Prairie falcon	Spring/Summer/Autumn/Winter	Frequent
Crotalus viridis	Western rattlesnake	Spring/Summer/Autumn	Occasionally
Buteo jamaicensis	Red-tailed hawk	Spring/Summer/Autumn/Winter	Occasionally
Notiosorex crawfordi	Shrews	Spring/Summer/Autumn	Seldom
Amphispiza belli	Sparrow	Spring/Summer/Autumn	Frequent
Buteo swaisoni	Swainson's hawk	Spring/Summer/Autumn	Occasionally
Neotoma micropus	Woodrat	Spring/Summer/Autumn	Occasionally

Summary

The northern Chihuahua Desert presented a harsh environment for human inhabitants. Water was scarce and sources unpredictable. Although a surprising variety of edible plants are present, they vary both spatially and according to seasonal availability. The diversity of economically important faunal species is extremely low, with jackrabbit and (to a lesser extent) cottontail being the main species targeted by indigenous hunters (see Chapter 23). Although human populations in the area eventually developed an agricultural based subsistence economy (see Chapter 3), the desert floor remained an extremely marginal environment for both agricultural possibilities and human habitation.

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Chapter 3

Cultural and Social-Evolutionary History

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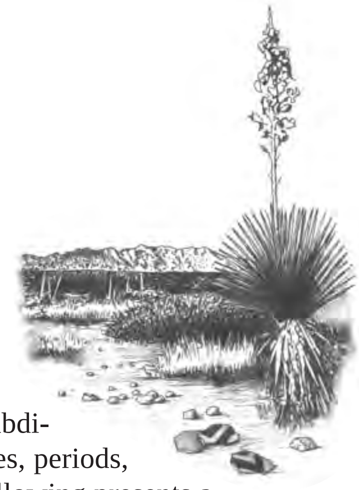

Introduction

The US 54 project area lies in the center of a cultural-geographic region defined by archaeologists as the Jornada Mogollon (Lehmer 1948) or, simply, the Jornada. As elsewhere throughout North America, human occupation of the central Jornada region covers over 10,000 years, and spans significant evolutionary changes among local cultures. Beginning with very small-scale hunting-gathering societies who inhabited the area at the end of the ice age, the archeological record proceeds along a trajectory that culminates in preceramic times with small communities of foragers who were somewhat less mobile than before, and who began practicing some agriculture. Following the introduction of ceramics, around A.D. 250, local populations continued to pursue hunting-and-gathering lifeways, although maize and other cultigens assumed increasing importance in the subsistence economy. Architectural developments led to the appearance of more substantial, well-constructed pithouses, and by A.D. 1250 puebloan-like settlements appeared, and maize-based agriculture had by this time become the subsistence mainstay for at least most of the region's population. A dramatic collapse and depopulation of the central Jornada region occurred around A.D. 1475, followed by the arrival of nomadic Apacheans and other groups. Europeans first arrived in the area in the sixteenth century, and the historic period brought settlers of Spanish, Mexican, and American origin.

Prehistory

Traditionally, archaeologists divide the prehistory of the central Jornada region into three traditions, the Paleoindian (ca. 9500–6000 B.C.), Archaic (6000 B.C.–A.D. 250), and Formative (ca. A.D. 250–1450). These are further subdivided into complexes, periods, and phases. The following presents a description of these temporal subdivisions as they are currently defined.

Paleoindian Tradition (ca. 9500–6000 B.C.)

Although there are disputed claims for evidence of Pleistocene human presence in the central Jornada region dating back as early as 36,000 B.P. (Chrisman *et al.* 1996; MacNeish *et al.* 1993; Shaffer and Baker 1997), the earliest widely-recognized interval of human occupation in the region is the Paleoindian tradition, dating ca. 9500–6000 B.C. This was a time when the local climate was cooler and moister than at present, with somewhat more lush vegetation and a smattering of now-evaporated lakes on the basin floors. Under these less arid conditions, the environment of the Tularosa Basin was not as marginal as it is today. Now extinct Pleistocene megafauna inhabited the area and provided a high-profile target for Paleoindian hunters. Low population densities prevailed among these early inhabitants of the region, who were apparently organized as small-scale, residentially mobile, and socially fluid groups. These groups shared a set of rudimentary material marker traits, borne of a common Paleolithic ancestry, and maintained wide-ranging exchange and interaction networks. These conditions worked to homogenize projectile point styles and other cultural marker traits over vast areas. Projectile points provide the most distinctive marker traits used to subdivide the Paleoindian tradition, which in this region includes three periods, or complexes: Clovis (9500–9000 B.C.), Folsom (9000–8000 B.C.), and Plano (8000–6000 B.C.).

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Clovis Complex (ca. 9500–9000 B.C.)

Marking the Clovis period are distinctive, fluted lanceolate projectile points, which give rise to the name of this complex. While the popular picture of this era is one of small groups of hunters attacking mammoths, with a Clovis-tipped spear in hand, there can be little doubt that smaller game and plants contributed greatly to the diet (Tainter and Levine 1987). The nature and pattern of Clovis sites indicate low population densities, with small-scale, dispersed, highly mobile social groups who inhabited large home ranges and traded and interacted extensively. Although Clovis points have been recovered along the Rio Grande and in the lower Tularosa Basin, Clovis sites tend to be relatively scarce in the Chihuahuan Desert. Two important locations occur near Mockingbird Gap, another is in Rhodes Canyon, and a fourth site is North Mesa, all of which are in New Mexico (Eidenbach 1983; MacNeish 1991; Weber and Agogino 1968). Several other Clovis sites are located in the Tularosa Basin and Hueco Bolson as well (Carmichael 1983; Krone 1975).

Folsom Complex (ca. 9000–8000 B.C.)

The Clovis period is followed by the Folsom complex (ca. 9000–8000 B.C.), which also is named for a distinctive, fluted projectile point type (Wheat 1972). Inhabiting the region following the extinction of the great mammoths, the hunter-gatherers of the Folsom period are distinguished most prominently by kill sites involving now-extinct species of bison. Like the Clovis complex, the archeological sites of this period indicate small group size and high mobility. Folsom sites tend to be relatively rare in southeastern New Mexico and the Big Bend, Texas, region. Localities include isolated projectile points, small kill sites, butchering stations, and other modest site types (Krone 1975). Several sites have been recorded in the desert lowlands along the shorelines of ancient lakes or modern playas (Beckes *et al.* 1977; Peter and Mbutu 1993; Zeidler *et al.* 1996). Other favored locations include caves, canyons, and foothill loci that may have been occupied for logistical purposes or hosted base camps (Carmichael 1986). Amick (1991, 1994) has argued that Folsom sites in the Tularosa Basin represent residential or home base localities, with the southern Plains serving as the actual procurement area for bison.

Plano Complex (ca. 8000 to 6000 B.C.)

At the end of the Folsom period, there is evidence of increasingly drier conditions in the region (Judge and Dawson 1972; Peter and Mbutu 1993). Changes associated with this more xeric environment are seen in the emergence of the Plano complex (8500–6000 B.C.). Plano sites tend to be located in areas with relatively easy access to increasingly restricted water sources. Communal hunting techniques were employed, and were focused primarily upon herds of bison (Carmichael 1983, 1986; Cordell 1979; Wheat 1972). Projectile points are laterally thinned (Midland and Plainview), basally contracted (Agate Basin and Hell Gap), and basally indented (Firstview and Cody complex). Archaeologists have recorded Plano complex points and sites in the lower Rio Grande Valley (Broilo 1973; Everitt and Davis 1974; Kauffman 1984), but the period is not well known in the southern Tularosa Basin.

Archaic Tradition (ca. 6000 B.C.–A.D. 250)

The Archaic Tradition spans over six millennia, during which human societies and cultures across most of North America underwent profound evolutionary changes. These changes and trends are summarized in Table 3.1.

Economic adaptations during the Archaic may have involved intensified use of a wide variety of plant and animal resources, in an environment increasingly similar to that of the present day. This trend probably relates to increasing population densities and consequent shrinkage of group territories. These trends are, in turn, tied to escalating social competition and conflict. Archeologically, the intensification of subsistence practices is best reflected in the appearance, and gradually increasing abundance, of ground stone over the course of the Archaic, and the eventual adoption of domesticated plants into the otherwise hunting and gath-

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Table 3.1. Trends and Developments During the Archaic Tradition

Trends and Developments	Archaeological Evidence
Population Growth	Greater numbers of archeological sites relative to the Paleoindian period, with increasing numbers of sites for each successive Archaic phase
Changes in subsistence patterns and increasing level of investment in subsistence-related activities and facilities	Appearance of ground stone milling tools, roasting pits, quantities of fire-cracked rock, and, by Late Archaic times, cultigens including maize and squash
Decrease in residential mobility, and a more substantial and long-term commitment to certain settlements	The appearance of preserved hearth and pit features and, by Late Archaic times, residential structures and midden deposits
Progressive territorial circumscription and an increasing regionalization and localization of cultural interaction spheres and social networks	Increasing regional and local variation in artifact styles; decreasing frequency of exotic material types in chipped stone assemblages

ering economy. Specialized milling tools appear long before the advent of plant cultivation, which took place during the Late Archaic. Hunting also provided a significant part of the subsistence economy throughout the Archaic sequence, as food-producing domesticated animals were absent.

Although archeologists once considered the Archaic tradition in the central Jornada region synonymous with the Cochise Archaic in southeastern Arizona and southwestern New Mexico (Haury 1936; Sayles and Antevs 1941), recent work (MacNeish 1993; MacNeish and Beckett 1987) has provided a more locally relevant cultural sequence under the framework of the Chihuahuan Archaic. In defining the Chihuahuan Archaic, MacNeish and his colleagues divide it into Early, Middle, and Late periods, with conventional subdivisions including the Gardner Springs (6000–4300 B.C.), Keystone (4300–2600 B.C.), Fresnal (2600–900 B.C.), and Hueco (900 B.C.–A.D. 200) phases. Sites are assigned to a phase on the basis of distinctive projectile point styles.

Gardner Springs Phase/Early Archaic Period (ca. 6000–4300 B.C.)

The Gardner Springs phase is synonymous with the Early Archaic period, and is recognized by the presence of Jay, Bajada, and Baker point styles (MacNeish 1993). Other distinctive artifacts include prismatic blades, endscrapers, denticulates, flake gravers, pebble cleavers, choppers, mullers, pestles, and milling stones. Deer and antelope appear to have been the primary game animals hunted, but little is known about plant utilization patterns. Most sites from this phase are in the desert basin, frequently near playas, suggesting a continuation of Paleoindian settlement patterns. Such sites may represent winter base camps on the desert floor, although the lack of structural remains precludes detailed interpretations of settlement function. During the spring months, site preference seems to shift toward the alluvial fans and lower Bajada locations where succulents, such as agave and sotol, are found. In contrast, summer sites tend to be equally distributed between each of the ecozones. Autumnal sites are found in higher elevations where groves of oaks and piñon pine yield acorns and nuts that may be stored for the winter. Two of the better known sites associated with this phase are Todsen Cave and Fresnal Shelter. The former is correlated with a spring occupation and the latter with a fall presence (MacNeish 1993).

Keystone Phase/Middle Archaic Period (ca. 4300–2600 B.C.)

The Keystone phase is roughly equivalent to the Middle Archaic, and is marked by projectile point types including Bat Cave, Lerma, Pelona, Gypsum-Almagre, Amargosa-Pinto, and Todsen points. These point types are found in association with pebble choppers, manos, milling stones, denticulate saws and scraper planes, large discoidal choppers and mullers, and slab metates (MacNeish 1993). Fewer deer and antelope

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appear to have been hunted, but the use of plants may have increased, as evidenced by the larger number of ground- and pecked-stone tools. An increase in the number of roasting pits signals developments in cooking technology. Overall, the economy of these people appears to have been more efficient in exploiting variable ecozones than that of the foragers of the previous Gardner Springs phase (Zeidler *et al.* 1996). Keystone-phase components are represented at more than 35 sites including Todsen Cave and the Keystone Dam sites.

Fresnal Phase/Early Late Archaic Period (ca. 2600–900 B.C.)

The Fresnal phase marks the first half of the Late Archaic period. More than 70 Fresnal phase components, which tend to be larger than those sites in previous periods, are known throughout southern New Mexico and western Texas. Fresnal assemblages consist of Pelona, Augustin, Fresnal, San Jose, Armijo, Todsen, Chiricahua, La Cueva, and Shumla point styles. Found in association with these point types are pebble scraper planes, large discoidal and flake choppers, small manos, rocker and bifacial metates as well as unifacial metates placed within boulders, gouges, and coiled nets. Hunting of deer and antelope continues to decrease, and there is a greater reliance on rabbits and other small mammals. Plant remains recovered from these components include tornillo, mesquite, and cut yucca leaves, as well as maize and *Cucurbita pepo (*Zeidler 1996). Based on evidence from Tornillo Rockshelter, Upham and his colleagues (1987) suggest that Fresnal phase people developed a more drought-resistant variety of corn (proto-Maiz de Ocho) as early as 1225 B.C. The presence of *Cucurbita pepo* should not be surprising in this context, because squash may have been introduced into the Southwest as early as 1500 B.C., and it certainly was present by 1200 or 1000 B.C. (Wills and Huckell 1994).

From the evidence, it is apparent that Late Archaic peoples of the Jornada region were active in plant domestication as well as in interacting with groups to the north, east, and west, which is most evident in this period from the distribution of obsidian and similarities in artifact styles including projectile points, basketry, and sandals (Baugh 1997). Taken together, these patterns indicate the dynamic nature of the Jornada system. Furthermore, the desert region may hold the key to our understanding of the movement of Mesoamerican crops into the Southwest and Plains. The marginal character of foraging in the Jornada area during the Holocene may have required a nutrient base allowing other resources to be exploited more efficiently as they became available. The manipulation of marginal resources was thus enhanced by the introduction of cultivars because of their association with disturbance plants that, together with the domesticates, provided a subsistence base from which foraging could be extended (Wills and Huckell 1994). Some of the better known sites of this period are rockshelters and caves and include Todsen, Tornillo, Fresnal, and La Cueva (Figure 3.1).

One of the most prominent developments in the Fresnal phase is the proliferation of archeologically visible pit structures. These are best known from the Keystone Dam 33 site (O'Laughlin 1980, 2002), which lies on the lower bajada of the Franklin Mountains, overlooking the Rio Grande in northwest El Paso. Alluvial fan deposits covered the Late Archaic remains at Keystone Dam, and subsurface testing identified the remains of 23 structures, with the testing interval such that perhaps as many as 41 pithouses are present at the site. Twelve structures were tested through hand excavation, and further excavations at the site in 1984 uncovered one additional structure and its extramural context as well (O'Laughlin 2002). Pithouses at Keystone Dam are round or oval in shape, typically about 3 m in diameter (covering about 6 m^2 in area on average), and 10 cm in depth. The recovery of burned roofing clay fragments indicated the superstructures of the Keystone huts were a "flimsy construction of a thin mud plaster over an unframed brush and grass dome" (O'Laughlin 2002:57). The house pits were simple basins, or saucer shaped, with no

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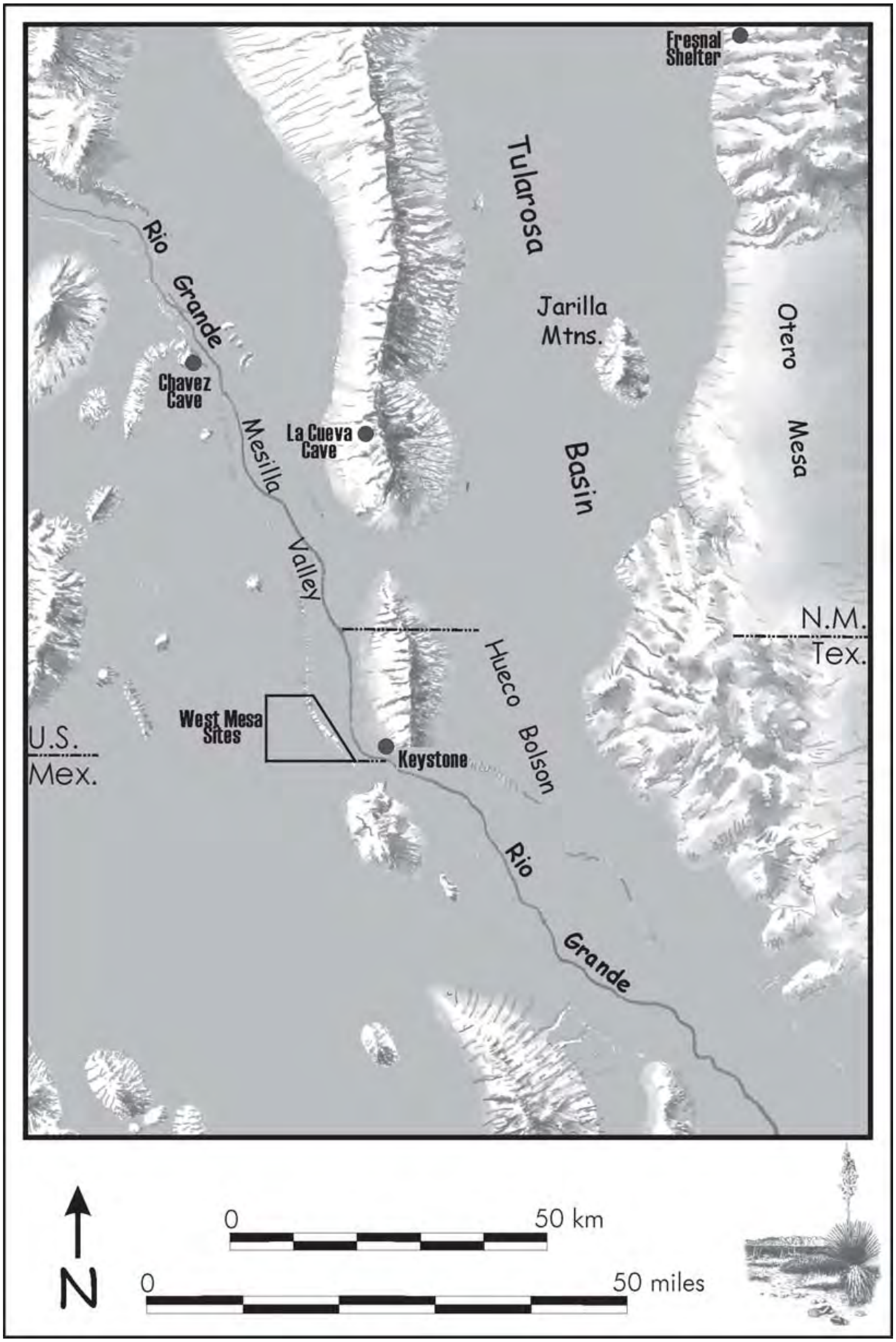

Figure 3.1 Selected Late Archaic sites mentioned in the text.

discernable break between pit floor and walls, and no floor plastering was evident in any of the structures. The only interior features consisted of informal hearths, and possible east entryways were also indicated. Various lines of evidence (including structural, faunal, and floral remains) suggests the Keystone Dam structures were probably occupied intermittently throughout the annual cycle, as part of a central-based, wandering settlement pattern (O'Laughlin 2002:58).

The 1984 excavations at Keystone Dam provided a detailed view of a typical Late Archaic, Fresnal phase pithouse (House 3) and its extramural surroundings (O'Laughlin 2002). This roughly circular structure was set in a very shallow (5–8 cm) pit, and covered 7.3 m^2. No postholes were evident, and the only interior features were two informal hearths. Burned roofing clay had collapsed onto the structure floor, and also occurred in several discrete accumulations that formed an arc from the southeast to western portions of the structure's exterior vicinity. An irregularly-shaped midden stain also extends throughout this same general area, and 19 extramural features, including mostly hearths and roasting pits, also form an arc around the south side of the structure, with several of these extending away from the structure's immediate vicinity to the southwest. The distribution of chipped stone and other debris also follows this same general distribution pattern around the structure. The spatial configuration of features and debris in this household cluster suggested a pithouse with south-facing entry, with flintknapping and other production activities concentrated near the entryway, and cooking activities taking place in and around the slightly more distant features to the southwest of the structure. The absence of features and debris on the north side of the structure suggested this was the "back" of the pithouse, and the south-facing orientation of the activities at the site indicates a winter occupation. Using comparative data from Bushman camps (Yellen 1977), O'Laughlin (2002:62) found the scatter of debris at Keystone Dam House 3 equivalent to an occupation of 40 days by a family unit.

Late Archaic pit structures were also uncovered at several sites on the desert floor mesa west of the Rio Grande (O'Leary 1987; Roney and Simons 1988; Whalen 1994a:626). These West Mesa sites date from both the Fresnal and Hueco phases of the Late Archaic, and their structures exhibit a wider range in size (1.6–10.8 m^2) than those at Keystone Dam, although their average floor area (4.4 m^2) is smaller (Graves *et al.* 1996). Four other Late Archaic structures were uncovered on the desert floor of the Hueco Bolson by Burgett *et al.* (1996). These ranged in size from less than 1 m^2 to 5.9 m^2, with an average of 5.0 m^2, again smaller on average than the Keystone structures.

To the north, a possible Late Archaic structure was excavated at LA 64097 in the southern Tularosa Basin (Swift 1991; Graves *et al.* 1996:67). This small hut was set in a shallow (18 cm), saucer-shaped basin 3 m^2 in size. One posthole was located near the center of the basin floor, and a hearth was located less than 1 m west of the structure. No associated artifacts were recovered from this structure, but a corrected radiocarbon of ca. 930$\pm$50 B.C. suggests a late Fresnal or early Hueco phase affiliation.

Late Archaic sites also extend up onto the alluvial fans and mountain zones. At FB 729, on the alluvial fan east of the Organ Mountains, a very small hut or large hearth was documented (Jeffrey Leach, personal communication reported by Graves *et al.* 1996:77). This circular basin covered 2.3 m^2 and was 15 cm deep. The feature appears to date from the early Fresnal phase, as indicated by a corrected radiocarbon date.

From the Keystone and West Mesa sites, Whalen (1994a) identified a dichotomy in Late Archaic pithouse settlements, with comparatively large settlements on the one hand (represented by Keystone Dam) and small pithouse camps on the other (the West Mesa sites). The differences extend beyond mere size of the pit structures; the Keystone Dam structures were associated with somewhat higher artifact densities and clusters of associated features (mostly ovens or baking pits)

than were the West Mesa pithouses. Whalen (1994a) interpreted these to be the expectable differences between short-term seasonal camps on the one hand (the small pithouse settlements along with more ephemeral sites lacking preserved structural remains), and more substantial winter base camps on the other (the larger pithouse settlements such as Keystone Dam). Still, the relatively thin cultural deposits associated with the Keystone Dam pithouses, along with the lack of substantial storage pits and absence of superimposed features, indicate little more than short-term occupations in the local Late Archaic settlement patterns, a distinction that becomes more apparent when contrasted with the more substantial residential patterns evident in some pithouse settlements of the post-Archaic, Mesilla phase.

As simple and informal as Late Archaic pithouses in the area seem to be, their appearance at this time nonetheless marks an increasing residential commitment to certain localities, and probably an intensifying sense of territoriality, relative to earlier times. This trend is associated with increased population levels during the Late Archaic (Whalen 1994a:625) and, presumably, gradual circumscription of group territories. The apparent absence of recognizable storage pits, however, and the lower material investment in pit-house construction compared to post-Archaic times, underscores the continued high mobility and logistical pattern of resource usage in the local Late Archaic.

Hueco Phase/Terminal Late Archaic Period (ca. 900 B.C.–A.D. 250)

The most recent temporal subdivision of the Archaic tradition is referred to as the Hueco phase. This is the best documented of the Archaic phases, with well over 100 known components in southern New Mexico and western Texas. First described by Lehmer (1948), artifacts associated with this phase include Hatch, Hueco, San Pedro, En Medio, Padre Gordo, and Pendejo projectile-point types, along with small disk scrapers and choppers, small pointed flakes, trough metates, one-handed and two-handed manos, paint palettes, coiled baskets, and sandals (Lehmer 1948; MacNeish 1993). Material attributes for the Hueco phase are best known from sites such as Chavez and Hale caves.

In terms of subsistence, the emphasis on deer and antelope continues to decrease during this period; small mammals (mostly rabbits) are hunted almost exclusively. In addition to wild plants, domesticates were relatively common including four varieties of corn, beans, pumpkin, and perhaps amaranth. Despite the evidence for increasing emphasis on agriculture, the use of domesticated plants does not necessarily imply a concomitant de-emphasis on wild plant resources (Wills and Huckell 1994). Indeed, food production may well have allowed Jornada people to use more intensively the natural resources within the region, because stored foods could be carried to areas and eaten while other foods were gathered and processed. This combination of domestic and wild plant use may have been one of the primary factors in the development of higher population densities in the central Jornada region at this time.

The use of pit structures continued during this period. The dichotomy between large and small pithouses presumably continued (Whalen 1994a), although there are actually fewer excavated structures dating from this phase than for the preceding Fresnal phase. On the desert floor near the Rio Grande, Kaufman and Batcho (1988) excavated an oval pithouse at FB 6816. This structure had a floor area of 6.2 m^2, and was set in a shallow basin (15 cm deep). Four corrected radiocarbon dates from this pithouse ranged from ca. A.D. 50–310, indicating a very late Hueco phase or very early Mesilla-phase occupation. One small pithouse was excavated at FB 6666, located on the desert floor of the Hueco Bolson (Graves *et al.* 1999:77). This structure was small, measuring 3.8 m^2, and was set in a shallow basin (13 cm). The only interior feature was a hearth set against the south-central edge of the basin. No ceramics were recovered. Two radiocarbon dates suggest a late Hueco-phase affiliation.

The small pithouse settlements, along with the more ephemeral sites, tend to be located on basin floors and in upland mesa and mountain localities, where plant foods available from spring through fall could be gathered, processed, eaten, and stored locally. The large pithouse settlements, on the other hand, were positioned along the Rio Grande and on lower bajada slopes, so as to maintain access to the restricted availability of water in the late fall and winter.

The presumed settlement strategy of the Hueco phase indicates the continued high degree of mobility characteristic of the Late Archaic period. Ongoing population growth would, presumably, have reduced the sizes of territories and home ranges of social groups living in the area, limiting access to critical resources for certain groups. Increasing reduction of territory could be counteracted in different ways, such as the development of various mechanisms and institutions to allow larger-scale social integration (which typically involves intensified ceremonialism). A larger investment in horticulture would increase the potential food supply for greater numbers of people living within reduced group territories. Development of exchange networks could also help even out regional resources imbalances.

This classic demographic/ecological scenario, with its emphasis on population growth, territory reduction, and related subsistence stresses, is used by Whalen (1994a) to explain the Late Archaic-Pithouse period transition in the central Jornada region. However, environmental- and population-driven models of long-term change tell us only part of the story. Consideration of social and political factors can potentially enrich our understanding of the historical and evolutionary forces associated with developments in the Late Archaic. For example, Hayden (1995a, 1995b) suggests that the origins, or adoption, of horticulture may have been motivated as much or more for social and political reasons as by resource shortages resulting from demographic and ecological conditions. The motivating factor here would have been production of surplus to be used as political capital by aspiring leaders or competing groups. The intensification of horticulture would have also served as a potential means of controlling the labor of followers. Nevertheless, there remains little evidence for the emergence of institutionalized sociopolitical hierarchies in either the Late Archaic or the succeeding Mesilla phase of the Pithouse period, although the seeds of inequality were probably being sown.

The scale of organizational complexity in the Late Archaic of the El Paso phase appears to fall somewhere along the continuum that Johnson and Earle (1987) describe as family-level groups and acephalous local groups, which are evolutionary-taxonomic reincarnations of Service's (1962) "band" and "tribal" levels of sociopolitical complexity. In the local Late Archaic period, the ephemeral character of aggregated camps such as Keystone Dam, the general lack of prestige items, and seasonal dispersion, is consistent with what we should expect for family/camp groups, as described by Johnson and Earle (1987:20):

> The family/camp is characteristic of foraging societies of low density (less than 1 person per 10 square miles). Camp groups of 25–50 persons typically form when resources are highly localized or when a group larger than the individual family is required for risk management or for a particular subsistence activity. The group can then dissolve into small segments consisting of single families (5-8 persons) that independently exploit low-density, dispersed resources. These societies are characterized by a simple division of labor by sex. Supra-family leadership is ephemeral and context-specific, relating to immediate organizational requirements such as a hunting expedition requiring the participation of numerous families. Although

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> homicide is fairly common, organized aggression (warfare) is not. Ceremonialism is ad hoc and little developed. A camp characteristically has a home range, but does not claim exclusive access to this territory or strictly defend it against outsiders.

Other characteristics of the local Late Archaic period, such as the presence of horticulture, are also potentially consistent with family/hamlet groupings, which are

> characteristic of somewhat higher-density societies (from 1 person per 10 square miles to 2 per square mile) in which families cluster into a settlement group or hamlet (25–35 persons) on a more permanent basis. The subsistence economy continues to rely heavily on wild foods, sometimes in conjunction with the beginnings of horticulture or herding. Storage is more prevalent. During the year individuals or families move out to exploit specific resources; from year to year, the hamlet re-forms and fragments as households change locations to minimize resource procurement costs. The hamlet does not form a clearly demarcated political group, and leadership continues to be context-specific and minimal. Ceremonialism is little developed. As with the family/camp, the hamlet's territory consists of undefended home ranges and warfare is uncommon (Johnson and Earle 1987:19–20).

Using such broad-brush evolutionary categories to characterize a particular cultural-temporal manifestation is potentially hazardous, as critics of evolutionary taxonomies frequently point out (e.g., Blanton *et al.* 1981; Cordy 1981:27–29; Dunnell 1980; Feinman and Neitzel 1984; Hodder 1991; Plog and Upham 1983; Rambo 1991; Upham 1990). Yet such descriptive devices remain useful touchstones for archaeologists dealing with long-extinct societies. Of course, the goal here is not to try and shove the local Late Archaic (or any other) period into particular evolutionary pigeonholes, but rather to use the taxonomic descriptions and cross-cultural comparisons as theoretical and analytical devices to help us understand what was going on at different times in central Jornada Mogollon prehistory.

It appears that continued low population densities, and still relatively large group territories, allowed local Late Archaic populations to deal routinely with social needs and conflicts by remaining residentially mobile, and aggregating and dispersing on a seasonal and/or periodic basis. In this sense, mobility, aggregation, and dispersion should not be viewed merely as parts of an "adaptation" to existing environmental and demographic conditions, as the ecological-demographic explanations might suggest or imply. Rather, aggregation, dispersion, sedentism, and mobility can be seen as component parts of *social* strategies designed to maintain the autonomy of families and other small groups, yet still allow groups to at least minimally meet their various social needs (e.g. marriage, resource sharing, and information exchange). These conditions, along with what were probably strong social sanctions against individual glorification within local Late Archaic societies, would have limited opportunities for aspiring leaders to substantiate any claims against their fellows. But such individuals often tend to manipulate existing cultural and sociopolitical norms to their advantage. The inherent tensions between social competition and cooperation, along with conditions such as increasing population levels and gradual territorial circumscription, are at the heart of sociopolitical dynamics. From this dynamic mix, any number of long-term historical outcomes might be expected, including either demographic and sociopolitical stasis, or continued population growth and increased levels

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of organizational complexity. To an extent, at least, we see the latter evolutionary course unfold during the central Jornada region's Formative period, which for archaeologists begins with the Mesilla phase.

Formative Period (ca. A.D. 250–1475)

The Formative period was a time of significant evolutionary change for human inhabitants in the central Jornada region. They began to make pottery, established more sedentary communities, invested more energy in horticulture, participated in regional interaction spheres, and made and acquired prestige goods that were probably used in various social transactions. Ceremonial life also became more elaborate materially, local population levels increased, and social and political life became increasingly complex. Yet, there was still a substantial degree of continuity from previous times. Earlier Formative period peoples in the central Jornada region maintained a high degree of seasonal mobility, they continued to rely heavily on gathering and hunting for their subsistence, the vast majority of their material needs were met locally, and their social and political life remained rather small-scale and rudimentary in evolutionary terms. Even during the El Paso-phase, when the proliferation of pueblo-like communities indicates a much more sedentary settlement system than in any other period prior to the arrival of Spaniards in the area, there is still evidence to suggest that certain segments of the region's population continued to pursue mobile, hunting and gathering lifeways.

The Formative period is commonly divided into three temporal subdivisions, the Mesilla phase (ca. A.D. 250–1100), the Doña Ana phase (ca. A.D. 1100–1250), and the El Paso-phase (ca. A.D. 1250–1475). Some investigators dispute the integrity of the Doña Ana phase (e.g., Foster 1993:11), and those that do employ it treat it as a transitional phenomenon between the Mesilla and El Paso-phases. In this report, the Doña Ana is considered a legitimate phase construct, and this discussion is organized accordingly.

Mesilla Phase (ca. A.D. 250–1100)

This phase is marked by developments and changes in technology, subsistence, demography, architectural and settlement patterns, social organization, and regional interaction. Archaeologically, the clearest developments and trends of the Mesilla phase include the following:

- the introduction of ceramic technology
- an increased reliance on horticulture in a still primarily hunting-gathering economy
- pithouse settlements that are larger and exhibit more investment in architecture and storage than what is evident in the Late Archaic

The Mesilla phase is roughly divisible into early/middle and late divisions, separated at ca. A.D. 700 (Whalen 1981a). Changes in both ceramic assemblages and architectural patterns provide the basis for this subdivision of the phase. Specifically, painted ceramics and structures that appear to have been used for ceremonial purposes do not appear until the late Mesilla phase. In fact, present evidence suggests the changes between early and late Mesilla times were as substantial as those between the Late Archaic and Early Mesilla phase on the one hand, and the Mesilla and Doña Ana phase on the other. Part of the problem stems from the traditional chronology, which originally started the Mesilla phase at ca. A.D. 900 (Lehmer 1948:79). This beginning date has been pushed progressively backward as earlier sites with pottery were discovered and chronometrically dated. Present evidence probably warrants further subdivision of the Mesilla into at least two phases, although no one has yet proposed this formally. The conventional chronology is thus adhered to in this report.

The appearance of pottery marks the beginning of the Mesilla phase. Ceramics provide not only a highly visible chronological index for archaeologists, but had a significant impact on native lifeways as well. Pottery vessels were especially useful as cooking and storage containers, and also provided an attractive medium for artistic expres-

sion. The earliest ceramics in the central Jornada region consist of an undecorated, plain brown ware referred to as El Paso Brown. This remains the most common pottery type throughout the Mesilla phase. Toward the end of the Mesilla Phase, potters began painting these brownwares, the earliest examples of which are referred to as El Paso Bichrome. Some painted ceramics from the Mimbres area of southwestern New Mexico (i.e., Mimbres Black-on-white and San Francisco Red) also appear in the central Jornada region around A.D. 1000.

Chipped stone technology begins to shift away from biface production in the Mesilla phase. The bow and arrow apparently arrived in the central Jornada region early in the Mesilla phase, and this "event" is marked archaeologically by the appearance of small, usually notched, projectile points. Ground stone implements, including milling equipment used in processing plant foods, remains an important component of local tool kits during the Mesilla phase.

Changes in subsistence practices are also evident in the Mesilla phase. While food production began in the Late Archaic, there was a slightly greater dependence on domestic plants during the Mesilla phase (Carmichael 1986), and this dependence increased over the course of the phase. At the Turquoise Ridge site, for example, Whalen (1994a; 1994b) reports that late Mesilla phase structures contained nearly four times more maize than did the early Mesilla pithouses at this site. At the same time, the Turquoise Ridge structures show a constant rate of use for Cheno-ams and a decline in sunflowers (Whalen 1994b).

Still, there is continued local and seasonal variability in subsistence patterns, and even at the very end of the Mesilla phase some sites with good macrobotanical remains show little or no evidence of maize or other domesticated plants (e.g., Miller 1990). Moreover, Whalen (1994b:119) cautions that "[i]t should be stressed … that no cultigen appears to have played a major role in the Jornada area's Formative-period subsistence." Gardening, rather than intensive agricultural production, appears to be the rule. As in the Late Archaic, domesticated crops apparently played a supplementary role in the subsistence economy, which remain focused primarily on foraging and hunting, and still involved a relatively high degree of mobility.

Wild plant resources were used according to their natural location and seasonal availability. In the desert basin, mesquite, grasses, cacti, and annuals are collected (Brethauer 1978; Carmichael 1981, 1986; Eidenbach and Wimberly 1989), and in the foothills and valley of the Rio Grande, agave, and other succulent plants were collected and processed (O'Laughlin 1979, 1980; Whalen 1978, 1994b).

Hunting strategies continued with little change from Late Archaic patterns. Small mammals (such as jackrabbits and cottontails) make up the majority (in some cases up to 90 percent) of the protein source within the Formative diet (Whalen 1994b). Nevertheless, O'Laughlin and Gerald (1977) suggest that, from Late Archaic times onward, three different hunting strategies were pursued in different environments within the central Jornada region: highland, lowland, and riverine. The highland strategy was focused on deer and, to a lesser extent, mountain sheep. Evidence for this pattern comes from upland rockshelters and caves such as Fresnal (Wimberly and Eidenbach 1981) and La Cueva (Lehmer 1948:35–38; O'Laughlin 1974). The lowland hunting strategy of the basin floors was the most widespread, focusing on rabbits (both jackrabbits and cottontails) and some pronghorn. This strategy is identified from a large number of sites in the region. Finally, O'Laughlin and Gerald (1977) identified a riverine hunting strategy, restricted to the Rio Grande River and its immediate environs. Species representation varies among faunal assemblages from riverine sites, with rabbits, deer, and pronghorn typically present, but also accompanied by distinctly riparian species such as duck and other migratory waterfowl, fish, and spiny soft-shelled turtle. Riverine sites that

reflect this strategy include Chavez Cave (Cosgrove 1947), Los Tules (Lehmer 1948:13–35; O'Laughlin 1976), and Sandy Bone (O'Laughlin and Gerald 1977).

Several lines of evidence indicate ongoing population growth during the Mesilla phase. First, there are many more sites with identified Mesilla phase components than for both Late Archaic phases. Carmichael's survey data (1986:108) for the Tularosa Basin revealed a roughly six-fold increase in the number of identified site components from the Archaic to Mesilla phase, adjusted for period duration. To the south, Whalen (1994a:627–628) reports similar increases over the same time span in the Hueco Bolson. Moreover, Whalen (1981a) reported that the total area of village site components for the late Mesilla phase in the Hueco Bolson was roughly seven times that for the early portion of the phase. Village size also appears to increase over the course of the Mesilla phase, although village sites remained comparatively small (average 0.83 ha). By the middle to late Mesilla phase in the Hueco Bolson, there are at least two villages larger than 3 ha in size, larger than any known earlier settlements in the area (Whalen 1981a). There are also many more Mesilla phase components with pithouse remains than for the preceding Late Archaic phases (Figure 3.2). Despite this modest growth in the size of certain settlements, it appears that population growth during the Mesilla phase was primarily due to villages dividing and establishing new settlements, rather than growth of individual communities.

Despite population growth and higher numbers of camps and settlements during the Mesilla phase, in the Tularosa Valley site distribution patterns remain similar to those of Late Archaic times. Specifically, in the Doña Ana Range of Fort Bliss, both Late Archaic and Mesilla phase sites show a similarly dispersed distribution of sites, with settlements clustered along the basin edges in some areas, but with many others scattered across the interior basin floor (Figure 3.3). This pattern probably reflects the overall similar subsistence strategies followed during the Late Archaic and subsequent Mesilla phase, wherein small, semi-mobile groups took advantage of the summer season's relative abundance of plant foods on the basin floor, as well as water that accumulated temporarily in the numerous desert floor depressions. Garden plots were probably established in these dispersed playas, where the area's earliest, part-time farmers could increase their chances of catching the intermittent summer rainfall.

Although Mesilla-phase subsistence and settlement patterns appear similar to those of the Late Archaic, the ongoing process of population growth and community division led to a progressive decrease in the size of group territories. This effectively limited the home ranges within which groups could forage during an annual migration. Territorial constriction "would eventually diminish the feasibility of long-distance movements to cope with seasonal resource shortages" (Whalen 1994a:628). According to this scenario, the ongoing process of territory reduction was a motivating force behind the Mesilla phase trend toward subsistence intensification, reduced mobility, and an increased commitment to food storage (Whalen 1994a).

In terms of site types, Whalen (1994a) recognized the same tripartite division of settlement types identified for the Late Archaic and Mesilla phase: large pithouse villages, small pithouse settlements, and ephemeral sites lacking preserved structure remains. Whalen (1994b:138-140) subdivided the small pithouse sites into four classes, based on indicators of occupational intensity. His classification of Mesilla phase sites is summarized in Table 3.2.

The functions of these settlement types were also similar to their Late Archaic counterparts; the large pithouse villages apparently served as winter base camps, while the small pithouse and ephemeral sites were shorter-term camps established to take advantage of the seasonal availability of plant foods and water sources. Beyond these fundamental parallels, however, some

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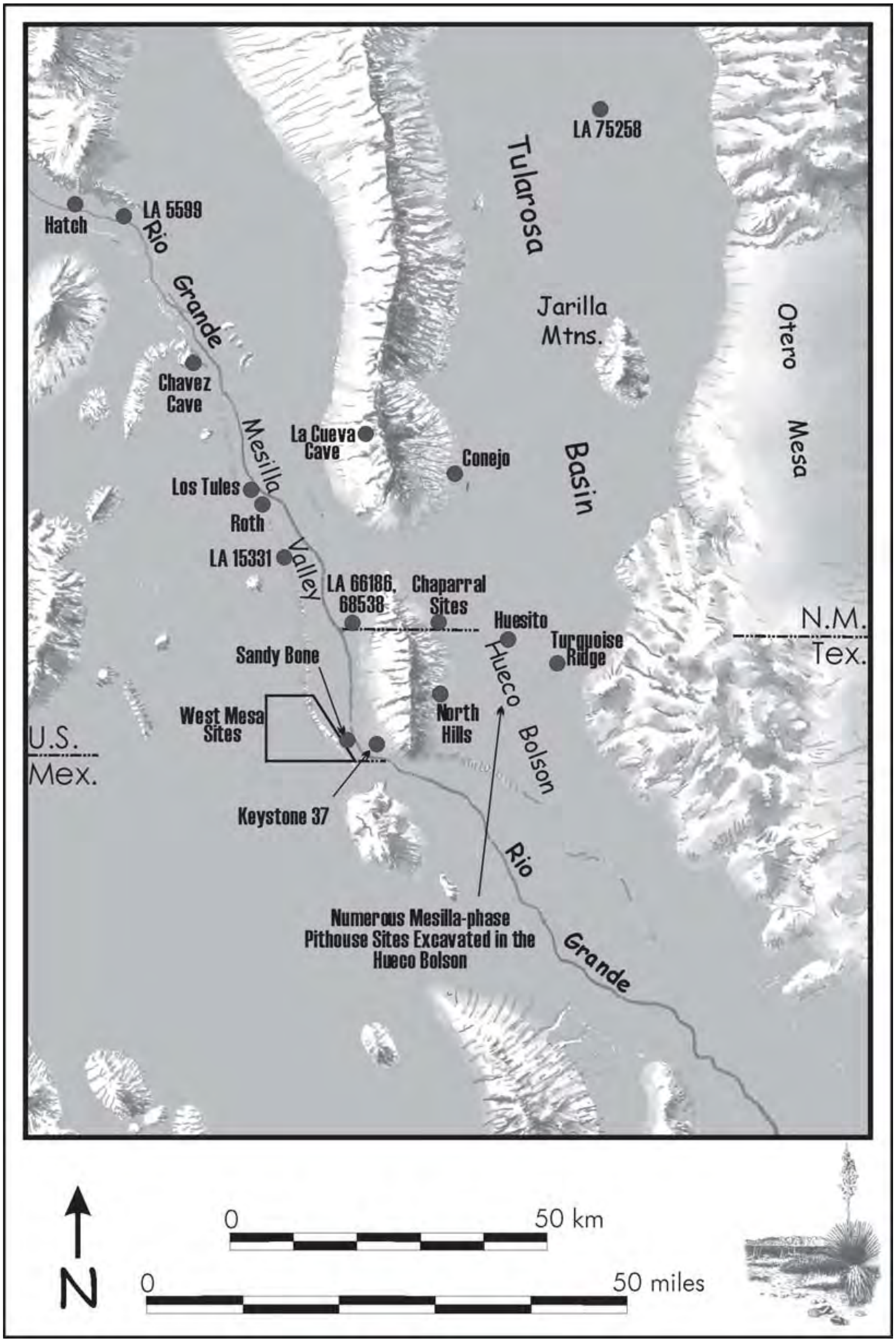

Figure 3.2 **Selected Mesilla-phase sites mentioned in the text.**

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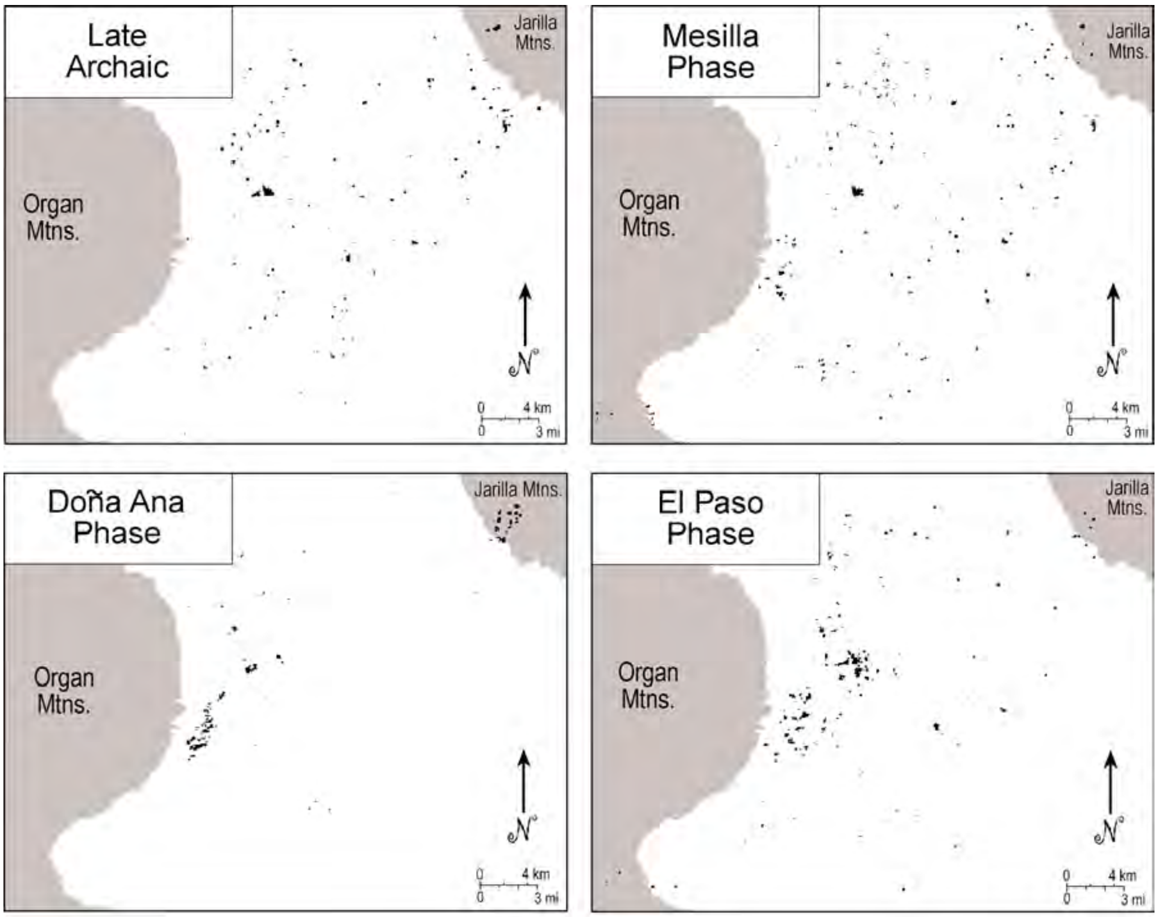

Figure 3.3 **Numbers of sites documented by Carmichael (1986) in the Fort Bliss Doña Ana Range, southern Tulasosa Basin.**

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Table 3.2 Whalen's (1994b) Classification of Mesilla Phase Sites

Class	Description	Examples
1	Large, substantial pithouses, including ceremonial structures; storage facilities; burials; extensive trash middens, high artifact densities; relatively rare site type for this phase.	Los Tules, Turquoise Ridge, Hatch, Rincon Valley sites
2	Small, shallow, simple pithouses; may or not contain trash middens or burials; lower artifact densities than Class I sites; no storage facilities.	Huesito, Roth
3	Small, shallow, simple pithouses; no trash middens, burials, or storage facilities; artifact densities lower than both Class I and II sites.	Keystone 33s, Castner Range, Hueco Bolson 294, West Mesa sites
4	No preserved pit structures; usually (but not always) small sites; most known Class 4 sites date from the early Mesilla phase.	Numerous sites

notable differences are evident between Late Archaic and Mesilla phase settlement types. In essence, the Mesilla phase settlement system was "larger and more complex" (Whalen 1994a:627), and pit structures in the large pithouse villages were larger than their Late Archaic counterparts, such as those at Keystone Dam.

Structure data for the Mesilla and contemporary phases in the Jornada Mogollon region (Graves *et al.* 1996) reveal an average floor area of 9.7 m^2 (range 1.2–44.9 m^2, n=126), or 1.5 times the average size of the "large" Late Archaic pithouses at Keystone Dam. Looking at these data by landscape zone (excluding sites in high-altitude settings), the highest average floor area is found in the riverine zone along the Rio Grande (11 m^2; range 2.0–44.9 m^2), although the size distribution of structures in the alluvial zone was highly bimodal (Graves *et al.* 1996). Mesilla phase and contemporary structures in the other zones are slightly smaller on average than those in the riverine zone, with the exception of the "high altitude zone," which contains unusually large structures (19.25 m^2; range 3.4–35.0 m^2, n=46). It should be noted, however, that these large, substantial, high altitude structures are located in the Sacramento Mountains, and are thus at best peripheral to the central Jornada Mogollon region and the Mesilla phase. The overall large sizes of these high-altitude structures are probably an adaptation to the cool climate that prevails up in the mountains.

Another measure to consider among Mesilla phase houses relates to labor investment in their construction. Miller (1990) and Graves *et al.* (1996) distinguish different types of pithouses, which are modified and summarized here in Table 3.3. The continuum from simple basins to formalized pit structures reflects an increasing amount of labor investment. Note that all Archaic structures in the central Jornada region are of the simple basin type, with the simple pit and formalized forms appearing in the Mesilla phase. Still, simple basin huts remain the most common type of pithouse throughout the Jornada Mogollon region during the Mesilla and contemporary phases (77 percent of the total for these phases; Graves *et al.* 1996:82), indicating that local populations were still relatively mobile at this time, and did not make a substantial investment in the majority of their structures.

The distribution of the different types of Mesilla phase pithouses among the respective environmental zones is potentially instructive, however. In the desert floor zone, 98 percent of pithouses are of the simple basin type (Graves *et al.* 1996). In the riverine zone, the frequency of simple basin-type pithouses drops to 55 percent, with 33 percent being simple pit structures, and formalized pit structures contributing the remaining 10 percent. The significantly higher percentage of simple pit and formalized structures in the riverine zone, as opposed to the non-riverine desert floor, suggests that populations living along the

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Table 3.3 Pithouse Types in the Central Jornada Mogollon Region (from Railey [2001:58]; adapted from Miller [1990] and Graves *et al.* [1996])

Pit House Type	Description
Simple Basin	Shallow basin or "saucer" shaped; lacks plaster or other special treatment; commonly referred to as "huts."
Simple Pit	Typically deeper and larger than simple basin types; exhibit recognizable break between walls and floor; lacks plaster or other special treatment.
Formalized	Walls and/or floors finished w/ plaster, adobe, or masonry. Often have more formal, adobe-lined hearths than simple basin- or pit-type pit structure.

Rio Grande (even if only seasonally) invested more heavily in the settlements here than elsewhere. This also indicates longer seasons of occupation along the riverine zone. These groups were probably also concerned with defending their territorial claims within this prized habitat zone and, as a result, put more effort into building their domestic and ceremonial structures.

This heavy investment in architecture is evident at the Hatch site (LA 3135), a Class 1 Mesilla phase component in the Rincon Valley (or Hatch Valley) along the Rio Grande (Schaafsma 1990). Up to five Mesilla phase pithouses were identified at Hatch, three of which were excavated. These show notable diversity in their architectural features. Structure 6 was apparently a simple pit-type structure, with vertical walls and flat floor. Covering approximately 15 m2, this structure is larger than the average for both Mesilla pithouses in general, as well as those from the riverine zone only. Interior features included a central hearth, a pit filled with rock and ash, interior post holes, and a remnant portion of a partition wall. No plaster or other indicators of special function were observed in this structure, however.

Structure 7 at Hatch was only partially excavated, but appeared to be a large, rectangular building set in a deep (> 50 cm) pit. The exposed portion of this building covered approximately 17.5 m^2. Structure 7 may easily have encompassed twice this floor area, which would make it an exceptionally large structure for the Mesilla phase. Besides its rectangular shape, Structure 7 was also distinguished by its floor, which was covered by a prepared layer of clean, white sand.

Structure 9 was the smallest Mesilla phase pithouse at the Hatch site, covering approximately 11 m^2 (roughly the average of Mesilla phase pithouses along the Rio Grande). Yet in several respects this house was the most elaborate of the three, set in a deep (up to 70 cm) pit, with walls and floor covered with a white sand and clay plaster. A 3.3 m long ventilator shaft (also plastered) extended east of the structure, and abundant adobe from the collapsed superstructure was found in the house pit. Floor features included several pits and a plastered hearth set between the ventilator opening and an ash pit.

The Mesilla phase structures at Hatch may not all be contemporary. Structure 6 is perhaps the earliest of the three, as indicated by a general lack of decorated ceramics. Structure 7 appears to be a late Mesilla construction, if the 100 San Francisco Red sherds reported from the pithouse fill are, in fact, associated with its occupation. Structure 9 appears to date extremely late in the Mesilla phase, or perhaps even beyond, based on the presence of San Francisco Red in the pithouse fill, sherds from an early variant of El Paso Polychrome on the house floor, and an absence of El Paso Brown. Alma Plain was the dominant ceramic type in all the structures at Hatch, signaling the proximity of this site to the nearby Mimbres area to the west. Interestingly, however, no sherds of Mimbres Black-on-White were found in direct association with any of the three structures, although a low frequency of this ceramic type did occur elsewhere on the site.

Not far from the Hatch site, six pithouses were excavated at LA 5599 at Rincon (Hammack 1962; Graves *et al.* 1996:28). These included three cir-

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cular, one oval, one square, and one rectangular structure, and encompassed a broad range in terms of floor area (3.4–24.1 m^2, mean 11.8 m^2). Excluding the largest structure, which was probably a communal facility, floor area drops to a range of 3.4–12.6 m^2 (mean 9.36 m^2). These were substantial structures overall, with reported pit depths ranging 45–85 cm, and one structure reportedly was plastered. Ceramics from the site were dominated by El Paso Brown, but also included Mimbres Black-on-White, Mangus Black-on-White, Jornada Brown, Three Circle Neck Corrugated, Mimbres Corrugated, and Alma Plain. The assemblage suggests a late Mesilla affiliation, probably ca. A.D. 900–1100.

Downriver, in the Mesilla Valley around Las Cruces, several Mesilla phase and contemporary sites have been investigated. Surface investigations at the Brazito North site identified possible pithouses marked by dark stains with dense artifact concentrations, and burned adobe with branch or pole impressions (O'Laughlin 1985a). Surface artifacts from this and the nearby Brazito South site included ceramics, small, notched projectile points, and a grooved axe and stone fish effigy (at Brazito South). Brazito South also produced a few bone artifacts and a large quantity of shell items, including ornaments from *Haliotus* sp. and freshwater mollusks. Local residents have collected shell artifacts from this site, including a cache of shell beads and bracelets associated with a small bowl and jar. Two *Olivella* sp. beads were also recovered from Brazito North. Ceramics from these sites are dominated by sherds of the Alma series, with lesser, but appreciable amounts of San Francisco Red and El Paso Brown. The assemblages, in fact, suggest the Brazito sites are more closely affiliated with the Mimbres area to the west than the central Jornada Mogollon. Based on the ceramic assemblage, and in particular the lack of painted pottery, O'Laughlin (1985a:60) suggests the Brazito sites date ca. A.D. 500–750, contemporary with the Georgetown and Early San Francisco phases in the nearby Mimbres area.

Elsewhere in the Mesilla Valley, sites appear somewhat more closely affiliated with the Mesilla phase of the central Jornada Mogollon. Investigations at the Hill, Country Club, and Little Pot sites revealed ceramic assemblages still dominated by Alma series pottery, but with higher percentages of El Paso Brown (O'Laughlin 1985a). San Francisco Red is also present at these sites; the lack of painted ceramics indicates these sites pre-date A.D. 900. Excavations at Hill and Country Club uncovered one rectangular and one circular pithouse at each site. At Hill, the rectangular structure was the larger of the two pithouses at that site (10.1 m^2), while the circular pithouse was smaller (7.6 m^2). At Country Club the reverse was the case; the circular house had a floor area of 11.1 m^2, while the rectangular one covered only 6.9 m^2. These are much smaller than the larger structures at Hatch and Los Tules (see below), and they are set in rather shallow basins, ranging 10–30 cm in depth. A badly eroded, circular pithouse was also uncovered at the nearby Little Pot site; it was also small by riverine Mesilla phase standards, with an estimated diameter of 3 m (approximately 7 m^2 floor area).

Two pithouses were excavated at the Roth site, another Mesilla phase settlement in the Mesilla Valley (O'Laughlin 1981, 1985a). Both of the Roth houses are circular and set in shallow (20–25 cm) pits with postholes along the interior walls. With floor areas covering 7.4 m^2 and 9.6 m^2, these are small- to medium-size pithouses by Mesilla phase standards (although still larger than the "large" Late Archaic structures at Keystone Dam). The Roth houses were located at either end of an extensive dark midden stain, covering an area about 20 x 12 m. The sheet midden suggests the lack of discrete trash disposal areas, which in turn indicates occupation episodes of short duration. Five burials were also uncovered at the site. The investigated midden area lies in the northeastern portion of the site, and O'Laughlin (1981:135) suggested there may be at least four additional structures at Roth.

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Unlike the other Mesilla Valley sites described above, El Paso Brown dominates the ceramics from Roth, at 82.9 percent, with Alma series sherds making up only 6.7 percent of the assemblage. Roth also contains Mimbres Boldface Black-on-White (8.9 percent of the assemblage), which was either wholly or virtually absent from the Mesilla Valley sites discussed above. San Francisco Red, which occurred consistently at the other Mesilla Valley sites, was represented at Roth by only a single sherd. These assemblage characteristics indicate that the Roth site dates in the vicinity of A.D. 1000, distinctly later than the Brazitos, Hill, Country Club, and Little Pot sites.

Another late Mesilla site was investigated at LA 79550 (Stuart 1991), in the village of Tortugas (on the south side of Las Cruces). Excavations here partially uncovered a large pithouse structure, which was apparently oval, covered more than 20 m^2, and was set in a 60 cm deep, basin-shaped pit. Two subfloor storage pits were uncovered, and although no post holes were detected the excavations did uncover two large posts laying parallel to each other on the house floor. Although two radiocarbon dates fall within the middle Mesilla phase, the associated ceramics indicate a late Mesilla affiliation (i.e., El Paso Brown, El Paso Bichrome, Mimbres Boldface Black-on-White, some red wares, and possibly Alma Plain); this structure probably dates ca. A.D. 1000.

The most prominent Mesilla phase settlement in the Mesilla Valley was uncovered at Los Tules, which was the original type-site for the Mesilla phase (Lehmer 1948). Los Tules is located 2.9 km south of the Roth site, and also dates late from the Mesilla phase, probably between A.D. 900 and 1100, based on a ceramic assemblage that includes Mimbres Black-on-White and San Francisco Red. Ten pit structures were excavated at Los Tules, including those with both rounded and rectangular floor plans. The Los Tules structures are large for this period, approximately 15 m^2 on average, with a range of 4.7–25.5 m^2. Among the houses at Los Tules are three exceptionally large, rounded structures, one of which has a perimeter bench. This structure, at least, appears to be a communal facility. Interestingly, remains of interior hearths were present in all of the rectangular houses, but in only one of the circular pit structures. Four storage pits were uncovered at the site, one of them inside one of the rectangular structures. None of the pithouse interiors were plastered. The variety of structure forms at Los Tules suggests a formalized differentiation of space (for both domestic and, probably, ceremonial use) to a degree not evident in the area prior to the late Mesilla phase. Bracelets, beads, and pendants of marine shell were also recovered from Los Tules, and although their spatial distribution within the site remains unknown, their presence suggests the manufacture and circulation of prestige goods by this time.

Moving downriver, three small Mesilla-phase pit structures were excavated in the vicinities of La Mesa and Anthony, New Mexico (Gerow 1994, cited in Gruesetal 1996:74–75). Excavations at LA 15331, just west of La Mesa, uncovered a small, oval structure that measured 5.7 m^2, set in a shallow (17 cm) basin. No floor features were present; a radiocarbon date and associated ceramics (El Paso Brown, El Paso Bichrome, and a Mimbres ware) indicate a late Mesilla date. A bead cache was also encountered at this site. Just east of Anthony, two Mesilla phase structures were excavated at LA 66186 and LA 68538. These measured 3.2 m^2 and 5.8 m^2, respectively, each lacked floor features, and radiocarbon dates indicate these are early Mesilla structures. Only LA 66186 contained diagnostic artifacts, consisting of a few brownware sherds.

Further downriver, a structure was excavated in 1958 at the Sandcliffe site, located on the west side of El Paso on the Rio Grande. Although this investigation was never published, the field notes reportedly indicate a rounded structure that covered an estimated 5 m^2, was set in a deep (76 cm) pit, and contained remnants of plastering (Graves *et al.* 196:27). El Paso Brown ceramics were recovered from the structure fill, and Mimbres sherds and El Paso Polychrome were also recovered from the site. The Sandcliffe structure is

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probably late Mesilla phase in age, although it may date from the subsequent Doña Ana phase. In west El Paso, Mesilla phase pit structures were uncovered at the Keystone Dam site. One of these overlay the Late Archaic House 3 (O'Laughlin 2002; see above), and another circular pit structure, with a floor area of 7.8 m^2, was excavated at Keystone 33S (Foster 1988:107–117; Graves *et al.* 1996:63).

Another west El Paso site is Keystone 37, situated at the base of the Franklin Mountains bajada just above the Rio Grande floodplain. Here, Carmichael (1984) reported four small, circular and oval pithouses, along with 19 possible structures. The four identified pit structures were all small (2.4–5.7 m^2, mean 3.85 m^2) and set in basins ranging 35–57 cm in depth. The 19 possible pithouses were even smaller on average (2.9 m^2, range 0.6–5.9 m^2). Two of the structures contained floor hearths, and one of these also had a floor pit. Large numbers of postholes were reported (mostly arrayed around the exterior perimeter of the structures) and entry ramps were a common feature. The absence of daub suggests superstructure frames of branches woven between the upright posts; Carmichael (1984) suggests they were probably wickiup-type huts. Four of the five radiocarbon dates from three of the Keystone 37 structures range ca. A.D. 1000–1400, while the fifth date is considerable earlier at A.D. 380±80 (all are uncorrected). Carmichael used these dates to argue for a Doña Ana and/or El Paso-phase affiliation for the structures, although no diagnostic artifacts were recovered that would confirm this conclusion; the only ceramics recovered were El Paso Brownwares. Graves *et al.* (1996:57) argue that the structures probably date from the Mesilla phase, and the dating of this site and its pithouses remain problematic.

Although rectangular structures are rare to absent in the late Mesilla phase in areas away from the immediate riverine zone, there is still an appreciable diversity of house sizes and settlement types, similar to those seen to the east along the Rio Grande. Investigations on the West Mesa uncovered at least four Mesilla-phase pithouses (Roney and Simons 1988), the preserved floor areas of which were all less than 5 m^2 (Table 3.4). Two of these structures (U48NW, Feature 5 and U48SW, Feature 1A) appear to date early in the Mesilla phase, based on radiocarbon dates and/or ceramic associations, while the other two are of late Mesilla affiliation. The rectangular structure (U48SW, Feature 4) appears to be the best preserved of the lot. The structure was surrounded by post holes arrayed along the house pit's exterior periphery. Macrobotanical remains from these pithouses and associated features did not yield any maize, suggesting that plant subsistence activities at these sites were probably focused on foraging and collecting wild species.

Table 3.4 Mesilla Phase Pithouses on the West Mesa (Roney and Simons 1988)

Survey Block*	Feature	Plan	Floor Area (m^2)	C-14 dates #	Ceramics++
U48NW	5	Amorphous	2.5	A.D. 325±260	UNBW (4)
U48SW	1A	Irregular	4.1	A.D. 430±190	UNBW (133), EPB (5), EPBC (7), EPPC (2), Mimbres (1)
U48SW	4	Rectangular	4.6	A.D. 600±180 A.D. 750+160 A.D. 1060+160	UNBW (133), EPB (5), EPBC (7), EPPC (2), Mimbres whiteware (1)
U21SW	4	Irregular	4.9	A.D. 830±200 A.D. 1020+135 A.D. 1045+150	Mimbres whiteware (2)

* All are in Survey Area 3 of the Navajo-Hopi Land Exchange Project, New Mexico
# "Corrected" dates as reported by Roney and Simons (1988, Table 9.1)
++ UNBW = Unspecified brownware; EPB = El Paso Brown; EPBC = El Paso Bichrome; EPPC = El Paso Polychrome (Note: ceramic totals were reported in aggregate for U48SW, Features 1, 3, and 4).

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An exceptionally small "hut" type pithouse was also excavated on the Mesilla Bolson at LA 52219 (Kauffman and Batcho 1988). The house feature covered a mere 1.2 m^2, with an extant pit depth of 15 cm. This small hut contained an informal, basin floor hearth, along with a couple of postholes. Radiocarbon dates and El Paso Brown ceramics indicate a Mesilla-phase affiliation for this small structure.

The diversity of Mesilla sites and pithouses along the Rio Grande and nearby desert floor/mesa localities suggests the possibility of increasing organizational complexity, and perhaps some emerging sociopolitical differentiation, especially in the late Mesilla phase. It is not entirely clear, however, to what extent this diversity of sites and pithouses might also be due to seasonality and/or temporal differences. The late Mesilla-phase appearance of rectangular structures along this western periphery of the central Jornada region contrasts with the continued absence of the rectangular house form in the Tularosa Valley and Hueco Bolson at this time. This may be symptomatic of closer contacts between the Rincon and Mesilla Valley sites with contemporary groups in the Mimbres area to the west, where rectangular structures had become the norm during the Late Pithouse period Three Circle phase (A.D. 850–1000), with true pueblos appearing in the subsequent Classic Mimbres period (A.D. 1000–1150).

East of the Franklin Mountains, on the desert floor of the Hueco Bolson, investigations have uncovered numerous Mesilla-phase pithouses. The best reported of these sites is Huesito, located just south of the New Mexico-Texas state line (Whalen 1981b). This is a short-term, late Mesilla phase site, occupied ca. A.D. 1000–1100, based on radiocarbon dates and the presence of Mimbres Black-on-White sherds within a ceramic assemblage otherwise dominated by El Paso Brown. Excavations here uncovered four small, shallow pithouses, all of which are similar in size, with floor areas ranging 4.8–5.5 m^2. Each structure contained a similar array of features, artifacts, and floral and faunal remains. The latter was dominated by abundant jackrabbit bones, and carbonized plant materials including mesquite beans and pods, and seeds of sunflower, *Portulacca*, chenopod/amaranth, and prickly pear, along with a small quantity of maize. The evidence suggests a short-term, warm-season occupation at the site, with little or no social differentiation between the households.

Elsewhere on the desert floor of the Hueco Bolson, 18 Mesilla phase structures were excavated as part of the Hueco Mountain project on Fort Bliss (Burgett *et al.* 1996; Graves *et al.* 1996:80–81). Those with measurable floor areas (n=17) revealed an average of 6.1 m^2 (range 3.2–12.8 m^2). Besides a few postholes, floor hearths were the only interior features identified with these structures. Four of these structures yielded radiocarbon determinations, with corrected dates ranging A.D. 110–900. Brownware ceramics were recovered from nine of the pithouses.

Whalen (1977, 1978, 1980) reports several Mesilla phase pithouses excavated at two sites in the Hueco Bolson. FB 6307 contained two structures that measured 8.0 m^2 and 8.8 m^2 (Whalen 1977), rather large by desert floor-site standards. These were both circular structures set in shallow (20–25 cm) basins, but each contained numerous postholes suggesting substantial and/or refurbished superstructures. Radiocarbon dates indicate a mid to late Mesilla phase occupation, and El Paso Brown was the only associated ceramic type. At FB 6726, four pit structures were excavated (Whalen 1978, 1980, 1981b; Graves 1996:43, 45). All were small (4.8–5.1 m^2), circular, and set in shallow basins (20–30 cm deep). Each structure contained an interior hearth, and postholes were present in varying numbers. Also present were exterior features marking household activity areas. Radiocarbon dates and ceramics (including El Paso Brown and Mimbres Black-on-White) indicate a late Mesilla phase affiliation.

Another Mesilla phase pithouse was excavated in the Castner Range district of the Hueco Bolson (Hard 1983; Graves *et al.* 1996:47). This structure was roughly circular, covering approximately

8 m^2, and set in a shallow basin (20 cm deep), with an entryway extending off the southeast side. A single interior hearth and a posthole were located within the structure, but no other features were present, and there was generally a low density of associated artifacts. Although the radiocarbon dates suggest an early to middle Mesilla phase occupation, the presence of Mimbres Black-on-White ceramics in the pithouse fill indicates a late Mesilla age.

Investigations along the Loop 375 project, just northeast of El Paso, revealed Mesilla-phase pithouses at four sites on the Hueco Bolson floor (Graves *et al.* 1996:61-62; O'Laughlin *et al.* 1988; O'Laughlin and Martin 1989, 1990, 1993; Dering *et al.* 2001). Three of these sites (41EP1621, 41EP2770, and 41EP2782) were only tested, but these investigations documented at least four structures ranging 5.1–6.5 m^2 in floor area. Most were set in shallow (~ 15–20 cm) basins, although one of the two house pits at 41EP1621was notably deeper (37 cm). Floor features were documented in only one of these structures (41EP2782), and include a simple hearth and at least one post mold. Radiocarbon dates indicate these structures range from early to late Mesilla times.

Data recovery at Loop 375 site 41EP2805 uncovered a very small (2.9 m^2), oval Mesilla phase structure (O'Laughlin and Martin 1990:184–204; Dering *et al.* 2001:273–294). This small hut was set in a simple, unplastered basin at least 30 cm deep, and contained one floor hearth and no postholes. It appears that this structure had burned down, as evidenced by a dark, carbonaceous stain on the house pit floor, along with burned branches along its interior periphery, which are probably the remains of a brush superstructure. Six extramural features were located within 1–2 m of the structure, and together with the pithouse itself these form a spatially discrete, household cluster. Three radiocarbon dates suggests an early to middle Mesilla phase affiliation. The associated ceramic assemblage was unusual in that it was dominated by a fine-tempered, polished brownware that may be an early variant of Alma Plain, which occurred together with a smaller number of El Paso Brown sherds.

Investigations at Fort Bliss sites FB 3929 and FB 6085, both on the Hueco Bolson floor, uncovered two more small, Mesilla phase structures (Mbutu 1997). Both measured slightly over 3 m^2 in area (Graves *et al.* 1996:71), and were set in shallow (15–23 cm) basins. An oxidized floor hearth was present in each, but no postholes were detected in either structure. Radiocarbon samples returned dates suggesting middle and late Mesilla ages, although El Paso Brown was the only ceramic type recovered.

Still more Mesilla-phase pithouses were investigated on the Hueco Bolson floor as part of the Fort Bliss "small sites" project (Mauldin *et al.* 1998). A structure excavated at FB 12330 was a typical desert-floor pithouse in that it was a small (2.7 m^2), shallow (29 cm), circular basin hut, with a single floor hearth being the only interior feature. El Paso Brown was the only ceramic type recovered. Pithouses at two other sites investigated by this project, however, were exceptionally large and/or contained features unusual for desert floor, Mesilla-phase sites. At FB 12100, an unusual "D"-shaped structure was uncovered. Contained within a 30 cm deep, simple basin, this structure covered 8.1 m^2, making it one of the larger known Mesilla-phase structures in a desert-floor setting. This structure is also notable in that it contained 17 floor features including four hearths, four pits, and nine postholes. The postholes were arrayed mostly along the pithouse margins, with two main posts in a north-south alignment in the center of the house pit. No plastering was noted on the structure floor, although the superstructure was daub-covered as indicated by collapsed remains in the pithouse fill. A cluster of features on the east side of the structure probably represents external cooking facilities associated with this house. Two radiocarbon dates suggest a late Mesilla phase age for this structure, and the recovery of both El Paso Brown and Mimbres Black-on-white sherds from the

structure's vicinity support this temporal affiliation. Apparently, the FB 12100 structure was more substantial than the typically ephemeral, hut-type Mesilla-phase structures found on the desert floor, and suggests some local variation in late Mesilla settlement patterns.

The small sites project uncovered an even larger, possible structure at FB 12069 (Mauldin *et al.* 1998:59–61). This roughly oval stain covered 12.1 m^2, and was set in a shallow (13 cm), simple basin. A fire-reddened hearth was located on the structure floor, along with a probable storage pit and one possible posthole. Although there was no mention of ceramics at the site, a series of radiocarbon dates indicate an early Mesilla phase affiliation. Like the structure at FB 12100, this structure also bucks the general pattern in which desert floor pithouses tend to be small and lack evidence of storage.

To the north, small-pithouse settlements have been documented on the desert floor of the Tularosa Valley. In the vicinity of Chaparral, New Mexico (below the eastern alluvial fans of the Franklin Mountains, just north of the Texas state line), Mesilla phase pithouses were uncovered at three sites: LA 67706, LA 67737, and LA 67738 (Gerow 1994 cited in Graves *et al.* 1996: 74–75). One structure was documented at each of these sites, all circular or oval in plan, with floor areas ranging 5.4–8.7 m^2 (average 7.3 m^2). All three were set in shallow basins ranging 11–20 cm in depth. Each contained a heavily oxidized, but otherwise simple floor hearth, along with 2–10 postholes arrayed along the interior margins of the house basins. The structures contained few to no ceramics, and those sherds recovered all appeared to be El Paso Brown. Radiocarbon dates from two of the pithouses (one of which lacked ceramics) indicate they date from the early to middle Mesilla phase.

Further north, at Holloman Air Force Base, a single pit structure was exposed in an arroyo at LA 75258 (Doleman *et al.* 1990; Graves *et al.* 1996:67). This structure reportedly measured 4.5 m^2 (Graves *et al.* 1996:67), although it was set into a fairly deep (45 cm) pit that was dug into caliche. No floor hearth was encountered, although four postholes were documented along the north wall of the structure. The house pit was devoid of artifacts, but a corrected radiocarbon date suggests an early Mesilla phase affiliation.

With a few notable exceptions, the Mesilla-phase pithouse sites in the Mesilla and Hueco Bolsons and the Tularosa Basin are consistent with Whalen's model, in which interior basin-floor settings tend to host settlements with small- to medium-size structures, with the large-pithouse settlements concentrated in the riverine and basin-edge zones. One such basin-edge site is North Hills I (14EP356), located high on the alluvial fan of the Franklin Mountains in northeast El Paso. Here, Miller (1990) uncovered 5–6 pithouses that ranged 10.6–23.5 m^2 in floor area. Despite their relatively large size, the North Hills 1 structures were not especially substantial constructions, consisting of rounded, irregular-shaped pithouses set in simple, "saucer"-shaped basins. The lack of daub suggests brush-frame or woven-branch superstructures. Both radiocarbon dates and ceramics (including Mimbres Black-on-White, El Paso Bichrome, and an early variant of El Paso Polychrome) place this site in the interval A.D. 1000–1150 (i.e., the very end of the Mesilla phase and beginning of the Doña Ana phase). The near absence of cultigens in the macrobotanical assemblage is intriguing for such a late Mesilla/early Doña Ana-phase site, and the evidence suggests seasonal occupations by small groups who were not involved in horticulture, or at least not while they were camped at this locality. North Hills I is instructive because it suggests the accelerating pace of subsistence change and use of cultigens at the end of the Mesilla phase may not have occurred uniformly across the area.

Another basin-edge Mesilla component was investigated at Conejo (FB 46), a large multi-component site at the base of the bajada apron of the Organ Mountains (Hard n.d.; Graves *et al.* 1996:80). Conejo lies near the western margin of

Old Coe Lake, which was a major playa and water source in prehistoric times. Seven structures were excavated here, and at least some of these date from the Mesilla phase. Both circular and oval forms were present, with house sizes varying widely (floor area range 3.3–27.4 m^2, mean 11.4 m^2). Hard (n.d.) suggested the largest structure was a communal/ceremonial facility. The presence of large structures here is consistent with the basin-edge setting of this site and an associated radiocarbon date indicates and age of ca. A.D. 800–900 for this large structure. Corrected radiocarbon dates reported for the Conejo structures range between ca. A.D. 500 and 1300, which would suggest occupations spanning the early Mesilla to El Paso-phases, although the associated ceramic assemblages (dominated by El Paso brownwares and low frequencies of Mimbres Black-on-White and El Paso Bichrome) suggest predominantly Mesilla and, possibly, Doña Ana phase occupations.

Northwest of Conejo, in the Organ Mountains near Dripping Springs, excavations at LA 89549 uncovered two small pit structures that may date from the Mesilla phase (Gerow and Hogan 1993). Both are very small, measuring 2.9 m^2 and 3.2m^2 (Graves *et al.* 1996:70), and apparently set in shallow (~ 12 cm) basins. A partially rock-lined floor hearth was present in the smaller of the two, and both structures contained postholes around the exterior margins of the house pit. Only one sherd was recovered from these structures, and it may be similar to Alma Plain. This single artifact, along with two radiocarbon dates, suggests an early/middle Mesilla phase affiliation for at least one of the structures.

Further to the northwest, on the alluvial fans draping the western side of San Andres Mountains, two Mesilla phase structures were investigated at LA 56834 (Miller and Stuart 1991). Both were circular pithouses, set in basins 27–30 cm deep, and covering 7.9 and 10.6 m^2 (Graves *et al.* 1996:68). The smaller structure contained a possible entry ramp, and each contained subfloor pits (probably storage facilities). Postholes were detected in both structures (one in the larger one, and four in smaller pithouse). The smaller structure also contained charred remains of the superstructure including grasses, posts, and beams, along with fragments of manos and metates. Radiocarbon dates and the presence of El Paso Brown suggest an early to middle Mesilla phase affiliation for these structures.

One of the most prominent large-pithouse Mesilla phase sites is Turquoise Ridge, situated near the eastern edge of Hueco Bolson (Whalen 1994a, 1994b). The position of this site near the basin edge is consistent with the presumed location of winter base settlements outside the riverine zone. Pit structures at Turquoise Ridge were all round or oval, and were roughly twice as large (mean 11.8 m^2) as the Late Archaic structures at the Keystone Dam site and three times as deep (Whalen 1994a:629). The Turquoise Ridge structures are also generally comparable in size to Mesilla Phase pithouses in the riverine zone, although smaller than the Los Tules structures. Larger numbers of post molds in the Turquoise Ridge structures also indicate extra attention paid to structural integrity and maintenance. Associated features at Turquoise Ridge, including storage pits, suggest formal activity areas. Whalen (1994a) argues that the presence of storage pits represent a logistical shift in the subsistence economy, with more plant foods being transported to the winter base camps than was the case in the Late Archaic period. Accumulations of trash middens at site such as Turquoise Ridge also indicate longer-term occupancy than was the case in Late Archaic pit-house settlements.

Botanical remains and associated settlement patterns suggest the inhabitants of Turquoise Ridge were primarily hunters and gatherers, although cultigens increased notably between the early and late Mesilla-phase occupations at the site. There is also at Turquoise evidence of an exceptionally large (30 m^2) ceremonial structure, set in a pit roughly twice as deep (75 cm) as the other structures at the site, and that lacked the usual set of domestic features. This building has a perimeter

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bench along the interior wall, and the structure contained over 80 percent of the site's 11 pieces of turquoise, seven calcite beads and 14 shell ornaments, and waste fragments reveal that these items were manufactured inside this structure. Most of the site's Mimbres Black-on-White pottery (which helps date this building to the late Mesilla Phase) was also found in this structure. Apparently, this large, kiva-like facility was a focus of ceremonial activities, and possibly the manufacture, use, and exchange of prestige goods (Whalen 1994b:128).

Although prestige goods recovered at sites such as Turquoise Ridge and Los Tules are relatively few in number, there is evidence elsewhere in the region that such items were being traded in fairly substantial numbers during the Mesilla phase. Just outside the Tularosa Basin, on the western side of the San Andres Mountains in the Jornada del Muerto, is the High Lonesome Bead Cache (Kelly 1977). This cache apparently dates from the late Mesilla phase, as there were Mimbres Boldface Black-on-White sherds at the site. Contained within an Alma Punched ceramic vessel, the cache included 871 beads of calcite, shell, and turquoise, as well as some pendants of the same materials. The cache was buried and marked by a cairn, suggesting either its owner intended to retrieve it, or that it was part of a "silent exchange" that never occurred.

The presence of exotic items in the Mesilla phase alerts us to the potential role of prestige goods exchange in process of sociopolitical evolution in the prehistoric central Jornada. In traditional societies, prestige items are often used to conclude social transactions such as marriages, puberty ceremonies, etc. Prestige goods exchange can flow both horizontally and vertically within a society, and are also important for maintaining external trade relations. Given the absence of clear indicators of formalized inequality in the Mesilla phase, it seems likely that prestige goods flow was mostly horizontal, although there may also have been ritual practitioners to whom payment in prestige goods was a customary practice. Such arrangements may have created openings for debt imposition and political exploitation.

In terms of the social-evolutionary spectrum, many Mesilla phase sites appear similar to the small settlements typical of Johnson and Earle's (1987) "family groups" (see above). As Whalen (1994a) observed, however the evidence suggests increasing regional population levels during the Mesilla phase and populatin growth probably meant larger social groups were formed as well. Moreover, the appearance of larger, more complex sites, along with evidence of more elaborate ceremonialism, suggest the formation of larger, more complex organizations similar to what Johnson and Earle refer to as "local groups" (which represents an updated formulation of Service's [1962] "tribes"). Johnson and Earle subdivide this category into "acephalous local groups" and "big man collectivities." According to their definition, acephalous local groups are

> Typically found in societies with densities greater than 1 person per square mile. The subsistence economy in most cases focuses on domesticated species, although in some cases wild resources, especially maritime resources, dominate. A frequent settlement pattern is a village of perhaps 100–200 people subdivided into clan or lineage segments of hamlet size (i.e., 25–35 persons). The local group forms a ritually integrated political group and may have a headman; but it typically fragments into its constituent kin groupings either seasonally or periodically because of internal disputes. Because of endemic warfare, intercommunity relationships of various sorts are critically important for community security, but such relationships are contracted essentially on an individual, family-by-family basis. Ceremonialism is important for

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> publicly defining groups and their interrelationships. Resources are held exclusively by kin groups, and territorial defense is common (Johnson and Earle 1987:20).

Beyond the acephalous local group, the big man collectivity is

> found at higher but variable population densities in areas in which warfare between territorial groups has traditionally been intense. Subsistence is focused heavily on agriculture, pastoralism, or extremely productive natural resources. The local community of perhaps 300–500 people is a territorial division, typically containing multiple clan or lineage segments that either live together in a village or are dispersed throughout the well-defined territory of the group. The local group is represented by a Big Man, a strong charismatic leader who is essential for maintaining group cohesion and for negotiating intergroup alliances. The Big Man is also important in risk management, trade, and internal dispute settlement, and represents his group in the major ceremonies that coordinate and formalize intergroup relationships. His power, however, is dependent on his personal initiative: if his support group deserts him for a competitor, little may be left of the reputation he has tried to build for himself and his local group, or of the alliances he has contracted (Johnson and Earle 1987:20–21).

Settlement evidence from the Mesilla phase appears to resemble Johnson and Earle's acephalous local groups more than big man collectivities. For example, population densities appear to have remained low during this time in the central Jornada region, and even the largest known Mesilla phase villages appear to be rather small, involving no more than a few families at any one time. On the other hand, it is possible that Mesilla phase *communities* were dispersed, involving multiple settlements, even during winter when local populations were presumably more aggregated than in the warmer months. Insofar as this may be true, the social structure of at least some Mesilla phase communities may have resembled Johnson and Earle's big man collectivities.

Johnson and Earle's big man collectivity may, however, make more sense as an evolutionary *alternative* rather than as an inevitable step in a social-evolutionary pathway. Gregory Johnson (1982; 1989), for example, identifies two alternative organizational strategies that he refers to as *sequential* hierarchies and *simultaneous* hierarchies (see also Braun 1991). According to Johnson, a sequential hierarchy is essentially a communal, segmentary organization in which the organizational units can be assembled and disassembled in a modular fashion to facilitate different scales of decision-making. Johnson found that, on average, a sequential hierarchy has six decision-making units, which may be family heads, clans, corporate groups, villages, or allied polities. Braun (1991) suggests this recurrent number of organizational subgroups reflects a cognitive attribute universal to the human species. According to Johnson, a sequential hierarchy presents an egalitarian alternative for decision-making and information exchange as the sizes of social groups and polities begin to grow. The other alternative is a simultaneous hierarchy, which involves vertical social and political differentiation, and personal aggrandizement displayed archaeologically by stark, individual differences in domestic architecture and mortuary treatment. Johnson argues that, as societies grow in size, they will tend to develop one or the other type of hierarchies to deal with, and streamline, information exchange.

Feinman, Lightfoot, and Upham (2000) question the egalitarian basis of Johnson's sequential hierarchy model, arguing that truly consensual decision-making could not have been maintained in large social groupings. Although the comments of Feinman and his colleagues on this issue are well taken, it should be kept in mind that cultures might evolve and maintain an egalitarian *ethic*, whereas actual, on-the-ground social interaction may involve relationships that are considerably less than equal (either in certain situations or across the board, with one potential result being the emergence of "big man"-type leaders). Material patterns in such a culture (e.g., mortuary customs and domestic architecture) will most likely reflect the egalitarian ethic, and mask whatever inequalities may have operated in the course of day-to-day social interactions. Perhaps a modification of Johnson's model (rather than a rejection of it) is in order here; while acknowledging that egalitarianism likely suffered as social groups grew increasingly large, it is still useful to preserve the modular element of the sequential hierarchy model, which seems to be especially applicable to the puebloan period of the American Southwest (see Johnson 1989).

As an alternative approach to conceptualizing sociopolitical organization in the pithouse period of the American Southwest (which includes the Mesilla phase), Feinman *et al.* (2000) distinguish two divergent tendencies, or strategies, for organizing hierarchical societies: a network mode and a corporate mode (Table 3.5; see also Lightfoot and Feinman [1982] for an earlier analysis of evidence for leadership in Mogollon Pithouse period villages). According to this study, these divergent organizational modes vary independently of the degree of vertical hierarchy within a society, and have interesting implications for Southwestern prehistory, including the central Jornada Mogollon region. Feinman and his colleagues present evidence to argue that organizational strategies varied considerably among pithouse villages in the Southwest, with some communities more closely resembling corporate organizations while others followed more of a network mode.

Although vertical and network-type hierarchies were probably poorly developed in the Mesilla phase, the prevailing conditions at this time were still potentially ripe for the creation and deepening of social inequalities. People had apparently decided to stay in certain places, for longer periods of time, by some combination of consensus, coercion, manipulation, fear, and/or benefit (either real or perceived). Whatever the precipitating circumstances, increasingly aggregated and sedentary settlement led, no doubt, to scalar problems in information exchange and interaction patterns that required more complex forms of organization. These conditions also would have likely led to interpersonal disputes that, with the erosion of mobility options, required adjudication on the part

Table 3.5 Tendencies of Network Versus Corporate Modes (from Feinman *et al.* 2000:453, Table 1)

Network	Corporate
Concentrated wealth	More even wealth distribution
Individual power	Shared power arrangements
Ostentatious consumption	More balanced accumulation
Prestige goods	Control of knowledge, cognitive codes
Patron/client factions	Corporate labor systems
Attached specialization	Emphasis on food production
Wealth finance	Staple finance
Princely burials	Monumental ritual spaces
Lineal kinship systems	Segmental organization
Power inherited through personal glorification	Power embedded in group association/ affiliation
Ostentatious elite adornment	Symbols of office
Personal glorification	Broad concerns with fertility, rain

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of leaders. One way to manage these problems is to formalize positions of status within the society, with such notions of status reinforced not only through daily patterns of interpersonal behavior, but also through carefully orchestrated ritual and increasing use of materials that symbolize group identification, status, and rank. In the Mesilla phase, prestige goods were being manufactured, traded, distributed, and used on a larger scale than before (although this scale was still modest by later standards). Such items, and the ceremonies in which they played a part, probably helped define and streamline increasingly complex social relations over the course of the Mesilla phase. Moreover, increasing use of prestige items also provided opportunities for certain individuals who may have encouraged the perception of material needs where none existed before. Such acquisition and control of material wealth is one well-recognized route to accumulating political capital and attracting followers. Likewise, increasingly formalized ritual life (which is symptomatic of the formation of larger, more sedentary societies) created political opportunities for those adept at organizing and/or provisioning group ceremonies.

Still, it would be folly to overstate the magnitude of these trends for the Mesilla phase. As survey data show, Mesilla phase sites are still highly dispersed, including numerous sites on the interior basin floors. The distributions suggest a seasonal pattern of aggregation and dispersion, probably similar to the Late Archaic, albeit with greater residential commitment to, and investment in, winter base camps. Although probably more territorial than their Late Archaic predecessors, Mesilla-phase groups were not only still highly mobile, but probably also socially fluid in terms of group membership, alliances, etc. One hallmark of territoriality that is completely lacking in the archaeological record of the area is the emergence of formal cemeteries or monumental architecture. Demographic-driven models of social evolution and mortuary behavior predict the emergence of such features under conditions of increasing territoriality (Chapman 1981; Charles and Buikstra 1983; Goldstein 1976; Saxe 1970). Yet formal cemeteries never appear prehistorically in the central Jornada, and this reflects the culturally contingent nature of the social-evolutionary trajectory here. Still, trends involving reduced mobility and increasing sociopolitical formality were already in motion during the Mesilla phase, and continued during the subsequent four centuries.

Doña Ana Phase (ca. A.D. 1100–1250)

The difficulty of distinguishing the short-lived Doña Ana phase in the field has led some archeologists to question it as a useful temporal subdivision (Mauldin 1993; Peter and Mbutu 1993; Whalen 1994b). Others (e.g., Hard *et al.* 1994) have stated that ceramic attributes can be used to segregate the Doña Ana phase from both the Mesilla and El Paso phases, and architectural patterns also appear to distinguish this phase.

In terms of ceramics, proponents characterize the Doña Ana phase by late brownwares, early polychromes, an increasing frequency of Chupadero Black-on-White, and low frequencies El Paso Bichrome, Three Rivers Red-on-terracotta, Playas Red, and Mimbres Black-on-white sherds. El Paso Bichrome is often considered diagnostic of this phase, although proper identification of this type can be difficult when dealing with fragementry sherds. There is some evidence for interaction with the Casas Grandes area in northern Chihuahua (Schaafsma 1979), but there are few definite northern Mexican wares associated with this phase, although Ramos Polychrome (which may have been manufactured in a number of locations in the southern desert region) is present (Whalen 1981a). Gilman and her colleagues (1994) cite several studies of Mimbres Black-on-white sherds from the Hueco Bolson that indicate these vessels were made in the Jornada Mogollon region.

Along with expanded ceramic inventories, the Doña Ana phase is marked also by notable architectural changes. Whereas the vast majority of pithouses of the Late Archaic and Mesilla phase are round or oval, square and rectangular houses appear with much greater frequency after ca. A.D.

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1100. Besides the change in house shape, Doña Ana structures differ from earlier pithouses in other respects. Typical features include puddled abode floors and (in at least some cases) walls, collared hearths, two large support posts, and a south-facing orientation.

The best-documented examples of these are found at the Meyer Pithouse Village (Peterson 2001; Scarborough 1986, 1989) and Hueco Tanks site (Kegley 1982), both in the Hueco Bolson, 11.5 km apart (Figure 3.4). The Meyer site was small, covering 1.2 ha, with a core activity area of 453 m^2. Excavation of approximately 70 percent of the core area uncovered four pit structures and one possible "hut." One of the pithouses was exceptionally large, encompassing a floor area of 20 m^2, which was roughly three times larger than any of the other three (which averaged 6.4 m^2). The large structure was further distinguished by having a poorly defined hearth, a male burial beneath the floor, and the highest concentration of artifacts including obsidian and turquoise. This structure apparently represents a communal facility, work area, or high-status residence. All of the pithouses at Meyer had stepped entrances and plastered floors and walls, and the smaller pithouses all had collared hearths. Postholes were rare; those that were observed were placed randomly within the structures. The substantial character of the Meyer pithouses, along with the central hearths, suggested they were occupied in the winter. The possible hut was set in a shallow, saucer-shaped basin, and may have been used during warmer seasons.

The inhabitants of Meyer were farmers, as evidenced by appreciable quantities of maize, two varieties of beans, and bottle gourd in the macrobotanical assemblage. They also foraged, gathered, and otherwise used wild plants, as indicated by remains of piñon, honey mesquite, screwbean mesquite (*tornillo*), cheno-ams, sunflower, and various cacti, yucca, and grasses.

Ceramics at Meyer included El Paso Polychrome (12 percent), El Paso Bichrome (6 percent), and undifferentiated brownware (79 percent). Chupadero Black-on-white was the most common imported ware (2 percent), and very small numbers of Three Rivers Red-on-terracotta, Playas Red, and Chihuahua polychromes were recovered. Mimbres Black-on-white was notably absent, which is consistent with a late Doña Ana phase affiliation for this settlement (see Scarborough 1989).

At nearby Hueco Tanks, a pithouse settlement similar to Meyer was investigated (Kegley 1982). Six structures were uncovered at Hueco Tanks, and these fall into three size classes: three small houses ranging from 5.3–7.8 m^2; two medium houses measuring 12.71 m^2 and 15.6 m^2; and a single large structure with a floor area of 24.8 m^2. Like those at Meyer, the Hueco Tanks pithouses were square or rectangular. Four of the Hueco Tanks structures contained two support posts oriented along the east-west axis; the other two structures contained one or two large posts in their western halves, but an intrusive feature in one structure, and only partial excavation of the other, obscure their eastern halves. Two of the postholes had adobe collars. The largest structure contains 14 smaller posts, including an alignment in the northeastern corner that may represent an enclosed space, weaving looms, and/or smaller roof supports.

Most of the Hueco Tanks structures include a collared hearth located in the south-central portion of the house floor, directly in front of an adobe step presumably marking an entrance in the middle of the south wall. This hearth-step layout is identical to that found in many rooms of the subsequent El Paso-phase. Also presaging El Paso-phase architecture, the Hueco Tanks structures exhibit adobe floors and walls, with the large structure at this site exhibiting more careful finishing of the adobe plaster and bricks. In these key attributes, the Hueco Tank structures are simply detached examples of the kinds of rooms that would be assembled into linear pueblos in the El Paso-phase. The Hueco Tanks structures are still semi-subterranean dwellings, however, with the house pits themselves ranging up to 95 cm in depth.

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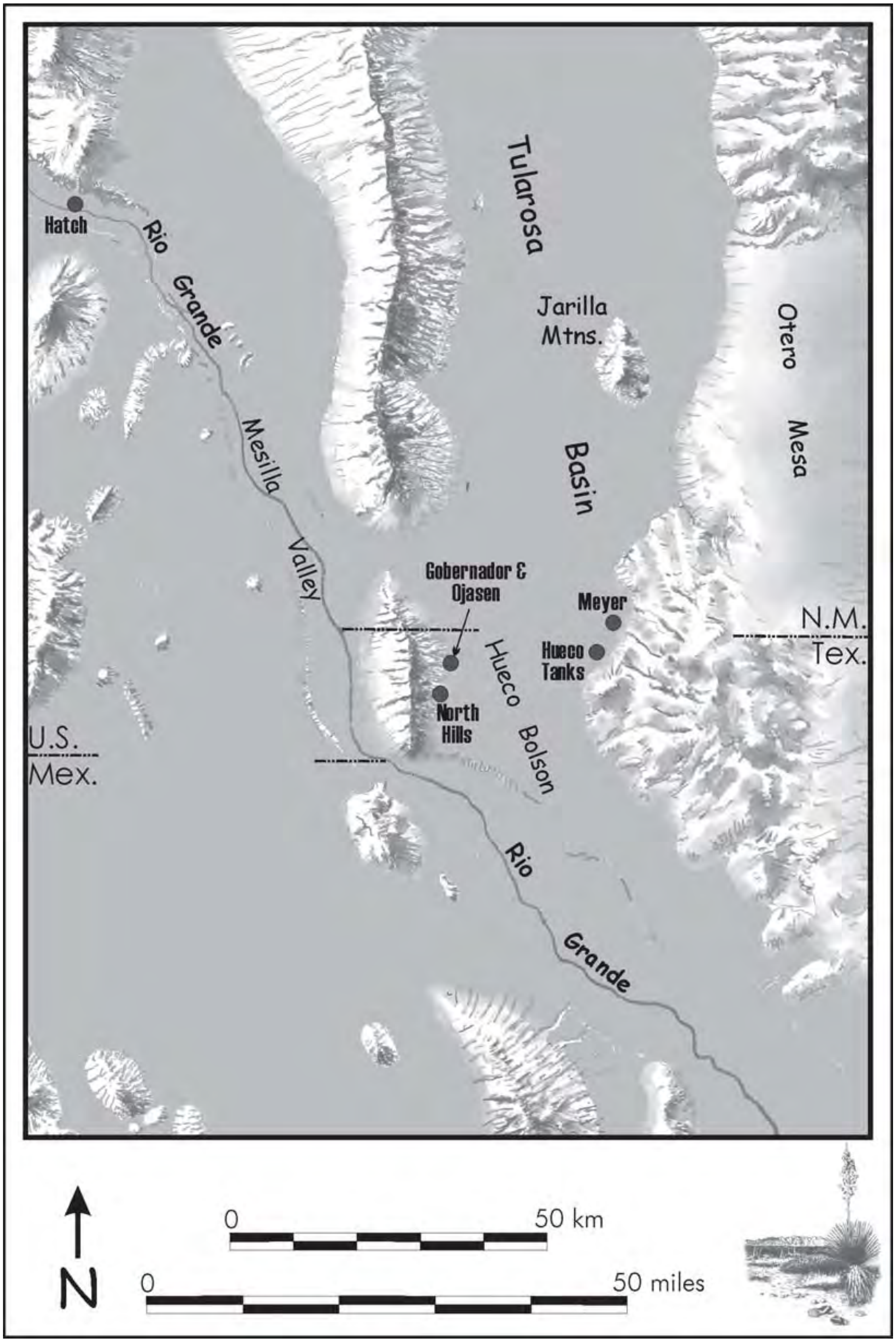

Figure 3.4 **Doña Ana-phase sites mentioned in the text.**

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Certain key architectural attributes found in Doña Ana phase sites (adobe construction, collared hearths located near the south wall, a two-post superstructure support with occasional collared postholes) also bear striking similarities to rooms of the Black Mountain phase (A.D. 1150–1300), which succeeds the Classic Mimbres in the Mimbres area of southwestern New Mexico (see Kegley 1982:39). The Doña Ana and Black Mountain phases also contain nearly identical ceramics. The two phases differ, however, in that Black Mountain settlements consist of pueblos with conjoining rooms and slab-faced adobe walls, and the Doña Ana phase contains a small amount of Mimbres ware, which disappeared in the Mimbres Area after A.D. 1150. Despite these differences, there was apparently a rising level of regional interaction between populations in the central Jornada and Mimbres areas. Exactly how this heightened interaction is related historically to the collapse of the classic Mimbres and concomitant rise of Casas Grandes in northern Chihuahua (the early portion of which the Doña Ana phase is roughly contemporary with) remains an open question. At any rate, it appears that people in the central Jornada region were being drawn into a larger regional interaction sphere, involving social, cultural, and ideological traits widely shared among diverse ethnic groups in the southern Southwest.

Not all Doña Ana-phase sites exhibit the same architectural attributes found at Meyer and Hueco Tanks. The North Hills 1 site (Miller 1990), described above, may extend into Doña Ana times, and insofar as this is true illustrates the persistence into this phase of rather expediently built pithouses. Excavations at the Gobernador site (41EP321), located at the foot of the Franklin Mountains in northern El Paso, uncovered five pit structures (Clark n.d.; Miller 1989; Shafer *et al.* 1999). With the possible exception of one structure that was badly degraded, the Gobernador pithouses all appear to be square, rectangular or subrectangular. Floor area for the four measurable structures ranges 9–19.5 m^2 (average approximately 13.2 m^2), which is generally similar to the range at Meyer and Hueco Tanks. One structure at Gobernador is notably larger than the others, although it may actually be two superimposed pithouses, both of which are perhaps smaller than 19.5 m^2). Unlike the Meyer and Hueco Tanks structures, however, none of the pithouses at Gobernador exhibited any plastering or adobe finishing of the floors or walls, and there was no evidence of any entry steps like the ones at Hueco Tanks (although the largest structure at Gobernador does contain a possible entry ramp extending off its south wall). Interior hearths at Gobernador were also much less formal than the collared fire basins at Meyer and Hueco Tanks, consisting of simple, shallow basins. Moreover, interior post holes were also much more randomly placed than those observed at Hueco Tanks. No daub or adobe rubble was encountered in and around the house pits at Gobernador, and Miller (1989:69) suggested the superstructures "most likely consisted of simple post supports with interwoven branches."

Excavations at the nearby Ojasen site uncovered up to two pithouses that are similar to those at Gobernador (Clark n.d.; Shafer *et al.* 1999). One of the structures was nearly square (7.1 m^2), while the other was a badly degraded, possible structure that may originally have measured 3 x 3 m (see Shafer *et al.* 1999:67–68). Both of the structures were spatially associated with discrete artifact concentrations; two other such concentrations were also documented at the site, but no structures were encountered with them (pithouse remains at these latter two artifact concentrations may have been destroyed by natural deflation). The artifact concentrations each covered 100–160 m^2, were spaced 20–25 m apart, and probably mark discrete household areas.

Whereas abundant evidence of cultigens was uncovered in the Doña Ana occupation at Meyer, at Gobernador and Ojasen there was very little indication of agricultural production. Overall, the botanical assemblages from these sites resemble those from Mesilla phase residential sites, with a wide variety of economically useful wild plants, along with a small amount of maize. The differ-

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ences may be related to chronology; radiocarbon dates and the ceramic assemblage (which includes Mimbres Black-on-White) indicate that the Gobernador occupation probably dates early in the Doña Ana phase (and may include a late Mesilla-phase presence as well), whereas Meyer and, especially, Hueco Tanks were likely occupied later in this phase.

The general lack of cultigens at both Gobernador and Ojasen is consistent with interpretations of these sites as small, short-term hamlets. Miller (1989:87–89) characterizes the pithouses at these sites as more substantial than small, saucer-shaped basins or "huts" (i.e., simple basin pithouses), but lacking some of the key architectural investments seen in more formalized pit structures. Accordingly, the Gobernador and Ojasen pithouses suggest an anticipated occupational duration somewhere between what is indicated by smaller, ephemeral pithouses on the one hand, and more substantially constructed, formalized ones (like those at Meyer and Hueco Tanks) on the other. The variation in pithouse construction among these excavated Doña Ana phase sites suggests both increasing sedentism *and* a continued pattern of seasonal mobility, with local populations possibly becoming less mobile over the course of this short phase. This variation may also indicate local differences in mobility and subsistence patterns among the region's population during the Doña Ana phase.

Besides signaling possible indicators of social inequality and even more formalized use of space, sites such as Meyer and Hueco Tanks indicate an even greater investment in pithouse settlements in the Doña Ana phase than what is seen for previous periods. These patterns further imply that at least some local groups were becoming more territorial at this time and, accordingly, increasingly concerned over claims to property rights. This inference is potentially supported further by changes in settlement patterns, which are perhaps best illustrated in Carmichael's (1986) study in the Doña Ana Range of Fort Bliss (in the southern Tularosa Basin). From his survey data, Carmichael suggested that "Transitional Pueblo" (i.e., Doña Ana phase) settlement patterns involve a much more contracted distribution relative to the more dispersed pattern of the preceding Mesilla phase (see Figure 3.3 above). Fewer sites are found in the basin interior, with settlements becoming more concentrated around playa locations near the feet of local mountain ranges, a pattern that presages that of the subsequent El Paso-phase. The pattern appears to be associated with an increasing emphasis on agriculture and further reduction in residential mobility. Others have taken issue with Carmichael's study, however, questioning the ceramic criteria he uses to identify "Transitional Pueblo" sites (i.e., sites with El Paso Brown, El Paso Polychrome, and El Paso Bichrome), and arguing that at least some of these mixed assemblages may be the result of multi-component occupancy (e.g., Foster 1993:11). Overall, however, the evidence appears to indicate that Carmichael's observed settlement pattern changes are more real than apparent.

The narrowed land-use focus of the Doña Ana phase, coupled with continued population growth, probably led to increased competition and conflict among social groups and polities inhabiting the central Jornada region at this time. Competition over territorial claims to choice locations left both winners and losers. The geopolitical conditions were probably highly dynamic, as the "winners" who occupied the choice lands immediately became the targets of the marginalized, and fortunes shifted between competing individuals, kin groups, and polities. Lands along the Rio Grande were probably always the most attractive to local populations, and the increasing commitment to horticulture made the river valley especially valuable real estate.

Along the Rio Grande, however, in the Mesilla Bolson and Rincon Valley, Doña Ana phase sites are conspicuously rare or absent, and the patterns discussed above for the Hueco Bolson and southern Tularosa Basin may not hold west of the Franklin, Organ, and San Andres Mountains. At

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the Hatch Site, Schaafsma (1990) reported a Doña Ana component that included four pithouses and a small, adobe room block. As in the Mesilla-phase component at this site (see above), the purported Doña Ana pithouses at Hatch vary in size, morphology, and certain key architectural attributes, and may not all be contemporary. Structures 2 and 3 were large, rounded pithouses that covered approximate 19 and 11 m^2, respectively, with straight-sided walls and flat floors. Each contained a floor hearth and a single posthole. A clay-sand plaster enclosed the hearth in Structure 2, while Structure 3's hearth was informal, although the house floor in the latter pithouse was lined with sand. Some burned twigs on the floor of Structure 2 suggest a brush superstructure. Structure 4 was a large stain that was only partially investigated, and is probably the remains of a pit structure that was cut into by Structure 3. Structure 5 was a large (21.2 m^2), rounded/rectangular pithouse with a ramp/ventilator and walls and floor plastered with gray mud. This was also the deepest house pit excavated at the site, with the floor dug to approximately 1 m below ground surface. A central hearth was the only floor feature. No postholes were detected in Structure 5, but cottonwood vigas on the floor suggested a cribbed-log roof. Collapse of the Structure 5 roof left a large depression, into which the occupants of nearby Structure 1 dumped trash.

Structure 1 at Hatch was a linear room block, oriented east-west, with walls and floors of coursed adobe. Only two rooms were uncovered, although at least one additional room extended to the east. Notable features include a plastered hearth in the south-central portion of Room 2, with a possible collapsed, rock-lined bin along the center of the south wall. Room 1 contained only an informal hearth, near the center of the floor.

If Structure 1 is indeed a Doña Ana phase building, then it is the only known room block for this phase. However, this temporal affiliation is problematic at best, as are the purported phase associations for several of the other Hatch site structures. Structure 1, at least, probably dates from the El Paso phase, as may some of the pithouses from this site. Structures 1–5 all contained El Paso Polychrome in varying amounts, and all but Structure 4 also yielded Chupadero Black-on-white. Structures 1, 2, and 5 also contained Reserve Indented Corrugated, although only Structure 2 contained a substantial amount of this ceramic type. Structure 9, which Schaafsma placed in the Mesilla phase component, also contains El Paso Polychrome, in its fill *and* on its floor. This structure is nearly identical in layout to (albeit is smaller than) Structure 5, and both closely resemble round, ceremonial pithouses with extended ramp/ventilators found in communal structures of the Three Circle phase (ca. A.D. 800–1000), in the nearby Mimbres reagion (e.g., see Structure X at the Wind Mountain site [Woosley and McIntyre 1996:58]). The Three Circle phase is contemporary with the late Mesilla phase of the Jornada region, but the presence of El Paso Polychrome in both structures five and nine at Hatch suggest they may post-date these contemporary phases. The occupation history at Hatch appears to be much more complicated than Schaafsma's phase assignments to two, spatially and temporially segregated groups of structures would otherwise indicate. Moreover, there is no clear Doña Ana phase occupation at this site; at least some of the structures assigned to this component probably date from the El Paso phase, while some structures may be contemporary with the Doña Ana phase, yet do not clearly fit the profile for this phase as it is defined further to the east. In particular, the high frequency of Alma Plain within *all* of the Hatch structures signals persistent close ties with the nearby Mimbres area. It may be that a contemporary, but separate phase should be defined here for the same interval occupied by the Doña Ana phase to the east.

Eliminating the purported Doña Ana phase component at Hatch leaves us with a curious hiatus in the Rio Grande Valley above El Paso. This is especially noteworthy because it was in this area that the earliest examples of rectilinear, formalized structures appear during the late Mesilla

phase, whereas no such structures are known for the late Mesilla to the east, in the Hueco Bolson and southern Tularosa Valley (see above). In the Doña Ana phase, however, the situation is reversed; now, it is in the Hueco Bolson that we find square and rectangular, formalized pithouses, whereas similar evidence is lacking along the westernmost periphery of the Jornada Mogollon region. What this means in terms of the regional interaction spheres and ethnic mosaic at this time is not at all clear, but present evidence does suggest that cultural developments that set the stage for the El Paso phase (including the emergence of key marker traits such as adobe construction and the hearth-step arrangement in the Hueco Tanks structures) were centered in the Hueco Bolson rather than along the Rio Grande. From the evidence, it seems apparent that Doña Ana groups were being drawn into a larger, regional interaction sphere involving social, cultural, and ideological traits widely shared among numerous ethnic groups in the southern Southwest. Human populations and their cultural traditions were in a dynamic state of flux across this region at this time, with accelerating changes occurring in subsistence economies, settlement systems, sociopolitical organization, and regional interaction. These conditions established evolutionary precedents for further changes during the subsequent El Paso phase.

El Paso Phase (ca. A.D. 1250–1475)

The El Paso phase is the final interval in the Formative period of the central Jornada region. This phase marks a climax in terms of local population levels, development of indigenous agriculture, reduced mobility, and the scale and complexity of settlement patterns, sociopolitical organization, ceremonialism, and regional interaction. Yet, this climax was a short-lived evolutionary/historical phenomenon, and by sometime around A.D. 1475 the entire cultural system in the central Jornada region had collapsed.

El Paso-phase site distributions suggest both regional population growth and changes in settlement patterns relative to the preceding phases. In his study of the Hueco Bolson, Whalen (1981a) reported that Pueblo period sites outnumber Pithouse period components (including both Mesilla and Doña Ana phases) 335–174. Total area of village sites also reflects demographic growth, with Pueblo period villages totaling 205 ha, as opposed to 67 ha for the Pithouse period. These differences are even more substantial when one considers that the Pithouse period lasted nearly five times longer than the El Paso phase. Whalen's data also underscore a decrease in residential mobility and a greater commitment to settled, village life; whereas settlements larger than 3 ha made up only 10 percent of total residential site area for the Pithouse period (which includes only two middle/late Pithouse period settlements), this figure increases to 49.5 percent for the El Paso phase. This statistic further indicates a change in settlement demographics, which now include growth of individual settlements as opposed to the pattern of village fission and establishment of increasing numbers of small communities characteristic of the preceding Pithouse period. Still, the dramatically increased number of village sites in the El Paso phase indicates that many new settlements were established during this period, which in turn suggests that group territories continued to shrink.

Territory reduction was probably exacerbated as the distribution of sites also contracted during the Doña Ana and El Paso phase. Whereas Mesilla-phase sites are distributed across a wide range of environmental zones, including numerous basin interior localities, Doña Ana and El Paso-phase sites tend to be located near playas and the lower margins of alluvial fans along the edge of the basin, where water is more readily available (see Figure 3.3, above). The change in settlement patterns was apparently related to an intensification of agricultural production during these phases, to levels that were never exceeded until the arrival of Euroamericans in the area.

Although more energy was invested in the cultivation of corn, beans, and squash, to the point that agriculture was now the focus of local subsistence

economies, hunting and gathering maintained a critical, supporting role. The establishment of smaller, seasonal settlements, linked to the larger villages, helped facilitate the logistical exigencies of hunting and gathering. Exchange relations between local populations, focused on different subsistence strategies, may also have helped even out resource imbalances and periodic shortfalls. Whalen (1981a) identified three site types associated with the Pueblo period in his study of the Hueco Bolson: small camps (n=176), large processing areas (n=4) and villages (n=155). The continued importance of temporary hunting and gathering sites is underscored by the fact that small camps outnumber villages in the Pueblo period in Whalen's sample, whereas the reverse was true for the Pithouse period (78 small camps versus 98 villages; although villages were, on average, smaller at this time). Still, the small camps of the Jornada Pueblo period tend to be less dispersed than those of the Mesilla phase (although not, necessarily, than those of the Doña Ana phase), with most located close to the pueblo villages along the basin edges (Carmichael 1986; Whalen 1977, 1978). This pattern provides further evidence for territorial circumscription and a reduction in group-foraging ranges.

One of the most prominent changes marking the El Paso phase is the appearance of modular, adobe, unit pueblo-like room blocks (Table 3.6 and Figure 3.5). Elsewhere in the Southwest, people had been constructing pueblos as early as A.D. 700, but in the Jornada Mogollon region pueblos do not appear until half a millennium later. But by the beginning of the El Paso phase, pueblo construction nevertheless proliferated rapidly throughout the region.

Unlike many other pueblo villages in the Southwest, El Paso-phase room blocks tend to be single-story, and only very loosely aggregated. Kivas are also notably absent in El Paso-phase pueblos. The hearth-step arrangement, which first appeared in the Doña Ana phase pithouses at Hueco Tanks (see above), is now a common feature of El Paso-phase rooms (Brook 1967a). Rooms also typically feature an arrangement of two or four main support posts. Linear arrangements of contiguous rooms, almost invariably oriented east-west with south-facing entrances, typify El Paso-phase pueblo construction. Many El Paso-phase sites consist of only one linear room block with a single or double tier of rooms (Figure 3.6). Linear room blocks typically contain between six and 20 rooms, although blocks with as few as two conjoined rooms—and even single-room, stand-alone structures—are not uncommon. Sites with multiple, linear room blocks tend to be only very loosely aggregated, and dispersed distributions of room blocks and single-room structures are not uncommon. Some single-room structures may have served as field houses—temporary residences and storage facilities constructed amidst agricultural plots (see Browning 1991; Browning *et al.* 1993).

There are also examples of El Paso-phase pueblos with plazas or courtyards, defined by surrounding room blocks and/or exterior walls (Figure 3.7). In some of these cases, the individual pueblo wings still consist of east-west oriented room blocks, but these are joined by either additional room units or exterior walls. In other cases, especially toward the margins of the Jornada Mogollon region, there are large pueblos enclosing central plazas, and the linear room-block arrangement is not as evident (e.g., see Browning 1991). There are also unusual configurations among smaller pueblo sites, including the room block at 14EP1683, which consisted of a non-linear arrangement of four rooms (Dering *et al.* 2001). The total size of El Paso-phase pueblo settlements also varied considerably, ranging from small, isolated room blocks, to pueblos and room block clusters that contain up to 200 rooms.

Construction techniques also varied among El Paso-phase pueblos, although some common patterns are evident. Building often began with the excavation of footer trenches for the walls. Adobe was then puddled into the wall trenches and courses were added above this foundation to create at least the lower portions of the walls. It

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Table 3.6 Selected Sites of the El Paso Phase

Site	No. of Roomblocks Documented	Rooms/ Block	Reference(s)	Comments
41EP 1683	1	4	Dering *et al.* 2001	Unusual room block, consisting of four contiguous rooms (non-linear config.). C-14 date of A.D. 1168–1403.
Alamogordo 1	3	3, 15, 75–100	Lehmer 1948	Largest room block contained 3 wings surrounding a plaza
Alamogordo 2	1	~ 60	Lehmer 1948	Rectangular pueblo enclosing a plaza
Anapra Pueblo	1	7	Scarborough 1985	Typical linear roomblock.
Bob John's	2	1-3	Brook 1984	Linear, 3-room pueblo w/ detached, stand-alone room.
Bradfield	1	16	Lehmer 1948	Investigated room block reportedly only part of much larger village
Casa Blanca	3+	Up to 7+	O'Laughlin 2001b	Site includes two early El Paso-phase pithouse components, followed by construction of what may be non-linear roomblocks, although the site is badly eroded, and the pueblo remains severely damaged.
Condron Field	2		Hammack 1961; Morrow 1970	Two linear roomblocks totaling seven rooms. Large communal room had cache of 99 shell beads in small, sealed, sub-floor pit. Late El Paso phase site.
Cottonwood Spr. Pueblo	3+	Up to 12+	Browning 1991; Lekson & Rorex 1987	Multiple, linear room blocks w/ at least three single-room, stand-alone structures.
Cox Ranch	?	?	Vermillion 1939	
Embree	2+	?	O'Laughlin 1985b	Two roomblocks form an "L," defining a plaza that may be bounded by additional pueblo wings.
Escondida Pueblo	1	?	Beckes *et al.* 1977; Hedrick 1967	Only limited testing & surveys of site. Testing uncovered a large (~ 33 m^2) room w/ a plastered hearth & 4-post arrangement. Discrete artifact concentrations suggest several room blocks.
Firecracker Pueblo	1	15-17	O'Laughlin 2001a	Late El Paso-phase site (15th c.). In addition to room block, site also contains an isolated pueblo room, and 17 El Paso-phase pithouses.
Fleck Draw (LA 72851)	Multiple		Browning 1991	Up to 100 rooms estimated for this site. Upright slab foundations for adobe walls
Hatch	1	3 (+?)	Schaafsma 1990	Pueblo reported as Doña Ana phase, but is probably El Paso phase.
Hot Well	12	1-20 (+?)	Bentley 1993; Brook 1966a, 1970, 1978; Davis 1968a, 1968b; Scarborough 1988; Schultz 1967	Total of 47 rooms excavated; Bentley (1993:1) estimates up to 200 rooms w/in the site. Includes both single, stand-alone rooms, linear room blocks, and one room block that appears to enclose a small plaza or courtyard.
Indian Tank	1	?	Browning 1991; Lekson & Rorex 1987	Rectangular pueblo surrounding a central plaza
Jack's	?	?	Beckes *et al.* 1977; Hedrick 1967	Site surveyed only. Substantial trash mounds suggest multiple room blocks.
LA 72129	1	1	Human Systems Research 1991; Browning 1991	Single, stand-alone room, or "field house." Upright slab foundations. Late El Paso phase.

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Table 3.6 Selected Sites of the El Paso Phase (continued)

Site	No. of Roomblocks Documented	Rooms/ Block	Reference(s)	Comments
LA 72147	1	1	Human Systems Research 1991; Browning 1991	Single, stand-alone room, or "field house." Upright slab foundations. Late El Paso phase.
LA 72149	5	1-7	Human Systems Research 1991; Browning 1991	Site near crest of San Andres Mountains, next to San Adrecito Spring. Prob. jacal structures, w/ some stone masonry foundations.
La Cabraña	1	9	Foster *et al.* 1981	Site lies on first terrace of Rio Grande. Linear roomblock w/ a single "patio."
McGregor Site	1	3	Beckes *et al.* 1977; Brook 1966	Survey data indicates multiple room blocks at the site.
MOTR (LA 72859)	1	1	Browning *et al.* 1993	Single, stand-alone room, or "field house." Plastered floor & hearths, badly deflated. Late El Paso phase.
Orogrande	1	1 (+?)	Brook 1980a	Large (~ 20 m^2 room with thick adobe walls, plastered floor, collared hearth, and stepped entry. Not clear if this is the communal room of a linear pueblo or a stand-alone structure
Pickup Pueblo	1	6	Gerald 1988	
Public Service Board Well 44	1	4	Green 1968	
Robledo Mtn. Pueblo	1	17+	O'Laughlin 1985b	
Sabina Mtn.	5	1-2	Brook 1980b	Excavated rooms indicate three pairs of two-room blocks, and two stand-alone, single-room structures. Site extremely deflated and weathered; perhaps originally consisted of linear room blocks, with several rooms since destroyed by deflation.
Sarge	1	1 (+)	Brook 1967b	Severely deflated site; perhaps only a single, stand-alone room.
Sergeant Doyle	8	1-4	Bentley *et al.* 1995; Green 1969	17 rooms documented at the site, including two single, stand-alone rooms.
Sherman Hog Ranch (or Pipeline)	1	6+	Green 1968; Brook 1975	
Three Lakes Pueblo	?	?	Whalen 1977	Limited testing by Whalen exposed plastered floors, collared hearths, & postholes inside of structures. Discrete artifact concentrations suggest multiple room blocks &/or individual structures.
Twelve Room House	1	12	Moore 1947	Linear room block; largest room at east end. Another room block site, 41EP1683, is located 400 m to the south of the suspected location of the Twelve Room House site.
Well	1	28+	Gerald 1963; O'Laughlin 1999	Pueblo actually consists of mulitple room blocks (two of which are linear) that are joined by exterior walls, which together define five plazas or courtyards.

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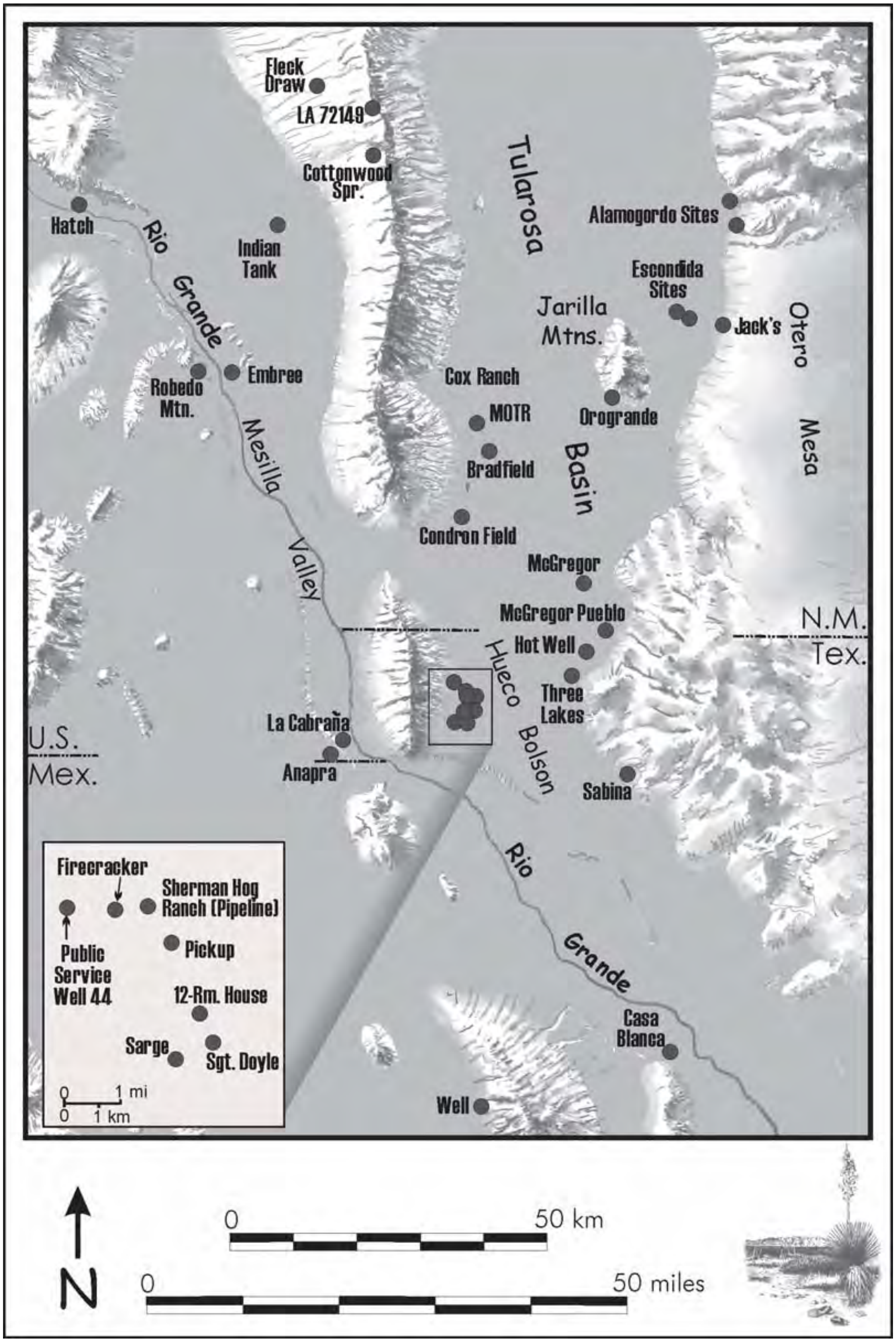

Figure 3.5 **Locations of El Paso phase sites listed in Table 3.6.**

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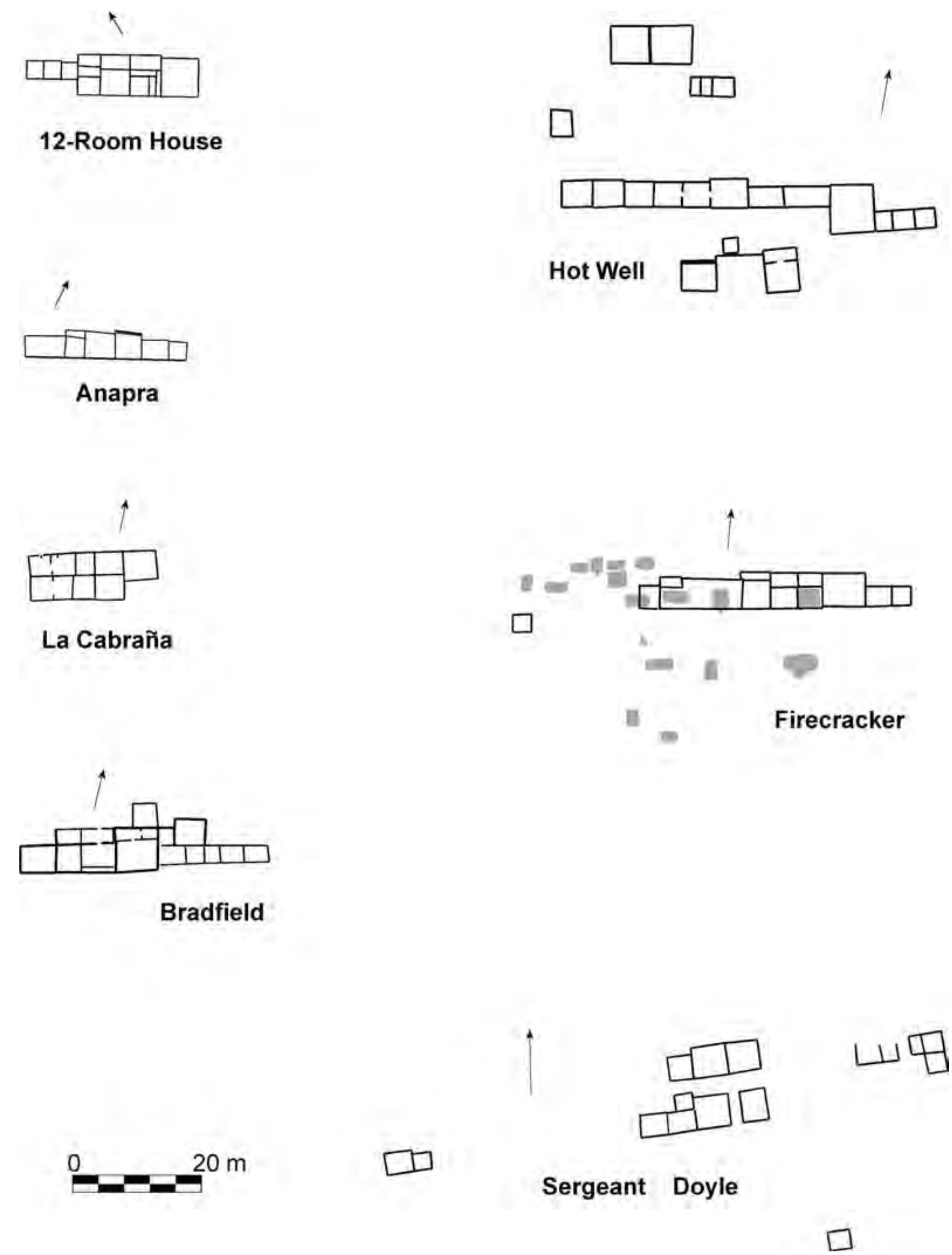

Figure 3.6 Some samples of El Paso-phase linear room blocks. The gray objects at Firecracker Pueblo are pithouses. The rooms shown for Hot Well represent only a small portion of this large site. Arrows point north.

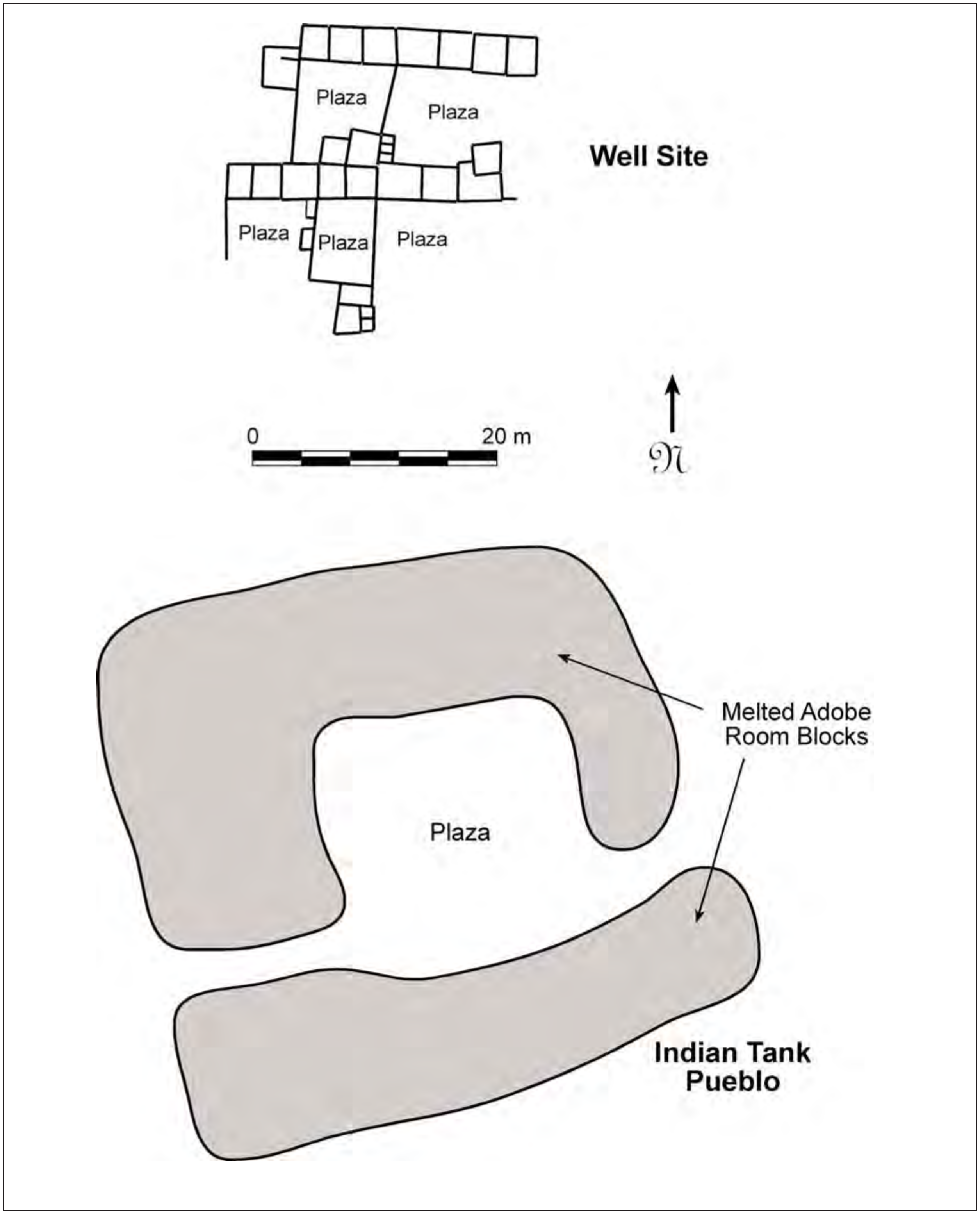

Figure 3.7 Examples of El Paso-phase sites with plazas.

is not always clear to what extent puddled adobe was used to construct the entire height of walls, and in some cases walls (or at least upper portions) were raised through the more expedient method of jacal (wattle and daub) construction. In one room at Hot Well pueblo, thick lower walls were constructed to a height of 38 cm, above which much thinner walls were erected (Brook 1978:7). In some cases, walls were thicker above the footer trenches, and overlapped onto the floors and outside ground surface (e.g., Green 1968:75). Some sites, such as Sabina Mountain (Brook 1980) lacked wall trenches. Walls were often plastered, on both the interior and exterior. But in some areas construction techniques depart considerably from these patterns; for example, among late El Paso sites in the San Andres Mountains, structures typically feature upright slab foundations, above which were raised jacal walls (see Browning 1991).

Following construction of the walls, floors were typically excavated 20–50 cm below the ground surface, and plastered. Some rooms exhibit multiple episodes of floor plastering, indicating refurbishing and repeated occupation. Floor hearths were typically plastered as well and, where present, entry steps were made from solid adobe (Brook 1967a:38). Storage pits, occasional burials, and other facilities were often excavated below room floors. The presence of large support posts indicate substantial, viga- and latilla- roofs in at least some El Paso-phase pueblos. Atop the latillas a layer of twigs, bark, brush, grass, and/or reeds was placed, and this in turn was covered with a layer of adobe.

Within individual pueblos, there is often one or more large, "communal" rooms, covering 25 m^2 or more. In addition to the usual hearth-step configuration (found in both communal and residential rooms), the communal rooms often contain an additional hearth and pit along the north-south axis, additional floor features, and two or four main support posts. In many cases at least, it appears the large, communal room was the first one constructed, after which residential room blocks were appended in a linear fashion.

Although the historical circumstances and details of each El Paso-phase pueblo varied, there may have been a common scenario in how such sites were founded, grew, and eventually abandoned. One possibility is that a founding leader, along with his immediate family or kin group, first established a pueblo by constructing a large communal room and then adding their residential rooms. Once established, the nascent pueblo may have attracted followers (most likely other members of one's kin group), and the communal structure would have grown accordingly. It is also possible that the full membership of a planned pueblo was already assembled and in place prior to its construction, with the room block then constructed in a single episode. Like most other Southwestern pueblos, however, the unique, site-specific layouts and ad-hoc agglomeration of El Paso-phase room blocks reflect the individual history of each settlement's formation, development, and abandonment.

Regardless of their individual circumstances and histories, the very appearance of communal pueblos implies a level of cooperative organization (and, possibly, political leadership) not evident in the pithouse settlements of pre-El Paso-phase times. This prompts questions as to why El Paso-phase peoples started building pueblos in the first place. Prior to A.D. 1250, Jornada Mogollon peoples were in contact with their contemporaries in neighboring regions, especially the Mimbres area to west, where above-ground pueblo construction began perhaps 300 years earlier. Some might find it tempting to view the advent of pueblo construction in the Jornada region as a straightforward case of diffusion and/or movement of peoples into the area from regions where pueblo construction was already an established cultural practice. However, there are problems with drawing such a conclusion. First, Jornada ceramic assemblages do not indicate any abrupt population replacements (although they do indicate increasing extra-regional interaction over the course of the Formative period). Second, as noted above, some of the key attributes of El Paso-phase pueblos

(e.g., the hearth-step and main support post configurations) were already in place by the late Doa Ana phase.

From these lines of evidence, the following scenario might explain the emergence of pueblo construction in the Jornada Mogollon region. First, southern Jornada peoples engaged in intensifying extra-regional interaction beginning no later than A.D. 900–1000 (when Mimbres wares begin showing up in late Mesilla sites). By this time, peoples in the nearby Mimbres area were beginning to construct agglutinated pueblos, and square and rectangular pithouses had been constructed here for at least three centuries. Jornada Mogollon peoples, especially those along the western periphery, were in close contact with the Mimbres area. At least some Jornada Mogollon individuals (perhaps clan leaders or "Big Men," who maintained personal trade and exchange relationships with "foreign" partners) were probably at least aware of these new architectural forms, and had perhaps even personally visited Mimbres pueblos and seen these constructions.

By late Mesilla times, some of these "foreign" ideas began to catch on in the Jornada Mogollon, or at least among groups on the western periphery of the region (closest to the Mimbres area), who began constructing square and rectangular pithouses, and large communal rooms, by A.D. 900. This suggests at least the beginnings of more complex social structures and formalized ceremonial practices, and the embedding of these new traits into the regional culture. These developments—along with on-going social competition between clans, groups, and leaders—would have encouraged local groups to both reproduce and elaborate these elements and their material expressions. Agricultural intensification at this time may be at least partly explained by this on-going dynamic, as leaders, clans, or other groups sought to sponsor and provision feasts as part of communal ceremonies. Even though the intent of such activities and behavior may have been to simply reproduce the existing sociopolitical and ideological order, the net result was continued cultural change.

The Jornada Mogollon region remained conservative, however, and for at least two centuries after groups in the Mimbres began constructing agglomerated pueblos, Jornada peoples continued to build, and live in, pithouses. This may be due to several factors, including continued low overall population densities and high-mobility settlement systems in the Jornada region as opposed to the Mimbres area. At any rate, there was a lag in the adoption and development of social-organizational forms and ideological elements that would otherwise have encouraged an earlier appearance of pueblos among Jornada groups. At the same time, indigenous architectural traits, which probably expressed new ideological and sociopolitical elements, were emerging in the Jornada Mogollon region. These include the recurrent hearth-step and support post configurations, south-facing entrances, and east-west arrangement of rectilinear pithouse rooms, already present by the late Doña Ana phase (at sites such as Hueco Tanks). It is possible that some of these marker traits were adopted, in part, from the Mimbres area (note the floor plan similarities between the Doña Ana and Black Mountain phases, see above), and perhaps were adapted to the local culture and available construction materials.

Many of these developments might be explained, in part, by the peer-polity interaction model, which describes processes through which a regional cluster of polities shares a number of structural homologies (Renfrew and Cherry 1986). These include close similarities in economic organization, political structure, ideological systems, iconographic symbols, ritual practices, and often a common language. As the name implies, however, peer polities are not politically united, and frequently engage in inter-polity warfare. The peer polity model predicts that, where one polity can be identified, polities of similar scale and cultural expression will occur in the vicinity, and sociopolitical change will proceed more or less simultaneously across the region, because of the nature of inter-polity interaction. The processes through which various traits are

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shared within a peer polity cluster involve the selection, diffusion, sharing, and modification of marker traits within a region. One such process is referred to as *symbolic entrainment*, which "entails the tendency for a developed symbolic system to be adopted when it comes into contact with a less-developed one with which it does not strikingly conflict" (Renfrew 1986:8), and can include the transmission of political behaviors along with material marker traits. Another process is *competitive emulation*, wherein "neighboring polities are spurred to ever greater displays of wealth or power in an effort to achieve higher inter-polity status" (Renfrew 1986:8).

The peer-polity model might help explain both the lag in the beginnings of pueblo construction in the Jornada region, and the rapid proliferation of this architectural form once it began here. Processes such as symbolic entrainment often involve a filtering effect when cultural marker traits diffuse from one regional system to another, and this appears to have occurred in the Jornada Mogollon region. Not all elements of puebloan construction found their way into Jornada culture. Note, for example, the absence of kivas in El Paso-phase pueblos. Moreover, as in the Mimbres area and other parts of the Southwest, peoples in the Jornada region appear to have passed through a preparatory phase in which pithouses gradually became more "pueblo-like." Apparently, it was only at a certain point in this incremental process that building conjoined pueblos became acceptable within the local culture. Moreover, the beginnings of pueblo construction in the Jornada Mogollon did not involve a huge developmental leap; rather, it was a short step to simply join together square and rectangular rooms that had previously stood apart, at the same time preserving (and further embedding) such traits as the east-west lineup of rooms, south-facing doorways, and the hearth-step configuration. The construction of agglutinated pueblos in the El Paso phase was thus as much a continuation of trends already set in motion as it was an abrupt change in the conceptualization and construction of domestic and communal architecture.

Still, the construction of agglutinated pueblos may have been motivated by a variety of concerns or factors that were new to groups in the region, or had intensified to the point that such a new construction technique became widely adopted. It is possible that building pueblos was seen simply as a way of economizing building material and energy expended on construction, as conjoining rooms meant that far fewer walls would have to be constructed to house the same numbers of people. But humans rarely behave for purely economic reasons, and thus it is equally likely that cultural and social factors came into play here as well. One such factor may have been group defense, and recent research has shown that warfare was common among Puebloan societies (LeBlanc 1999). Although the linear room blocks that typify most El Paso-phase pueblos do not appear to be especially effective defensive configurations, the mere act of people clumping together, in such tightly knit housing units, may have enhanced the defensive posture of the resident group. Pueblos with enclosed plazas would have provided even better defensibility. But plazas were primarily ceremonial and social spaces, and the evolution of a more tightly knit communal life may also help explain the emergence of agglomerated pueblos (and vice-versa, as building and living in pueblos would have also encouraged and enhanced a more communal ethos among their residents). In social terms, pueblo residency probably conferred a certain responsibility upon member occupants, to a degree not necessarily found in earlier, pit house settlements. This involved a commitment to reside at the pueblo (at least for certain times of year), to do one's part to help build and maintain the communal structure, and generally to try and get along with one's neighbors living on the other side of a common wall. Such responsibilities probably did not hold to the same degree in situations where families lived in their own, separate houses.

Yet problems arose, no doubt, within the compact, pueblo living conditions, even within the comparatively dispersed room blocks typical of the El

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Paso phase. Life in larger groups, along with more extra-local interaction, inherently led to new challenges in organizing societies, managing information exchange, and mediating interpersonal disputes. Such problems probably led to several important, sociopolitical strategies and adjustments on the part of El Paso-phase societies. As noted above, one strategy for dealing with problems that accompany life under increasing group size is the formation (or continued operation) of sequential hierarchies. Given the evidence for a continued absence of highly centralized leadership in El Paso-phase societies (more on this shortly), it seems quite likely that sequential hierarchies operated in the region at this time. Similarly, Feinman, Lighfoot, and Upham (2000) suggest that puebloan societies in the American Southwest were organized according to a corporate, as opposed to a network mode of operation (see above). Sequential hierarchies are more congruent with a corporate form of social organization, as these organizational forms tend to stress an egalitarian ethos (regardless of how social relations actually play out).

Remembering that sequential hierarchies tend to have an average of six decision-making units (Johnson 1982, 1989; see above), one way of examining this possibility for the El Paso phase is to look at ratios of communal residential rooms. Such a study is beyond the scope of this project, but it is worth noting here that O'Laughlin (2001a:117) observed El Phase pueblos tend to have "one large room for every six to 10 rooms." The implication here is that there was one ceremonial facility (the large room) for several families (the small rooms), and the numbers look suspiciously like a sequential hierarchy, especially if we assume that at least some of the small rooms in the larger blocks were used for storage rather than as residences.

Besides organizational adjustments designed to accommodate larger, more communal groups, El Paso-phase peoples appear to have also retained the option to settle problems by "voting with their feet." This option involved both seasonal mobility and more permanent disbanding of pueblos. Settlement evidence (e.g., Whalen 1981a) indeed suggests El Paso-phase people maintained a certain degree of seasonal mobility. It also appears that El Paso-phase pueblos were often short-lived and frequently relocated, or even dissolved, with residents opting for life in stand-alone structures and more expedient pithouses. Such a pattern is not at all unexpected in this harsh desert, where even slight fluctuations in precipitation levels may have wreaked havoc on a group's ability to produce enough food in a given location, which in turn would have exacerbated social tensions inherent to life in aggregated settlements. As a result, pueblo life remained a tenuous option throughout the El Paso phase, and the maintenance of mobility options, including the construction and use of pithouses, remained a key ingredient of regional settlement systems.

One of the best examples illustrating settlement and architectural vanadium in the El Paso phase is the Firecracker Pueblo site (O'Laughlin 2001a). Here, a late El Paso-phase group established a small settlement of 17 square and rectangular pithouses, most of which had floor areas between 6.0 and 10.9 m^2, and shallow house pits typically 15–25 cm in depth, although some were more than 1 m deep. One of the pithouses was exceptionally small (1.3 m^2), whereas another was inordinately large (22.2 m^2) and may have served as a communal facility. Most of the Firecracker pithouses followed culturally proscribed patterns in their design and layout; 11 were located along a roughly east-west alignment, at least four of these had south-facing entryways, plastered hearths were located in the south-central portion of the floors, and postholes, when present, followed the two- or four-post pattern. But there were variations here as well, as at least four structures formed an inward-facing square, the exceptionally large structure stood apart from the rest, and most of these structures lacked discernable postholes. Following the pithouse occupation at Firecracker, a typical pueblo room block was constructed at the site, which partially follows the east-west alignment of 11 pithouses, with three of the rooms

in the block built directly over pithouses. Ceramics and radiocarbon dates indicate that both the pithouse settlement and subsequent room block at Firecracker are very close in time, both dating from the fifteenth century.

Architectural and settlement variation underscores the dynamic nature of El Paso-phase sociopolitical organization, and the instability faced by these societies in this extremely marginal environment. Cycles of aggregation and dispersion, as well as continued seasonal mobility, characterize life in the El Paso phase, and prompts us to envision scenarios as to how these cycles played out in social and political terms. In a discussion of sociopolitical dynamics among prehispanic Puebloan peoples, McGuire and Saitta (1996) paint a scenario that is potentially relevant to our understanding of settlement variation in the El Paso phase. They see widespread settlement instability as symptomatic of an underlying tension between the contradictory forces of communalism and hierarchy, both rooted in late prehistoric Southwestern sociopolitical organization (see also Saitta 1997). According to McGuire and Saitta, this tension resulted from social relations designed for the manipulation of scarcity, an ever-present condition under the region's marginal and unstable environmental conditions. At the same time, however, they argue that the environment in no way *determined* the precise character of Puebloan social organization, and that ever-fluctuating environmental conditions both impose limitations upon, and create opportunities for, social *action* on the parts of various individuals and groups. Settlement aggregation and dispersion might occur in response to environmental perturbations, but, just as importantly, were subject to cultural and sociopolitical conditions.

> The coming together and breaking apart of late Prehispanic populations was, therefore, not just a functional response to changes in the environment, but meaningful human action undertaken by social groups with different and sometimes contradictory interests in an environmental context (McGuire and Saitta 1996:211).

Both aggregation and dispersion could be equally viable responses to a prevailing set of environmental circumstances, or they could be settlement alternatives that were differentially opted for within a single, time-space trajectory shaped by both environmental and sociopolitical dynamics. According to this perspective, we can envision a "dynamic, variable, and historically contingent process of cultural change" (McGuire and Saitta 1996:211) for the El Paso phase and the Jornada Mogollon sequence in general. Under the aggregation option, these authors argue that the founding clan(s) of a settlement would enjoy material, social, and ideological benefits in the process of attracting others to their village. Yet those "others" would still be attracted because of the "promise of social and material stability and the allure of a rich and meaningful ceremonial life" (McGuire and Saitta 1996:211), as well as the security and defensive advantages of the village. During this phase of village expansion, the communal side of the sociopolitical ethos should prevail, to accommodate aggregation and facilitate social integration. Beyond a certain threshold, however, or under sharply worsened environmental conditions, aggregation may lead to diminishing returns. Under these conditions, a Pueblo community should be expected to show its more hierarchical face, as newcomers are increasingly marginalized or excluded from settling within the village. Lower-ranking residents might even be evicted, in which case they might found a new settlement, or disperse. In any event, their expulsion would alter the set of social, political, and ideological relationships that had prevailed in the aggregated settlement of which they had been a part.

McGuire and Saitta's scenario potentially enriches our understanding of El Paso-phase settlement variation, in that it expands upon more straightforward, ecological-demographic models, and encourages a fuller consideration of sociopolitical dynamics. Their discussion also highlights *both*

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the hierarchical and communal sides of life in the late Prehispanic Southwest. The prospect of sociopolitical hierarchy among El Paso-phase societies is informed further by recent discussions and re-analysis of archaeological and ethnographic evidence, which indicates Puebloan societies were not the Apollonian, egalitarian organizations they were once thought to be. Rather, to a limited degree at least, they were formalized, stratified hierarchies with elites whose power was maintained to a large extent through control over esoteric knowledge and orchestration of ceremonies (Brandt 1977, 1980, 1994; Cordell and Plog 1979; Cordell *et al.* 1989; Nelson 1994; Plog 1984; Plog *et al.* 1982; Sullivan and Hantman 1984; Upham 1982; Upham *et al.* 1981, 1989).

At the same time, Puebloan societies were characterized by significant restraints on leadership behavior, to the extent that many material indicators typically associated with formalized hierarchies (such as richly furnished graves, prestige goods representing symbols of authority, and significant health status differences as reflected in skeletal populations) are largely absent in the Puebloan archaeological record (see Johnson 1989; Upham 1982:31). This is especially true for the El Paso phase. This degree of ambiguity has even led some researchers to question the existence or importance of formalized hierarchies in the Puebloan societies (e.g., Graves and Reid 1984; Hunter-Anderson 1984; Reid 1985; Reid *et al.* 1989; Saitta 1997; Whittlesey 1984, 1986). McGuire and Saitta's (1996) scenario provides some middle ground within this controversy.

> What impresses us most about modern and past pueblo societies is not that they are/were egalitarian or stratified, but that they embodied both consensual and hierarchical social relations (McGuire and Saitta 1996:198).

Besides the pueblo room blocks themselves, the organizational capabilities of El Paso-phase societies are also reflected in capital investments such as the Hot Well and Hueco Mountain reservoir (Scarborough 1988; Bentley 1993; Leach *et al.* 1993). The Hot Well reservoir is located just 400 m from the Hot Well site, one of the largest El Paso-phase pueblo settlements, and within an area of densely concentrated Doña Ana- and El Paso-phase sites. This facility was situated to collect and concentrate precipitation runoff from the nearby Hueco Mountains. With a maximum capacity of 182 m^3, the reservoir was large enough to potentially meet the yearly water needs of approximately 80 people, although evaporation rates meant that it probably could not sustain the water needs for such a group throughout the year (Scarborough 1988:30). Nevertheless, the reservoir indicates a major effort designed to ameliorate the inherent uncertainties posed by the region's desert environment and unpredictable precipitation.

In social terms, the Hot Wells reservoir underscores several major points about the El Paso phase. First, it suggests that mobility options had been reduced to the point that the energy investment required to excavate and maintain the reservoir was considered worth it. Second, it reflects a level of commitment to aggregation not previously witnessed in the region. Third, a project of this scale implies a level of organizational capability unprecedented in the region. Finally, once completed and in use, and to the extent that it served its desired purpose, the reservoir would have "tethered" its users to the vicinity, reinforcing and intensifying the various conditions and trends that led them to excavate this large facility in the first place, and strengthening their sense of territoriality and claims to property rights.

Another indicator of intensifying sociopolitical dynamics, in both the Doña Ana and El Paso phases, is the proliferation of painted pottery. El Paso-phase ceramics were much more varied relative to earlier times. El Paso Brown, the mainstay utilitarian ware of the Pithouse period, disappears by the beginning of the El Paso phase, as does El Paso Bichrome, which is an important marker of the Doña Ana phase. El Paso Polychrome, which

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had appeared in the Doña Ana phase, proliferates during El Paso times, and experiences changes in vessel morphology and design elements. Chupadero Black-on-white also becomes more frequent, and remains the most common imported ware in local pottery assemblages. Other intrusive ceramic types include Lincoln Black-on-red, Three Rivers Red-on-terracotta, and "smudged corrugated ware" (Lehmer 1948; Simmons *et al.* 1989). Northern Rio Grande wares recovered from El Paso-phase sites include Galisteo Black-on-white, Agua Fria glaze wares, and Arenal Glazed Polychrome. Chihuahuan wares such as Villa Ahumada Polychrome, Carretas Polychrome, Corralitos Textured Polychrome, and Convento Rubbed Corrugated also appear, and signal increasing interaction with groups in northern Mexico. Taken together, these intrusive ceramic types indicate local populations were involved in larger and more intensive interaction spheres during the El Paso phase than in any earlier period. This inference is supported further by the presence of Pacific and Gulf Coast marine shell, as well as turquoise and occasional Mexican copper bells.

Following the information exchange theory of Wobst (1977), the proliferation of painted pottery in the Late Formative period is probably symptomatic of not only more wide-ranging contacts, but also of scalar increases in social interaction. According to Wobst's theory, symbolic messaging with formalized, visual markers is expected to increase under conditions involving regular interaction between persons of intermediate social distance. Such conditions emerged with the formation of settled village life and large communities (but not necessarily including a highly stratified social order). These are precisely the conditions in which decorated pottery appears in various parts of world, including many Middle Neolithic cultures of Eurasia, and the late prehistoric cultures of eastern North America and the American Southwest.

Material markers, such as painted pottery, are usually displayed during public gatherings. Such group ceremonies become increasingly important for defining social roles and group identity, and for orchestrating social reproduction, as communities become larger and more complex. Accordingly, in the Doña Ana and El Paso phases, the proliferation of decorated ceramics reflects escalating sociopolitical dynamics under conditions of accelerating population growth, increasing community size, and more complex and carefully-orchestrated ceremonialism. Again, however, population growth was probably as much a symptom as a cause of increasing complexity.

Besides painted pottery, intensified extra-regional connections are evidenced by increasing numbers of prestige goods in the El Paso phase, including items of turquoise, calcite, and shell (including both Pacific and Gulf Coast marine shell), along with Mexican copper bells. During the El Paso phase, the region was linked to an interaction sphere centered at Casas Grandes, the large regional center in northwestern Chihuahua, 260 km southwest of El Paso. The Jornada Mogollon region was on the far northeast periphery of this interaction sphere and only remotely tied to it; certain items, such as macaws, apparently did not find their way to El Paso-phase groups (see Minnis 1984). Accordingly, it appears that social and political control over prestige goods exchange remained rather diffuse throughout the region encompassed by the Casas Grandes Interaction Sphere, which includes the central Jornada.

As a sort of currency used to conclude social transactions and cement alliances and other political relationships, prestige goods were probably considered essential ingredients of social and ceremonial life in the minds of El Paso-phase peoples. Prestige goods also are often exchanged for food, and thus increasing circulation of wealth items often stimulated further intensification of horticulture and surplus production.

One of the cruxes for the characterization of Puebloan societies as "communal" or "corporate hierarchies" is the perception that power and leadership in these societies did not rely on control of

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exchange networks and prestige goods, such as turquoise (Feinman *et al.* 2000:465; Cameron and Toll 2001:12). Although the quantities of such goods at any one El Paso-phase site are typically low, there are exceptions, the most prominent perhaps being the Bald Eagle Cache, discovered beneath an overhang in the Sacramento Mountains (Wooldridge 1979). The cache involved two ceramic vessels containing 50,009 artifacts, including beads of marine shell, calcite, slate, and turquoise. Another notable find of prestige goods from this period is a cache discovered in 1936 at the Tobin Ranch, 11.5 miles northeast of El Paso (Moore and Wheat 1951; Wooldridge 1979). This cache involved 17 ceramic vessels (including both Chihuahua wares and one Hohokam vessel) containing 7,477 shell ornaments. A less spectacular, but still notable, cache was found beneath a room floor at Alamogordo Site 2, and involved a small ceramic jar containing five turquoise pendants, several *Olivella* shells, and a large quartz crystal (Lehmer 1948:62).

Although these caches appear as isolated occurrences, it seems likely that many more have either been looted without documentation, or still await discovery. The concentration of such large quantities of prestige goods in the Bald Eagle and Tobin Ranch caches suggest some measure of control over the distribution and exchange of these goods by certain individuals or groups. Localized sources of prized raw materials, such as the turquoise deposits in the Jarilla Mountains, also would have at least tempted local groups to try and exert some control over their extraction and export. It is possible that control over prestige goods was indeed used as a form of political capital and leverage in the El Paso phase and elsewhere in the Southwest. That such goods rarely were concentrated in the burials of certain individuals may, again, speak more to the prevailing cultural norms than to on-the-ground, day-to-day political maneuvering. Even though the circulation of prestige goods often did not involve high volumes of these goods, they nevertheless may have been key items used in ceremonies or specific social exchanges. Control over the production and acquisition of prestige goods probably was critical to the maintenance of sociopolitical order and even positions of leadership in El Paso-phase communities.

Importantly, in the Southwest prestige goods were associated with esoteric knowledge, which, as noted above, was a key source of sociopolitical power in puebloan societies, as opposed to control over subsistence production and concentration of wealth and its ostentatious display (Brandt 1977, 1980, 1994; Cordell and Plog 1979; Cordell *et al.* 1989; Nelson 1994; Upham 1982; Upham *et al.* 1989). A similar connection between ideology, ceremonialism, prestige goods, and power appears to have held sway in the El Paso area as well. Rock art depicting images reminiscent of Queztalcoatl and Tlaloc (Bentley 1992:37; Brook 1979:38), and elements suggestive of the Kachina cult (including tablitas made of yucca from dry caves, and kiva bowls), suggest the presence of powerful ideological elements in the El Paso area at this time. The foreign sources of these icons probably lent them an air of mystery that was seized upon as a source of power by El Paso-phase ritual practitioners.

Although prestige goods (and the ideological forces they were associated with) provided a potential source of power in the El Paso phase, these elements may also have contributed to the ultimate undoing of the local puebloan culture. Perhaps more often than not in the history of humankind, the initial emergence of sociopolitical complexity ended in collapse, rather than a continued development of ever-larger scale, more complex societies. Such was the case for the El Paso phase. But collapse is a complex process involving a myriad of factors, conditions, and historical circumstances. Most discussions of the El Paso-phase collapse point to the environmental limitations of the Chihuahuan desert, coupled with a series of extended droughts, as responsible for the ultimate demise of the food-producing economy upon which local populations had come to depend. On-going population growth, increas-

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ing numbers of mouths to feed in a marginal environment, and environmental degradation resulting from ever-intensifying use of limited agricultural lands, may have been critical factors in the collapse at the end of the El Paso phase.

Perhaps also included in this mix were the long-term effects of increasing reliance on prestige goods exchange in reproducing an existing social and ideological order. Exotic prestige goods were, in many respects, probably just as important to the reproduction of Jornada puebloan societies as were their agriculture crops. But prestige-goods exchange and wealth-based economies have inflationary tendencies (Earle 1991, Tainter 1988). At first, the manufacture, acquisition, and distribution of novel prestige goods can garner considerable political capital for a relatively modest price. Because of competitive emulation (Renfrew 1986), however, leaders are motivated to acquire ever-greater quantities of such goods, for either ritual display and/or provisioning communities whose numbers and expectations are growing. Eventually, this escalating demand strains the ability of primitive exchange networks. In the Jornada region, escalating demand for prestige items may have encountered supply shortfalls as peoples in other parts of the Southwest grappled with various problems of their own.

Insofar as this scenario is true, failure to maintain a steady supply of prestige goods may have undermined much of the ideological basis of El Paso-phase culture, creating a crisis of faith from which there was no easy recovery. The situation was, no doubt, exacerbated by the productive limits of trying to farm this marginal environment using the available level of technology, and eventual inability to continue increasing the production of surplus food to meet both subsistence and social demands. Things were made even worse by the onset of a disastrous drought that apparently occurred late in the El Paso phase (see Bentley *et al.* 1995:26–27).

Yet many droughts had occurred in the area prior to the El Paso phase, and did not result in such dramatic cultural, demographic, sociopolitical collapse. By the El Paso phase, however, not only had populations stretched the limits of this marginal environment, but also the cultural stakes had been upped to a point that entire communities had become vulnerable to the escalating, sociopolitical and ideological dynamic they were caught up in. With the culture so heavily invested in both subsistence production and its sociopolitical structure, there was no easy way out once economic and environmental circumstances turned even slightly against it. In this respect, a devastating drought may have simply dealt the final blow to an already strained culture.

Regardless of what the precipitating processes and circumstances were, the result was a dramatic demographic crash and/or large-scale abandonment of the region, as much of the local population either starved to death or emigrated as refugees. The ultimate outcome of this story stands as a valuable object lesson in the vagaries of human history, and the potential consequences of material and ecological over-extension in the face of, what proved to be, unsustainable complexity.

Protohistoric and Ethnohistoric Periods (ca. A.D. 1475–1750)

The sweeping scale of the El Paso-phase collapse was such that nearly nothing is known of post-El Paso-phase prehistory in the central Jornada region. The comparatively few survivors (or newly-arrived nomadic immigrants) of the post-El Paso-phase period reverted to way of life once again dependent primarily on hunting and gathering, and were organized as much smaller, simpler, and more mobile societies. There may have been some surviving remnants of El Paso-phase societies, possibly including the semi-agricultural, Uto-Aztecan speaking Manso (Beckett and Corbett 1992). Roughly a century after the El Paso-phase collapse, the Manso were concentrated along the Rio Grande in the vicinity of present-day El Paso and Las Cruces, where the earliest Spanish explorers and settlers first encountered them. The Manso presence suggests

that some descendants of Jornada Mogollon populations in the riverine zone may have survived the El Paso-phase collapse, but it remains unclear whether the Manso were indeed direct descendants of El Paso-phase groups, or were newcomers that moved into a landscape emptied of its previous inhabitants. While adhering to the first of these two possibilities, a discussion by Beckett and Corbett (1992:39–47) underscores the problems in sorting through possible archaeological evidence that may or may not form a bridge between the end of the El Paso phase and the earliest recorded Manso.

A clearer archaeological picture of post-El Paso-phase developments can actually be found south of the Jornada Mogollon, along a segment of the lower Rio Grande centered on the confluence of the Conchos River (Kelley 1952, 1985). Here, in the La Junta phase (ca. A.D. 1200–1500), local groups constructed linear room blocks and stand-alone, square and rectangular pit structures similar to those found in the contemporary El Paso phase to the north. Similarities include the typical east-west lineup of room blocks, plastered hearths and floors, and south-facing entryways with adobe steps (the latter features are found in both room blocks and in stand-alone, square/rectangular pit structures). Circular and oval pithouses were also constructed during this phase. El Paso polychrome was the dominant ceramic type of this phase.

During the subsequent Concepcion (1500s–late 1600s) and Conchos (1680–1710) phases, rectangular houses were built either as stand-alone units, or conjoined in linear, east-west tiers resembling room blocks. Round and oval pithouses also continued to be constructed in both of these later phases. An exceptionally large structure at the Millington site was transitional between the La Junta and Concepcion phases, and featured adobe steps. An adobe step was also present near the southern edge of a round, Concepcion-phase structure from this same site. But this feature, along with adobe plastering of hearths and house floors, disappears early on in the Concepcion and Conchos phase houses. These later houses (both the rectilinear and curvilinear structures) were also much larger on average than their La Junta phase counterparts, with multiple hearths, suggesting a shift from nuclear to extended family dwellings.

There were also substantial changes in settlement patterns and site distributions between the La Junta and subsequent phases. Specifically, during most of the La Junta phase, settlements were located along a lengthy stretch of the Rio Grande, as well as along the lower portions of the area's two main tributaries (the Rio Conchos in Chihuahua, and Alamitos Creek on the Texas side). After ca. A.D. 1400, there was widespread abandonment and a marked contraction of settlements, which were now concentrated along the Rio Grande in the vicinity of La Junta de Los Rios, at the confluences of the Rio Conchas and Alamitos Creek, and along the lower portions of these tributaries. It was here that the earliest Spanish explorers encountered the Otomoaca peoples in the early 1580s. Between here and the Manso territory to the north, the Spanish encountered only scattered bands of the non-agricultural Suma, who were being harassed by Apachean groups. As demonstrated by both archaeological evidence and historical records, the distribution of agricultural settlements became further restricted over the next century. By the late 1600s–early 1700s, only about 15 puebloan villages can be identified in the vicinity of La Junta, and that number was reduced to seven by 1747. Pressures from Apachean groups in the area contributed to the progressive abandonment of these settlements.

The La Junta de los Rios sequence is of interest here because it illustrates both disruption and continuity in the post-El Paso-phase time frame. In the area centered on El Paso and Las Cruces, archaeological evidence linking the El Paso phase with the historic Manso may be buried or destroyed by urban and agricultural development. But this cannot be confirmed, and the decades between the El Paso-phase collapse and the Spanish Entrada of the sixteenth century remain

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largely a mystery. Regardless of the cultural-historical status of the Manso, it is likely that infectious diseases from the Old World had already begun to devastate indigenous populations by the time the earliest Spanish explorers arrived in the area, further reducing the numbers of native peoples living along the Rio Grande. By the mid-1600s, the Spanish began resettling the Manso in the mission of Nuestra Senora de Guadalupe de los Mansos, in present-day Cuidad Juarez. Attempted revolts by some of the Manso in 1667 and 1684, inspired in part by non-missionized Manso living in the Mesilla Valley, were quickly crushed. Tensions remained, however, and the Manso were not completely pacified until 1698 (Beckett and Corbett 1992).

The ethnic identity of the Manso gradually eroded, as they merged with other Native American groups living at the Guadalupe Mission. The mission had been established for both Manso and Suma residents, and the Piro were there from the beginning as well. The Pueblo Revolt in northern New Mexico also led to streams of refugee peoples into the El Paso area. By the mid to late eighteenth century, the Manso were essentially extinct as a recognizable, ethnolinguistic group.

Although the Manso (and perhaps the Suma as well) may represent descendants of at least some late Formative groups, the El Paso-phase collapse left much of the central Jornada Mogollon region abandoned, and the region was eventually occupied by nomadic, hunting-and-gathering peoples. Among the most prominent of these nomads were the Apacheans, who occupied the Tularosa Valley well into historic times. It remains unclear exactly when these Athapaskan-speaking peoples first arrived in the area, but it appears they were already on the scene by the time of the earliest Spanish presence. The Apaches fanned out over large portions of the American Southwest, and are divided into distinct groups or "bands," with the Mescalero band occupying most of the northern and central Jornada Mogollon region. The nomadic lifeway of the Apaches is such that identification of archaeological sites relating to their early presence in the area is difficult at best (see Baugh and Sechrist 2001). Occasional Apache sites are found in the vicinity, such as a teepee ring near northeast El Paso that contained a metal arrow point, along with other scattered occurrences of metal points in the area (Thompson 1979, 1980). Nevertheless, knowledge of the earlier Apache presence in the area is dependant primarily upon historic documents.

During the 1650s, Mescalero Apaches became more prominent in the Tularosa Basin and Hueco Bolson (Sanders 1993). Raiding pueblos that were under Spanish protection, they presented a challenge to Spain's control of the region. West of the Organ Mountains, the Apaches attacked settlements at Doña Ana (north of modern Las Cruces) and Mesilla, and then retreated through the San Augustine Pass; the Apaches took refuge in Soledad Canyon or the Sacramento Mountains further east (Beckes *et al.* 1977; Freeman 1981).

Spanish authorities did not recognize the Mescalero Apaches' claims to land, and they responded with expeditions against the Mescalero Apaches in the Tularosa Basin (Opler 1983a, 1983b; Scholes and Mera 1940). About the time of the Pueblo Revolt, and in the years that followed, Apaches were active in raiding. They held places such as Soledad Canyon in the Organ Mountains. Their presence hindered Spanish expansion. Later in the eighteenth century, 1760–1775, Apache raids in the El Paso area increased (Adams and Chavez 1956). These attacks probably resulted from stress caused by Comanche harassment, a severe drought, and Spanish slave raids in the region (Brown *et al.* 1994). In response, the Spanish government established the San Elizario presidio downriver from El Paso in the 1780s. Soldiers stationed at the presidio offered protection for settlements and for caravans traveling on the Camino Real.

During the second half of the eighteenth century and into the early 1800s, Spanish settlers fought with the Mescalero Apaches. In 1810, a treaty was signed that reserved for the Mescalero land

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north of San Elizario to the Sacramento Mountains (Opler 1983b; Sonnichsen 1968; Thomas 1974). The Apaches, however, remained a threat to settlement in the Fort Bliss area until the late nineteenth century, before being pacified and confined to their reservation in the Sacramento Mountains.

Euroamerican History

Spanish Exploration and Settlement

The first Spaniards to cross the Rio Grande were Alvar Nuñez Cabeza de Vaca and three companions in 1535. They forded the river in the El Paso area or perhaps in southern New Mexico. These explorers had contact with Indians, probably Mansos (Covey 1983; Hammond and Rey 1966). Spanish explorers returned in 1581 with the Chamuscado-Rodriguez expedition, which followed the Rio Grande to El Paso and explored the area (Hammond and Rey 1966). In the following year, Antonio de Espejo led another expedition to the El Paso Valley and met the Tanpachos, who were, perhaps, Mansos.

Late in 1597, Juan de Oñate led soldiers and colonists north from Mexico. The following April they reached the San Elizario area at the eastern end of the El Paso Valley. The expedition rested there for a week, caught fish and hunted waterfowl. Oñate claimed for Spain the entire region drained by the Rio Grande (Hammond and Rey 1966; Timmons 1990). Then, instead of going through the Tularosa Basin, Oñate's party traveled up the Rio Grande.

In 1610, caravans began operating over the Rio Grande route that the Spanish expeditions had opened. Known as the Camino Real, this road connected central and northern Mexican settlements with Santa Fe. Caravans, escorted by soldiers, brought supplies up this road every three to seven years (Moorhead 1958).

The pass, from which El Paso takes its name, was important for local residents and travelers on the Camino Real. For this reason, a mission was established downriver from the pass in 1659. An adobe church was built that year, and the mission was named Nuestra Señora del Guadalupe de los Mansos del Paso del Norte. A larger, permanent church was completed and dedicated in 1662 (Lockhart 1995). This mission served the Manso and Suma Indians living in the area (see above). The name of the settlement that grew around the mission became known as El Paso del Norte (Simmons 1991; Sonnichsen 1968; Timmons 1990).

Because of the absence of water and the threat of Apache attack, the Spaniards had little interest in the interior of the Tularosa Basin, with the exception of extracting salt. Although in the seventeenth century Spanish settlers did not extensively graze cattle on the vast expanses of grama grass on the basin floor, the area's salt did attract them. A trail was established to salt deposits located at Lake Lucero in 1647 (Bentley 1991; Faunce 1997; Hawthorne-Tagg *et al.* 1998). It ran from Durango, Mexico, by way of El Paso. Other salt deposits are located to the east of the Fort Bliss area, and these became the focus of later "salt wars." The importance of salt for silver mining is discussed in West (1949), and the historic context of salt and salt trails in the Fort Bliss area is found in Hawthorne-Tagg *et al.* (1998).

In contrast to the Tularosa Basin, the Rio Grande Valley was better for the Spanish settlers. Traffic on the Camino Real increased during the middle of the seventeenth century. Population rose around El Paso. Settlers established ranches and farms along the valley below the mission. By 1668, there were about 1,000 parishioners in El Paso, mainly Suma and Manso Indians. There were 9,000 head of cattle, 13,000 sheep and goats, and many acres under cultivation (Sonnichsen 1968). El Paso del Norte became a villa in 1680 (Cardenas 1964).

Conflicts continued between the Pueblo people and the Spanish settlers on one side, and the Apaches on the other. In the late 1600s, Apache raiders attacked from strongholds in the mountains around the Tularosa Basin. During the Pueblo Revolt, raiding increased. As the pueblos

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were abandoned, the Apaches probably migrated north (Hackett 1937; Schroeder 1973).

The Pueblo Revolt (1680–1692) and Spanish Colonial Rule in the Eighteenth Century

In August of 1680, Pueblo Indians in northern New Mexico revolted against Spanish rule. New Mexico's Governor Otermìn led more than 2,000 Spanish refugees and 317 Tiwa, Piro, and Tompiro Pueblo allies from the upper and middle Rio Grande Valley to below El Paso del Norte (Hammond and Rey 1966). Since the Spanish authorities could not adequately feed and house the refugees at El Paso, they established four new settlements downriver: Real de Lorenzo, Senecu, Isleta del Sur, and Socorro (Sonnichsen 1968).

In January of 1682, Governor Otermìn brought another 385 Southern Tiwas from Isleta Pueblo, New Mexico to the El Paso Valley, where they lived with other Tiwas at Corpus Christi de la Ysleta del Sur. Piro and Tompiro refugees of 1680 settled at the San Antonio de Senecu Mission, and some Piros and Tanos settled at Nuestra Señora de Socorro Mission (Timmons 1990).

The following year, the presidio Nuestra Señora del Pilar del Paso del Norte was established several miles downriver from Guadalupe. Approximately a year later, the authorities moved the presidio upriver, close to the church and surrounding Spanish settlement (Moorhead 1975). Suma villages in the surrounding area at this time included San Francisco, Santa Gertrudis, and La Soledad. In 1684–1685, the Manso, Suma, Piro, and Tigua revolted, in part because of an extended drought. Spanish military forces suppressed this uprising.

Living conditions were difficult. Poor crop harvests and Apache raids forced both the Spanish and Indian people to subsist primarily on wild plants (Timmons 1990). A 1692 census between the Guadalupe mission and La Soledad counted 1,051 residents, a decrease of 50 percent from 1680 (Timmons 1990). There was a similar decline among the Indian population between 1692 and 1700 (Thornton 1987). These decreases were largely the result of disease, war, and drought, which not only caused a decline in Pueblo, Manso, and Suma Indian populations, but also affected the number of Spanish residents in the area. Between the late seventeenth and the middle of the eighteenth centuries, people abandoned entire settlements. By 1700, only five settlements remained in the El Paso Valley: El Paso del Norte, San Lorenzo, Senecu, Ysleta, and Socorro (Thornton 1987; Timmons 1990).

Despite the difficulties, there was an overall increase in the population of the area during the eighteenth century. Surviving Mansos and Sumas assimilated into the Spanish population by the late 1700s. By 1802, there were more than 35,000 people living in or near the El Paso Valley (Baxter 1987; Thornton 1987; Timmons 1990). Trade also increased, and in 1802 an annual trade fair started at El Paso. Traders from the regional fair at Taos, New Mexico, formed caravans and joined with other traders in the Rio Abajo to travel to El Paso (Minge 1979).

Spanish and Mexican Rule in the Early Nineteenth Century

The most significant event of the early nineteenth century affecting the El Paso area was Mexico's independence from Spain in 1821. Mexico's new government reaffirmed the existing laws and ensured protection of Native American rights and lands (Metz 1988). The new government enacted several land grants in the 1820s, including the Bracito and Heath Land Grant, which includes portions of the US 54 project area. This grant was initiated in 1805, when Juan Antonio Garcia de Noriega petitioned for a land grant. He was granted land for establishing a settlement. By 1820, the settlers had left and Apache raids made occupation difficult. Garcia asked to have the land granted to him as an individual, but there were protests from El Paso residents who used the land. In 1822 and 1823, John Heath petitioned for the Bracito grant

lands (these included the eastern portion of the present-day Doña Ana Range on Fort Bliss, abutting the US 54 corridor). On the condition of settling Catholic families, Heath received the grant. While in Missouri, arranging the migration of settlers, Heath's grant was revoked. Garcia received the grant, and Heath was forced to abandon it.

One major change caused by Mexican independence was a reversal of Spanish trade policy. Spain had prohibited trade between Mexico and foreign countries. Within a few years of Mexican independence, trappers and traders from the United States entered the El Paso area. Most came by way of the Santa Fe Trail, which opened in late 1821. The increased commerce led to the establishment of the El Paso custom house in 1835 and a trade fair in 1842. American citizens began to conduct business in the El Paso area (Metz 1988; Timmons 1990).

Following the Texas Revolution of 1835–1836, the Republic of Texas laid claim to land as far as the Rio Grande. Mexico disputed this claim. The Texas Revolution, the Texan invasion of New Mexico in 1841, and the annexation of Texas increased tensions between Mexico and the United States.

The Mexican-American War (1846–1848) and its Consequences

During the Polk Administration, expansionist policies culminated in a declaration of war against Mexico in May of 1846. On December 25, 1846, an Army contingent fought with Mexican troops at Brazito, 28 miles upriver from El Paso. The Americans won the battle and entered the portion of El Paso that is now Cuidad Juarez, Chihuahua (Timmons 1990).

Following U.S. victories in Mexico, representatives of the two governments signed the Treaty of Guadalupe Hidalgo in 1848. A new international boundary ran along the Rio Grande from its mouth to El Paso, then due west to the Pacific Ocean. The treaty also extended the rights of U.S. citizenship to Hispanic residents living north of the boundary (Timmons 1990).

Nineteenth and Twentieth Century Development

During the nineteenth century, El Paso developed as a mining center. In late 1847, prospectors discovered two silver deposits in the Organ Mountains east of Las Cruces. Immigrants on their way to California stayed in the El Paso area to work or prospect. Four copper deposits were later discovered, but mining was a limited industry (Sunseri 1979; Timmons 1990). The site of El Paso remained part of Texas, even though the boundaries of the state changed under the Compromise of 1850. According to this plan, the U.S. government purchased land from Texas that became the Territory of New Mexico.

Connecting the El Paso region with routes to settlements and military posts to the east and west was a concern of U.S. Army Corps of Engineers. A potential route ran through San Augustine Pass in the Organ Mountains, continuing to the southeast towards the Hueco Mountains. The lack of water in the Tularosa Basin and the danger of Apaches attacking parties crossing the mountains limited the desirability of this route. Most travelers preferred the safer route along the Rio Grande, which had water, grass, and settlements (Faunce 1997).

In 1859, surveyors platted a new townsite, and named it El Paso. Increasing numbers of U.S. citizens settled the area, and by 1860 there were 428 residents living in El Paso County, which had been created ten years earlier. Across the border, 4,000 persons lived in El Paso del Norte, Chihuahua; another 12,000 lived along the southern side of the river (Metz 1988).

During the Civil War, Confederate troops occupied the military post at present-day Fort Bliss in 1861, which had been abandoned. Union and Confederate forces clashed in 1862, and Fort Bliss was not re-established as a Union army post until 1865 (Timmons 1990).

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After the Civil War, railroads were the primary means of connecting parts of the country, thereby opening areas of the West for commerce and development. The Southern Pacific and the Texas Pacific began construction of railroads that would pass through El Paso. By 1881 El Paso had railroad service. Subsequently, rail lines linked northern Mexico to El Paso. Tracks through the Tularosa Basin connected El Paso with the Rock Island Railroad and, ultimately, Chicago.

Affairs south of the border had an effect on El Paso. The Mexican Revolution caused an increase in the population of El Paso, from 40,000 to 78,000 between 1910 and 1920. Much of this increase came from an influx of refugees. The Chihuahuita section of the city, near the Rio Grande, was home to many of these refugees. At times, Fort Bliss housed some of those fleeing the fighting in Mexico.

As revolutionaries led by Pancho Villa captured Juarez and other places near the border, the Army increased troop strength at Fort Bliss. It became the headquarters for General John J. Pershing, who led a Punitive Expedition against Villa after his troops raided Columbus, New Mexico.

The presence of many troops at Fort Bliss increased the demand for goods and services in El Paso. From the era of the Mexican Revolution on, the military would be a major part of the city's economy. Construction after World War I, particularly housing during the 1930s, changed the appearance of the post. Areas near Fort Bliss also saw residential development, and the city expanded. Today, El Paso is the largest American city on the U.S.-Mexican border and a major crossing for international trade.

Ranching (1870s–1940s)

During the Spanish Colonial and Mexican periods, sheep and goats were the primary livestock raised in the Southwest. As one prominent source states:

> Sheep were the principal item of agricultural production in the Southwest throughout the Spanish period. Each year the dust of the trail to Mexico City stirred leisurely to the tread of ovine hoofs (Wentworth 1948:112).

The first sheep to be introduced into the Southwest were brought by Coronado in 1540. Starting with 5,000 sheep and 500 cattle, Coronado's expedition lost almost all of the sheep by the time they entered what is now the United States. Juan de Oñate had 3,000 sheep on his expedition in 1598. From the seventeenth century on, wool production was a major industry of New Mexico, and in Chihuahua, sheep were raised in grassy areas along rivers.

As for cattle, there were about 9,000 head around El Paso del Norte (today's Juarez) in 1670. People from the Pueblo villages of Ysleta, Socorro, San Lorenzo, and Senecú kept livestock; herding was probably done on the flanks of the Hueco and Franklin Mountains. Increased settlement in the lower valley of El Paso inhibited the use of the valley's land for grazing, and Pueblo irrigation for farming may have limited the development of a cattle industry (Jordan 1993).

Until the middle of the nineteenth century, livestock were kept near the settlements along the Rio Grande. The Tularosa Basin, still subject to attacks by the Apaches, witnessed only limited grazing (Wilson *et al.* 1989). Even after the Civil War, there were reports of Apaches driving off livestock and attacking wagon trains, but the Apaches did not develop an interest in raising livestock (Faunce 1997; Spicer 1962). Soledad Canyon and the Sacramento Mountains were Apache strongholds at this time. Despite the danger of Apache attacks, Warren Shedd raised sheep and established the San Augustine Springs Ranch, north of the present-day Doña Ana Range on Fort Bliss, in 1866.

Once the threat of Apache raids had subsided, there was an expansion of ranching in the Tularosa Basin, the Sacramento Mountains, and the western slope of the Organ Mountains (Faunce 1997;

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Wilson *et al.* 1989). In the 1880s there was a cattle industry boom; even though some ranchers moved into the Tularosa Basin in the late 1860s or early 1870s, the main ranches date to the 1880s (Faunce 1997). In 1886 there was a movement of families from Texas to the Tularosa Basin that one newspaper called a "great migration in search of free land" (*Rio Grande Republican*, May 10, 1886 and July 3, 1886, cited by Faunce 1997). Another newspaper stated "Large numbers of Texans and eastern capitalists are in the southern part of the territory, looking for cattle and sheep ranges (*The Lone Star*, April 12, 1884)."

Several factors favored the development of the cattle industry in the late nineteenth century:

- The invention of deep well drilling equipment gave ranchers access to water.
- Railroads provided access from remote areas to markets; a railroad came to El Paso in 1881, and through the Tularosa Basin in 1898.
- Production of barbed wire (c. 1873) allowed vast areas to be fenced.
- There was also an influx of new capital from foreign and domestic sources to finance ranching (Wilson *et al.* 1989).

Cattle ranching in the area was an expansion of the Anglo-Texan ranching system. According to Jordan (1993), this system of practices developed on the coastal prairies of southwestern Louisiana from influences deriving from the Carolinas and from Tamaulipas, Mexico. Its main features included allowing cattle to feed themselves year-round in stationary pastures on a free range, without additional feeding or protection. With sufficient grass, it is not necessary to fatten cattle for market. The specifically Mexican contributions to this system were Iberian longhorn cattle bloodlines and a variety of equestrian skills. Prejudice against Hispanics on the part of Anglo-Texans limited the adoption of more practices from the 1830s on. The Carolina contributions included "riding line" on the perimeter of a range, use of whips, twice-annual round-ups, an open range, branding, minimization of the importance of sheep raising, and an emphasis on beef production rather than hides and tallow. The appeal of the Anglo-Texas system was that it was neither capital nor labor intensive. With a relatively small investment of money and time, a rancher could establish a cattle operation. This is not to say, however, that the rancher's work was very easy or extremely profitable.

Ranchers faced difficulties with this system of cattle ranching, which succeeded best in the subtropical grasslands of the Gulf Coast. Harsher climatic conditions in the Tularosa Basin led to losses of livestock and fewer calves being born (Jordan 1993). Ranching became difficult in the area as the decades passed.

Water was a persistent problem for ranchers (Faunce 1997). Even deep wells might produce water with high sulfur content. Dry years followed wet ones; this was a special problem for ranchers who depended on runoff. Building tanks, pipelines, and troughs (such as the system of reservoirs and ditches connected to Grapevine Horse Camp and Old Ditch Camp) was expensive. Rights to water also became a source of controversy among ranchers.

Disputes, such as one between Benjamin Davies and Mayer Halff over water in Soledad Canyon, were common (Faunce 1997). Developing water resources was an important venture for some ranchers. The dominant rancher in the Tularosa, Oliver Lee, controlled large ranching interests, and some of his associates planned to build ditches to irrigate alfalfa fields and provide water for stock tanks (Faunce 1997; McNew 1984).

Some of the more prominent ranchers allied themselves with political factions. Oliver Lee and Albert Fall were associates, and Fall controlled the Las Cruces marshal's office; Albert Fountain was affiliated with the so-called Santa Fe Ring, and controlled the Doña Ana County sheriff's office (Faunce 1997). Disagreements over land

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and water became political issues that, at times, boiled over into violence.

Ranchers sought to drive out competitors for grazing land and water rights. In the 1890s, The Blue Water Company ran cattle on land that Lee had used, moving them when Lee demanded that they do so. The Blue Sky Company put goats on Lee's rangeland, hoping to overgraze the area; Lee's men drove the goats out. A conflict over changing the brand of a Blue Sky steer to the brand of Lee's group led to the indictment of Lee and William McNew. Albert Fountain, who was involved with the case, was murdered along with his young son in February 1895. Lee and McNew were charged with the killings. When Doña Ana County Sheriff Pat Garrett tried to arrest Lee and an associate at Wilde Well, a gunfight took place, and a sheriff's deputy was killed. Lee was charged with this murder also, but was cleared in 1899 (Faunce 1997).

In addition to raising livestock, there were attempts to use water resources to irrigate land for farming. Around 1907, Lee was involved in a project to build a pipeline to a location that was planned to become a community called Sacramento City, at the northwest corner of the present-day McGregor Range on Fort Bliss. The plan envisioned farms between Orogrande and the Sacramento Mountains. This project, however, failed because there was no water available and the principals had engaged in fraud.

Overgrazing of the Tularosa Basin had damaged resources by the early 1900s (Wilson *et al.* 1989). As the U.S. Department of Agriculture stated, "The dry years of 1916 to 1918 brought the realization that periodic drought is normal in the Southwest…(U.S.D.A. 1948)." Nonetheless, there was an increase in the number of head of cattle and sheep in Otero County during the first decade of the twentieth century, as is shown in Table 3.7.

The dairy industry in the region was secondary to cattle raising. At the turn of the century there were dairies only in El Paso and Cloudcroft. In the 1930s there were dairies in Alamogordo, Tularosa, and other locations (Wilson *et al.* 1989).

Table 3.7 Livestock Censuses for Otero County, New Mexico.

Year	Cattle	Sheep	Goats
1900	10,431	9,905	3,331
1910	38,960	22,457	11,625
1920	36,648	3,596	13,183

(Data from Federal Censuses, cited by Wilson et al. 1989).

Mining and Petroleum Development

Although the potential for mineral wealth motivated many Spanish explorers to come to the Southwest, the reality did not measure up to expectations. Mining became a major activity in the region only in the late nineteenth century. As one historian of mining in the West wrote, "The mineralized parts of Arizona and New Mexico, by contrast, were little more than a foreshadowing of a mining frontier until the 1870s" (Paul 1963).

Legends of lost mines from the Spanish Colonial and Mexican periods, however, abound. In the region, there is a legend about the Padre La Rue Mine, in the Organ Mountains. Supposedly, a French priest in Mexico heard about a mineral treasure north of El Paso. He and some followers worked a mine, but they were confronted by Spanish authorities. Instead of turning over the gold that they discovered, they hid their treasure, which has never been found.

In 1849, Hugh Stevenson discovered silver in the Organ Mountains. This mine was worked for a about a decade and was sold to Army officers from Fort Fillmore in 1858. During the Civil War, Confederate troops captured a smelter, and after the war, the property's title was challenged. In 1872, Warren Shedd and Henry Lesinsky, along with others, patented the property as the San Augustine Mine; production at this mine resumed (Freeman 1981).

Another mine in the region was the Santa Susana claim, filed in 1853, by Mariano Aguire, Pedro

Aguire, Samuel G. Bean, and E. Henere. It produced silver, gold, and lead. Nearby was the Refugio Mine, owned by Thomas Bull, Mariano Barela, and Alexander Daguerre in 1854; these men also owned the Las Cruces Mine. In 1858, several mining properties were consolidated as the Organ Mountain Mines. Samuel Bean, Caleb Sherman, W. Claude Jones, Eugene Leonart, James A. Lucas, Henry J. Cuniffe, Henry Grandjean, George W. Southwick, and Justus McCarty formed the Organ Mountain Mining Company (Freeman 1981).

Midway between the Organ Mountains and the Sacramento Mountains are the Jarillas, which are about 12 miles long and four wide. One mining camp on the eastern flank was called Jarilla, and by 1879 prospectors were working the region. In 1897, the El Paso and Northeastern built a spur line from the railroad station at Jarilla Junction two miles west to Jarilla, whose name was changed to Brice. A gold rush in 1906 made Jarilla Junction boom into a town of 2,000 residents and re-name itself Orogrande. Brice had 150 residents, and the population grew to 300 by 1919; it also had a saloon, general store, hotel, four mining companies, and the first school in the region (Julyan 1996). Once the deposits played out, Brice vanished and Orogrande faded. Chapter 32 presents a detailed history of Orogrande and mining in the Jarilla Mountains.

Petroleum exploration quickly started in the Tularosa Basin in 1919, although Oliver Lee had been interested in oil since at least 1910. Among the first companies to work in the region were the Alamogordo Shale and Oil Company. Other companies were formed, such as the Tularosa Oil Exchange, the Burk Burnett Ranger Tularosa Basin Oil Company, the Southwestern Tularosa Basin Oil and Refining Company.

W. W. Cox was heavily involved in exploration and filed over 100 claims; the W. W. Cox Oil Company, however, never produced oil, and the Cox State Well site (LA 97374) was dry (Faunce 1997). Cox, along with other investors, was financially ruined. In addition to Cox, the McNary, Fleck, and Newman families were attracted to the oil boom. None of these ranchers turned petroleum explorers became rich from oil in the Tularosa Basin.

Railroads (1881–present)

Developed in Britain, railroads were first built in the U.S. during the 1820s. In Massachusetts and Maryland, horse-drawn railroads were constructed, and a steam-powered locomotive was imported from England. During the 1830s, the railroad came to be defined as a system of transportation that included track, a mechanical locomotive, cars, and regular service as a common carrier. Soon the railroad was displacing canals, carriage service, and coastal packets as a means of passenger and freight transportation in the eastern U.S. Most of the railroads, however, were separate routes that did not connect with other rail lines.

Starting in the 1850s, railroads were built in the West. No transcontinental lines were in existence before the Civil War, and long-distance travel was by horse- or oxen-drawn vehicles on trails. During the 1850s, the Army explored potential transcontinental routes, and in 1862, President Lincoln signed a bill authorizing a railroad from the Missouri River to California.

With the Civil War, the utility of railroads for military purposes became evident. Linking distant parts of the nation, facilitating mail service, providing immigrants access to lands for settlement, and moving agricultural and industrial products to markets were other reasons why railroad construction was an important national priority in the late nineteenth century.

Since the first transcontinental railroad was to be a “great military highway,” in General Sherman’s phrase, the federal government subsidized its construction (Andrews 1962). Loans (to be paid back) and land grants (made in exchange for reduced rates for government traffic) were incentives for railroad construction. The goal of a transcontinental railroad was achieved on May 10, 1869, when

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two railroad lines met at Promontory, Utah. The second transcontinental line met in 1881 in New Mexico.

Before the Civil War, the most likely transcontinental route appeared to be through western Texas. Indeed, the acquisition of the Gadsden Purchase (present-day southernmost Arizona) was primarily for potential railroad construction. With the victory of the Union in the Civil War, a northern transcontinental route was favored, and the Texas route had to wait (Leonard 1981; Reed 1941).

Two railroads were involved in the construction of a rail line connecting El Paso with destinations to the east and west, as well as linking it with the Santa Fe's route up the Rio Grande and across the Great Plains. The Southern Pacific and the Texas Pacific were the primary players in bringing the railroad to El Paso. Later, another railroad was built, connecting El Paso with points in the Tularosa Basin.

The Southern Pacific Railroad was incorporated in 1865. Established by parties associated with the Central Pacific Railroad, the Central Pacific was the railroad that began construction in California and linked with tracks built by the Union Pacific to form the first transcontinental railroad. By 1870, the Southern Pacific was consolidated with other lines established by the Central Pacific. Major figures in the Southern Pacific included Collis P. Huntington and Leland Stanford. In 1897, the Southern Pacific Railroad Company of New Mexico was chartered (Myrick 1970).

Building eastward from Los Angeles, Southern Pacific construction workers reached Lordsburg on October 18, 1880, and Deming on December 15, 1880. In the latter town, this railroad would meet the tracks of the Atchison, Topeka and Santa Fe Railway, which were laid by early March of 1881 (Myrick 1970). Once the Southern Pacific rails were joined with those of the Santa Fe, a second transcontinental rail line had been completed. The route that the Southern Pacific followed provided the easiest crossing of the continental divide; indeed, the advantages of this route were the justification for the Gadsden Purchase. These tracks would eventually be linked to El Paso, and the route remains in use.

Work continued on the tracks to Texas; the first train reached El Paso on May 19, 1881. Despite having no authority to build a railroad in Texas, Huntington and his associates did just that. Doing business as the Galveston, Harrisburg and San Antonio Railway, the Southern Pacific interests laid track further east. Meanwhile, another railroad was pushing west towards El Paso.

In 1870, Congress chartered the Texas and Pacific Railroad (as opposed to the Texas Pacific), which then acquired the Southern Pacific of Texas (as opposed to the "Southern Pacific Railroad") and the Southern Transcontinental Railroad (McAlister 1926). During the 1870s, construction of tracks across Texas was slow. Progress improved after it was taken over by financier Jay Gould, a principal of the Union Pacific. Gould directed his efforts at controlling lines that might compete with those in which he had an interest. Challenging the Southern Pacific, the Texas and Pacific tried to reach El Paso in 1880.

A compromise had to be reached. The Southern Pacific had built tracks beyond El Paso, and the Texas and Pacific was still 130 miles to the east. Gould would not get to build west of El Paso, and Huntington was building without legal authority. Lawsuits and conferences ensued, and the two railroads agreed to use the tracks west of El Paso jointly, dividing the profits. The tracks of the two lines met at Sierra Blanca, Texas, in late 1881. Sierra Blanca, approximately 90 miles east of El Paso, was the best pass for a railroad to take in the region. The route remains active to this day.

With the completion of these and other lines, El Paso had rail links in each direction. The rail lines helped the El Paso area become a regional center for the mining and oil industry, and smelters and refineries opened in the city.

Passenger terminals, freight houses, machine shops, travel-related services, and commercial development also followed.

In the Tularosa Basin, there was an attempt to build a railroad from El Paso to White Oaks (Gilbert 1988). Located in the Jicarilla Mountains, White Oaks was a mining subdistrict and a gold mining town. As early as the 1850s, placer mining produced gold here. A booming town in the late nineteenth century, this community flourished until the early 1900s. Although gold was an attraction, El Paso business interests wanted a railroad to White Oaks to transport coal. Without other energy sources, coal was required to fuel the economy of El Paso, and the 160 miles to White Oaks was a much shorter distance than it was to alternative suppliers of coal.

Several attempts were proposed or begun. Each attempt required the creation of two corporations—one in New Mexico and another in Texas, each conforming to the laws of the territory or state. The El Paso and White Oaks Railroad was planned to follow the eastern slope of the Organ Mountains; despite some interest from both the Texas Pacific and Southern Pacific, the line was not built. One group that laid tracks from El Paso towards White Oaks was the El Paso, St. Louis and Chicago Railway and Telegraph Company (Faunce 1997; Gilbert 1988; Myrick 1970; Rabe 1971). After the El Paso, St. Louis, and Chicago fell short with only a few miles of track, the Kansas City, El Paso and Mexico attempted to build the railroad.

The Kansas City, El Paso and Mexico began construction in late 1888. Disputes over access to a right-of-way led to financial difficulties. A drought from 1889 to 1891 compounded the economic problems, and the Texas and Pacific bought the company, which had only 10 miles of track and 11 miles more of grading completed. The financial Panic of 1893 made matters worse, and no construction was done until 1897 (Faunce 1979; Rabe 1971).

Charles B. Eddy was one of the principal figures in railroad development in the Tularosa Basin. Born in Otsego County, New York, in 1857, Eddy came from a prominent family. He and his brother arrived in the Southwest around 1881. They operated ranches in New Mexico and Colorado, and C. B. Eddy promoted development of the Pecos River Valley. Eddy abandoned his original plan to build a railroad in the Pecos Valley, and focused his attention instead on a constructing a line from El Paso through the Tularosa Basin. One of the incorporators of the El Paso and Northeastern Railroad in Texas (in New Mexico the company was called the El Paso and Northeastern Railway), Eddy approached the Chicago, Rock Island, and Pacific Railroad with a proposal to connect a railroad from El Paso to White Oaks with one from Liberal, Kansas, through Clayton, New Mexico. This would be about 250 miles shorter than other routes between Chicago and El Paso. The line through the Tularosa Basin would thus serve the purposes of hauling coal from White Oaks and be an economical route between El Paso and Chicago (Gilbert 1988; Myrick 1970; Rabe 1971). Eddy had to rebuff a challenge from a company called the El Paso and White Oaks Railroad; then Eddy purchased the El Paso and White Oaks from financier Jay Gould, and Eddy was able to proceed. Eddy's business associates included his brother John, William A. Hawkins, Albert B. Fall, and future New Mexico governor George Curry.

Late in 1897, construction began on the El Paso and Northeastern (which roughly follows the present-day US 54 corridor through the project area). Access to water, coal, and timber was acquired. Eighty-five miles north of El Paso was the land of Oliver Lee. Eddy bought property, about 940 acres in what was called Casey's Flat, which would become the town of Alamogordo. The Alamogordo Improvement Company was established as a subsidiary of the El Paso and Northeastern. Lots were offered for sale in 1898, and the town became home to railroad workers. It became the headquarters of the El Paso and

Northeastern, and in 1899 it became the seat of the new Otero County (Faunce 1997; Gilbert 1988; Myrick 1970).

Eddy formed the El Paso and Rock Island to connect lines in the Tularosa Basin with the Rock Island. Originally, Eddy wanted the Rock Island to construct a line from Liberal, Kansas, to Clayton, New Mexico, but the decision was made to lay tracks to Santa Rosa (Gilbert 1988). Early in 1902, the work was completed, and El Paso and the Tularosa Basin finally had a direct route to Chicago (Myrick 1970).

In October 1904, rains and floods washed out sections of railroads throughout New Mexico. There were other setbacks for the El Paso and Northeastern as well, and it did not earn a profit. Part of the problem was that Eddy and his associates knew how to build a railroad, but not necessarily how to run one (Gilbert 1988).

The El Paso and Southwestern, which was controlled by the Phelps-Dodge Company, bought the El Paso and Northeastern, along with the El Paso and Rock Island in 1905. Under the new ownership, the machine shops for the railroad were moved from Alamogordo to El Paso. Closely tied to the copper industry, the El Paso and Southwestern suffered a loss of traffic with the decline in copper prices. Southern Pacific finally acquired the El Paso and Southwestern system in 1924 (Hofsommer 1986;Wilson and Taylor 1952).

The El Paso and Northeastern Railroad in the Tularosa Basin provided access to El Paso for selling agricultural products. Another effect was that Alamogordo grew into a commercial center for the northern Tularosa Basin. Several other communities were established to supply coal or water or serve as sidings. Coal supplies, carried on the railroad to El Paso, quickly dwindled in the 1900s. There apparently was not much impact on patterns of agriculture or livestock management that resulted from the railroad (Wilson *et al.* 1989). Accessibility to Alamogordo brought tuberculosis patients seeking a cure. Most growth of the area around Alamogordo did not happen, however, until World War II, with the establishment of the White Sands Bombing Range, now called Holloman Air Force Base (Gilbert 1988).

Residents of the Tularosa Basin benefited from the railroad, but there were feelings of animosity. Damaged property, loss of cattle that were shipped, injuries, and a perception of greed contributed to this (Faunce 1997). There were lawsuits and complaints by residents. Nevertheless, the Tularosa Basin would not have been settled as quickly without the railroad, which provided employment as well as transportation to the region.

Fort Bliss and the Southern Tularosa Basin

Distrust between the U.S. and Mexico in the 1830s and 1840s, coupled with the American annexation of Texas, led Mexico to break diplomatic relations with the U.S. Movement of Mexican troops into territory claimed by the U.S. as part of Texas was the occasion for a war message to Congress by President Polk, who strongly supported territorial expansion into New Mexico and California. On December 25, 1846, an Army contingent fought with Mexican troops at Brazito, 28 miles upriver from El Paso. The Americans won the battle and entered El Paso del Norte, in present-day Cuidad Juarez, Chihuahua (Timmons 1990).

In 1849, two Army officers and 43 enlisted men moved into the presidio of San Elizario (Porter 1973). Around this time, six infantry companies arrived at Ponce's Rancho and made quarters in adobe buildings. The companies' main duty was to protect travelers on the road between the Pecos River and El Paso (Metz 1988). The name of this installation was “the Post Opposite El Paso” (Timmons 1990). Soldiers protected local ranchers as well as travelers on the stretch of road between the Pecos River and El Paso. The Army abandoned the presidio and the post in 1851.

In the early 1850s, attempts at establishing a peace treaty between the U.S. and the Apache bands in the region failed. After several incidents, a cavalry force crossed what is now the Fort Bliss

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McGregor Range (just east of the US 54 project area) to recover stolen cattle and confront Apaches in the Sacramento Mountains, but the soldiers saw no combat (Bender 1974; Sanders 1993; Thomas 1974).

Apache hostilities were another reason for establishing a military post in El Paso. In early 1854, Army troops moved into Magoffinsville. The post was at present-day Fort Bliss. Troops from the post fought against the Apaches in the Gila Basin and Dog Canyon, New Mexico (Metz 1988). On July 27, 1857, Lieutenant Edward Beales arrived with camels. This was part of an experiment to supplement mules and horses with an animal that could adapt to the desert (Metz 1988).

In addition to the military actions against the Apaches, the Army conducted surveys for the establishment of roads for immigrants. Surveys were also necessary before land could become available to the public. There were two surveys of potential wagon routes in the Tularosa Basin during the 1850s, led by Randolph B. Marcy and John Pope. The official accounts to Congress provide contemporary descriptions of the region (Beckes *et al.* 1977; Freeman 1981).

In July 1861, a Confederate force from Texas marched up the Rio Grande and occupied the military post at El Paso, which the Army had abandoned a short time earlier. Union troops defeated the Confederates as they moved across northern New Mexico in the spring of 1862 (Timmons 1990). The Confederates marched down the river to El Paso in August 1862. It was not until after the Civil War, in October 1865, that U.S. troops reoccupied the military post, which the Army named Fort Bliss on March 11, 1869.

One consequence of the Civil War was that U.S. troops were preoccupied with the threat from Confederate forces. As a result, once the war began, the Mescalero Apaches were under less pressure from the U.S. Army. When the Union side gained control of the military situation, however, the Mescaleros were again subject to a military campaign against them. An attempt to concentrate the Mescaleros at Bosque Redondo, along with Navajos, did not succeed and was abandoned. Later a reservation was established for the Mescaleros (Opler 1983b). Subjugation of the Apaches allowed ranchers to settle the Tularosa Basin.

As it had in the 1850s, the Army conducted a survey of the Fort Bliss area in 1879. Captain George M. Wheeler surveyed and classified land in the states and territories west of the 100th meridian. Lieutenant Eugene Griffin was in charge of mapping the Organ Mountains, Franklin Mountains, and southern Tularosa Basin. In a report on the project, Griffin evaluated the land as being most suitable for mining and sheep raising (Freeman 1981).

Meanwhile, after the Civil War, and through a series of events, Congressional authorizations, and land purchases, the main post at Fort Bliss was established in its present location in 1890. The government solicited and awarded construction contracts in 1892 (Jamieson 1993; Metz 1988). By the spring of 1893, the largest construction project in the history of the area was almost complete, and it was destined to make a significant contribution to the economy of El Paso, and re-shape the human landscape of the southern Tularosa Basin (Christian 1977).

Fort Bliss provided a source of income for local residents, farmers, and ranchers. Alfalfa growers' orders for fodder tripled, and the post sent out bids for 800,000 pounds of oats and 1,200 cords of wood. The Army also contracted for drilling two wells and installing pumps, windmills, gas engines, and pipelines. Finally, residential construction increased by more than four times over that of previous years (Christian 1977).

The Mexican Revolution and activities of Pancho Villa had a significant impact on El Paso and the development of Fort Bliss between 1911 and 1919. Also, during this interval, attention turned briefly toward the war in Europe, and Fort Bliss

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became an important training station for U.S. troops. Following somewhat of a lull in activity between the two World Wars, Fort Bliss experienced an expansion. In June 1940, the Army purchased 52,000 additional acres. In July 1945 the Army acquired the White Sands Proving Ground and began construction of facilities. Following World War II, Fort Bliss was an active military base through the Cold War years, and remains so to the present. Today, it serves as an important training facility for U.S. troops as well as those from other nations. The expansion of military lands into the southern Tularosa Basin in the present century effectively ended the civilian history for much of this area, although both mining and ranching efforts had already collapsed years earlier.

Chapter 4

Research Orientation

Jim A. Railey and John C. Acklen

Introduction

An archaeological research design should establish an explicit framework for carrying out field investigations, conducting analysis, and constructing interpretations of recovered and documented remains. Ideally, a good research design provides a theoretical orientation drawn from general concepts and models, and relates these to region-specific problems in a way that both enriches general theory and, at the same time, places regional issues in a broader, comparative light. From this theoretical point of departure, the research design should then identify how the anticipated findings of the specific project may be used to address explicit questions and issues, and thus provide a guide and justification for the various methods to be employed. The end result should be a synthesis that maximizes the interpretive potential of the data recovered from the investigated sites, and makes a substantial contribution to an understanding of how general behavioral processes are expressed on the region's historically unique stage.

General Theoretical Orientation

The present project deals with archaeological remains that occur within a specific environmental regime, cover a relatively broad expanse of time, and encompass an appreciable range of variation along an historical-evolutionary trajectory. Accordingly, the theoretical orientation employed here makes use of concepts drawn from a broad range of theoretical approaches, including cultural ecology, sociopolitical dynamics, and cultural-evolutionary theory.

One essential tenet of this synthetic approach is that humans adapt to specific environments. Yet human culture has evolved to satisfy not only bare subsistence needs in particular environmental settings, but also to provide cognitive "maps" that allow human groups to carry on and reproduce their social structure and ideological systems within complex webs of interaction. Importantly for archaeologists, the cognitive map of culture involves the use of material marker traits, which serve as visual cues that help channel and structure culturally-embedded perceptions of the world (see Boyd and Richerson 1985, 1987; Wobst 1977). The potential variation of cultural behaviors and associated marker traits is such that a broad range of evolutionary outcomes may be possible from any given "starting point." These evolutionary possibilities are conditioned as much by essentially random historical circumstances and mutation-like variation in human behavioral patterns, as they are by the economic exigencies of wresting a living from a particular environment. Hence the profound diversity in human cultures.

At the same time, the nature of cultural learning is such that, once a particular set of culturally-instilled patterns of behaviors and marker traits are established, such patterns will constrain and channel the direction of subsequent change by providing a unique, culture-specific pool of variation upon which evolutionary forces can act (Gould and Lewontin 1979). As a result of evolutionary processes and particular historical conditions, minor cultural variation between two groups at one point can lead to wide differences over time, with each group following its own divergent evolutionary course (Boyd and Richerson 1985). Thus, archaeologists and historians can recognize both diversity between different areas and regions, and long-term continuity within particular regions. For archaeologists,

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these patterns typically are characterized as cultural traditions that, in turn, can be subdivided into spatial-temporal units such as periods and phases.

Cultural learning processes evolved to provide humans with an efficient mode of reproducing themselves socially, politically, and ideologically. As a result, humans are constrained by these biologically induced behavioral patterns, many of which recur cross-culturally. Such recurrences include social organizational patterns such as those characterized within evolutionary typologies (e.g., Fried 1967; Service 1962; Johnson and Earle 1987), or organizational modes such as Johnson's (1982; 1989) simultaneous hierarchies versus sequential hierarchies (see also Braun 1991) and corporate versus network hierarchies (see Feinman *et al.* 2000). Other human behavioral convergences have been discussed in terms of interactional models such as Wobst's (1977) information exchange theory, the peer polity interaction model (Renfrew and Cherry 1986), or world systems theory (see Chase-Dunn and Hall 1991). Recurrent forms of architecture—and evolutionary trends in architectural forms—may reflect cross-cultural behavioral patterns variously associated with similarly recurrent environmental conditions, economic patterns, and social-organizational structures. Parallel developments in domestication and agriculture in different regions of the world provides another example of cross-cultural convergence. Thus, despite the great diversity of human cultures, there are many behavioral convergences that reflect humanity's common evolutionary heritage and are relevant to an understanding of the archaeological record in any particular cultural-historical context.

Using this theoretical orientation as a point of departure, the anticipated findings at the investigated sites can be considered from a comparatively broad and informed perspective. The occupations at these sites represent highly localized and chronologically momentary residues of human activities conditioned by specific cultural-historical circumstances. At the same time, patterned behaviors are expected to derive from pan-human cognitive structures and learning processes. This dual perspective is offered as a means of enriching an approach to region- and site-specific research problems, and is developed further in the cultural historical narrative presented in Chapter 3.

Research Questions

The research questions for this project were first framed in Acklen *et al.* (1999) and Graves *et al.* (2000), and draw upon both the general theoretical orientation presented above and a current understanding of the regional culture history (see Chapter 3). Five problem domains were identified for this study:

(1) chronology,

(2) resource variability and subsistence adaptations,

(3) settlement and demographic patterns,

(4) regional interaction, and

(5) historic economic and social development.

Chronology

What are the temporal parameters of each component represented at the sites?

Prior to data recovery, chronological data from the investigated sites derived primarily from ceramic evidence. With the exception of LA 115263, the prehistoric sites (LA 6829, LA 115256, LA 115259, LA 115260, LA 115262, LA 115265, LA 126181, LA 128699, LA 128700, and LA 128708) all had ceramics dating from the Formative period (ca. A.D. 250–1475, see Chapter 3). Although no diagnostic, preceramic artifacts were encountered during the testing phase, it was also suggested that Archaic components might be present on some of the sites, based on geomorphology and the presence of aceramic features. To confirm or modify our present understanding of temporal components represented at the sites, it was deemed necessary to obtain chronologically sensitive data. Such data would help place each site's

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archaeological remains and occupation history within the prehistory of the central Jornada Mogollon region (see Chapter 3), and to refine this temporal framework to the extent possible.

Chronologically sensitive data were obtained from both samples subjected to chronometric techniques, and analyses of diagnostic artifacts. Of particular importance was the collection of tightly provenienced radiocarbon and archaeomagnetic samples. Although tree ring dates produce the most precise results, Miller (1996:32) notes that virtually no prehistoric dendrochronological dates have been derived from the lower desert region of the Tularosa Valley and, indeed, no such samples were obtained during the US 54 investigations. Archaeomagnetic samples were the second most desirable, in terms of accuracy, and were obtained from highly fired, clay lined thermal features and floors. As it turned out, however, the archaeomagnetic samples could not be successfully processed (see Chapter 33). Radiocarbon-datable materials, while providing dates less accurate than those obtainable from archaeomagnetism, were more ubiquitous in well preserved cultural contexts. A large number of radiocarbon samples were thus collected and submitted for chronometric analysis. For radiocarbon dating, efforts were made to obtain dates from annual seeds such as maize kernels, thus avoiding the "old wood" effect, although in the end many of the samples submitted were composed of wood charcoal. Although it was originally planned to collect and submit samples for oxidizable carbon ration (OCR) dating, continuing uncertainties surrounding this dating technique dissuaded the investigators from pursuing use of this dating method.

Ceramics, especially decorated wares, were considered especially useful sources of chronological data for this project. Decorated ceramics were indeed recovered from several of the US 54 sites, a few of which yielded large quantities of painted wares. Studies in the Jornada Mogollon area have shown that rim morphology, as measured by the "rim/sherd index" (RSI), also exhibits temporally sensitive attributes for both undecorated and decorated brownware ceramics (Carmichael 1986; Seaman *et al.* 1988; West 1982a, 1982b; Whalen 1993). Accordingly, RSI was measured in an attempt to extract temporal data from the US 54 ceramic assemblages, although small sample sizes often impeded this effort. In general, the ceramic analysis made use of existing ceramic chronologies in the area, including the use of widely recognized pottery type names.

Projectile points were not abundant in the recovered assemblages, but nonetheless provided a secondary source of relative dating of the components that yielded these stylistically distinctive artifacts. Analysis of technological patterns in lithic debitage assemblages provided yet another line of chronological evidence, and helped to better define the extent of different temporal components at several of the sites.

Chronological analysis is simply a means to an end, and good chronological control meant that other, temporally sensitive research issues could be better addressed. These include questions surrounding subsistence and settlement patterns, intrasite structure, and variation and changes in sociopolitical organization.

Resource Variability and Subsistence Strategies

The sites targeted for investigation included a range of temporal components, and occur in a variety of environmental settings, including the Tularosa Valley floor, alluvial fan bases, and alluvial fan surfaces. The investigations provided an excellent opportunity to explore subsistence patterns in relation to both changes over time and local resource availability.

Although not confirmed during the testing phase, it was initially suspected that Late Archaic components might be present at some of the US 54 sites. Because the Late Archaic was a pivotal period in early agricultural efforts and use of domesticated maize (see Chapter 3), a key question for the investigations concerned the possibili-

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ty of recovering subsistence data relating to this period. This concern prompted the following research questions:

Are Late Archaic components with preserved subsistence remains present at some of the US 54 sites?

What is the range of plants utilized by Late Archaic groups who may have occupied the targeted sites?

Were these plants locally available?

Is there evidence of domesticated plants in Archaic components in the US 54 sites?

Cultivation of maize by Late Archaic groups has been well documented in various parts of the southern Southwest (e.g., Wills 1988; Huckell 1995; Tagg 1996). These groups may also have experimented with cultivating or otherwise encouraging some native wild plants, such as sunflower and cheno-ams. Finding evidence for maize farming in Archaic contexts within the targeted sites would strengthen the case that agriculture was a subsistence economic strategy common to Late Archaic groups in many different local environments, whereas negative evidence for maize agriculture (especially if coupled with abundant evidence for the use of wild food plants) would suggest that maize farming may have been restricted to less marginal environments at this time. With these concerns in mind, the following research question is posed:

Is there evidence of Late Archaic maize farming at any of the targeted sites, and if so, what was the role of maize in the local subsistence economy at that time?

Flotation, pollen, and phytolith samples were routinely collected from intact features encountered at the sites. These samples were analyzed to help reconstruct past floral environments in the project area, extract data on subsistence patterns, and to determine the presence or absence of maize and, if present, determine its abundance and ubiquity. Standard quantitative methods were used to determine the relative frequencies of various plant food remains. A secondary data source of relevance to this question involved artifact tool categories present and how they relate to cultigen processing.

Formative-period occupations were documented at 10 of the 11 of the data recovery sites. These range from what appear to be small, momentary encampments to large settlements with multiple features and/or midden deposits. The largest and most intensive Formative period remains were documented at the Jaca site, located at the base of the alluvial apron surrounding the Jarilla Mountains. The location of Jaca within the local landscape is consistent with the common positioning of Late Formative (Doña Ana and El Paso phase) sites along basin margins. It is in these locations that the accumulation of rainfall runoff offered viable opportunities for intensive horticulture in the non-riverine expanses of the Jornada Mogollon region (see Chapter 3). Substantial features and deposits at this site allowed the recovery of relatively abundant plant and animal remains. The uncovering of a major Jornada Mogollon occupation at this site, along with less intensive Mesilla- and Doña Ana/El Paso-phase components at the other sites, presented a good opportunity for investigating Formative-period subsistence patterns and trends. The recognized data potential of these sites prompted the following research question:

What subsistence patterns were associated with the Jornada Mogollon occupations of the targeted sites?

A key issue in the study of Jornada Mogollon subsistence patterns involves the relative roles of hunting and gathering versus cultivation. Current evidence suggests a shift in the role of cultivation as a subsistence buffer (and possibly surplus-producing sociopolitical strategy) during the Mesilla Phase, to the dominant crop among the more agricultural societies of the Doña Ana and El Paso phases. Even in the El Paso phase, however, hunting and gathering continued to be critical component of

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subsistence strategies, and special-purpose sites, such as agave-roasting pits, are known for this period. Consequently, the research design poses the following questions:

What are the roles of cultivated plants in the various Jornada Mogollon occupations within the targeted sites?

Is there evidence for horticultural activities in the Mesilla phase components?

Is there any evidence of task-specific subsistence activities at the smaller Jornada Mogollon sites, such as agave collecting/roasting or procurement and/or processing of other localized plant or animal resources?

If there is evidence of task-specific subsistence activities at the smaller sites, are these activities related, as part of an integrated subsistence-settlement system, to the occupations at the larger sites?

Alternatively, do the larger sites also contain evidence of task-specific subsistence activities, which might in turn suggest that the smaller sites mark activities by comparably small, independent (and possibly chronologically discrete) groups?

Again, flotation, pollen, and phytolith samples were routinely collected and analyzed to extract the kinds of data necessary to explore these questions, with data from faunal assemblages contributing a secondary line of direct subsistence evidence. Although faunal remains were preserved well at only two of the sites (LA 6829 and LA 115260), these materials were used to address subsistence issues. The recovery of faunal remains prompted the following research question:

What is the role of faunal resources in the Archaic and Jornada Mogollon diet? From which ecological niches and from what distance are these resources coming from?

Standard quantitative methods were used to determine the relative frequencies of various animal food sources.

Analysis of artifact functional classes provided less direct information regarding subsistence patterns. One potential line of evidence concerns inferred relationships between changes in the morphology of ground stone tools and the processing requirements associated with increasing dependence on agriculture and processing of maize (e.g., Hard 1986, 1988; Mauldin 1993). Grinding dried maize kernels into flour is an especially time-consuming, labor-intensive activity, and observed increases in grinding surface areas of manos and metates over time is argued to reflect efforts to increase the efficiency of grinding activities associated with maize processing. Accordingly, quantitative measurements of recovered ground stone artifacts from the targeted sites were recorded and compared with the results of other studies that have documented morphological changes in these processing tools over time. Accordingly, the research design poses the following question:

Do changes in the size of manos and metates (and their grinding surfaces) from the targeted sites match patterns noted elsewhere, and what do these data reveal in terms of subsistence patterns?

Addressing this question was, of course, dependent upon the recovery of manos and metates from temporally datable contexts.

Settlement and Demographic Patterns

Since the 1970s, intensive archeological investigations in the Jornada Mogollon region have generated abundant information on Archaic and Formative period settlement systems (Carmichael 1986; Hard 1983; O'Laughlin 1980; MacNeish 1993; Mauldin 1993; Mauldin *et al.* 1998; Whalen 1981a; 1994a). Settlement models presented by Hard (1983), Mauldin *et al.* (1998), and Whalen (1981a; 1994a) attempt to explain mobility behavior within the region and can be used in this study to help examine site types and their locational patterning. All three models are in general agreement regarding long-term settlement-subsistence trends, although they differ in some

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details. As for Late Archaic settlement systems, Hard's (1983) model postulates that populations were organized into small groups scattered over the desert basin floor during the summer months, to take advantage of peak wild plant productivity and the seasonal availability of water in basin floor's numerous playa depressions. By fall, the populations would shift to winter base camps along the basin edges and Rio Grande, where water sources were more dependable during the dry months.

In both Whalen's and Hard's models, early Mesilla-phase populations continued an essentially Late Archaic-like settlement pattern of foraging and hunting on the basin floor during the summer months. Hunting and plant cultivation supplemented intensive gathering activities for wild plant on the desert floor. In this scenario, horticulture was probably low intensity, involving cultivation of many small garden plots within playas on the basin floor, dispersed in a manner to hedge against the hit-and-miss potential of summer thunderstorms. Such a strategy was probably more easily pursued under conditions of relatively low population densities and large group foraging territories, which would have facilitated the dispersed, summer foraging and collecting on the basin floors. Warm season camps in Whalen's model include a few sites with small pit houses and sparse artifact densities (see Chapter 3), and more numerous, ephemeral and logistical camps with low levels of artifact diversity and no preserved structure remains. In the late fall, when water became scarce on the desert floor, the populations would move to heavily used winter base camps along the basin margins, near mountain springs, or other dependable water sources.

Not merely a subsistence adaptation, mobility and seasonal aggregation and dispersion should also be viewed as *social* strategies that enabled families and other small groups to maintain a high degree of autonomy, yet still interact in a way that allowed for reproduction of the society and its cultural norms. At the same time, social needs and intensifying competition presented opportunities for would-be political leaders, and these conditions provided raw material for sociopolitical evolution in the area (see Chapter 3).

By the late Mesilla and succeeding Doña Ana phase, Whalen (1994a) and Hard (1983) suggest that agriculture became increasingly important, a trend in evidence at Turquoise Ridge (Whalen 1994b) and Meyer Pithouse Village (Scarborough 1989), although Whalen argues that gathering of wild plant food becomes even more intensified. Carmichael (1986) postulates that population density peaks during the Doña Ana phase, although Mauldin (1993) argues that many of the sites identified with Doña Ana phase components may represent palimpsests of Mesilla- and El Paso-phase occupations.

Whalen's (1981a) model concludes that by the El Paso phase, populations were organized into pueblos with agriculture as the main component of the diet. At least a portion of the population lived at the pueblo year-round. These pueblos were located along the Rio Grande Valley and the desert basin-edge zones, which received precipitation runoff from the mountains. Whalen (1981a) suggests that the El Paso phase populations probably participated in a mixed farming and collecting subsistence strategy that depended more heavily on wild plant foraging when crop shortfalls occurred. Mauldin (1986) also has proposed that pueblo groups used a radiating settlement strategy, wherein task groups would leave the central village to gather wild plant and animal resources in the mountains and desert basin. Marking these seasonal and short-term camps are the many small sites located throughout the region. These include sites without house remains, and possibly some isolated, stand-alone structures that may have served as agricultural field houses (e.g., Browning *et al.* 1993).

The present project provided a good opportunity to examine individual settlements of varying scale, duration, and intensity, and how they might relate to each other functionally and temporally. Existing settlement pattern models provide a point of departure for assessing these issues.

Accordingly, the following research questions were identified:

What is the range in terms of settlement types represented in the targeted sites, and how does the analysis of these sites enhance present understanding of settlement and sociopolitical trends in the region?

What special characteristics of the local environment (including distance to water resources) had an impact on settlement patterns and the production of surpluses? How do these sites compare with Whalen's settlement model?

What can the smaller sites suggest in terms of mobility patterns over time?

Were some or all of the small sites used for task-specific functions relating to subsistence and/or lithic procurement activities, and if so, what tasks are represented?

What is the local Doña Ana and El Paso phase settlement pattern, and how (if at all) do any of the small sites relate to large, residential occupations such as the one at the Jaca site (LA 6829)?

If there are connections in terms of site functions and settlement pattern between the targeted sites, how does this relate to local and intra-site sociopolitical organization?

What can excavations at LA 6829 tell about the process of pueblo establishment in the Doña Ana and El Paso phases, the architectural features of such sites, the occupational duration of local pueblo settlements, and abandonment processes?

To explore these questions, different lines of analysis were carried out, including intra-site spatial analysis of features and artifact distributions, to infer site-specific functions and activities. Stratigraphic and geomorphological analysis, especially at LA 6829, was conducted as an aid to estimating numbers of components and duration of occupation. Clues regarding demographic patterns can become evident when each site's occupational intensity and duration of use are measured. Therefore, the following research questions were proposed:

What was the duration or intensity of site use during each temporal component?

What was the population composition at each site and how does that relate to site function?

One of the salient factors limiting the settlement analysis stems from the restriction of data recovery investigations to the proposed construction impact areas. This meant that, in almost every case, only portions of each site could be investigated through subsurface excavation, leaving any subsurface archaeological remains outside the impact areas unexplored. Thus, most statements concerning numbers of components, spatial patterning, and occupational intensity for the sites are tentative in some cases. Still, surface investigations outside the impact areas at most of the sites helped the investigators to obtain a fairly clear idea of each component's overall character and the density and distributions of their archaeological remains.

Regional Interaction

A final research category of relevance to the US 54 prehistoric components involves patterns of regional interaction. A comprehensive understanding of the various occupations at the targeted sites cannot be gained without a consideration of the broader patterns of cultural interaction of which they were a part. As is evident from the cultural-historical background, there were significant shifts in the scale, complexity, and directionality of interaction spheres involving the prehistoric occupants of the Jornada Mogollon region. The changes in regional interaction patterns may be viewed simultaneously as both symptoms and causes of the cultural and sociopolitical trends inferred from the archeological record. A basic question posed here is:

What evidence for regional exchange networks exists on the sites?

Questions of regional interaction were explored primarily through ceramic analysis, especially painted wares. Distinguishing locally produced pottery from imported ceramics is critical for this analysis. Fortunately, prehistoric potters in the American Southwest produced an incredibly rich variety of painted vessels, with paste characteristics, design elements, and paint materials that are often distinctive to different regions and time periods. Many ceramic types are easily recognized even in fragmentary sherds, although recognition of more subtle, time-sensitive variation in design elements often require larger vessel portions. Many prehistoric pottery types were traded within wide-ranging interaction spheres in the American Southwest, and so the presence of distinctive, non-local ceramics (e.g., Anasazi, Southern Mogollon, and Chihuahuan pottery types in Jornada Mogollon assemblages) is often the most obvious indicators of extra-regional interaction. Much of this exchange was probably organized in a “down the line” pattern. Non-local goods could have been obtained by contact between individual trading partners, or through large community or supra-community gatherings. These mechanisms of exchange not only brought pottery from other regions into smaller sites, but also facilitated interaction and information exchange between communities and regions. To understand the organization of exchange patterns and social ties, pottery produced within the general project area must be identified correctly and then placed within a comparative context. Accordingly, this research was guided by the following question:

What can the analysis of ceramics tell about inter-regional interaction during the Formative period (especially the Doña Ana and El Paso phases), and are the observed patterns consistent with what is presently known about these patterns in the southern Tularosa Valley?

In addition to the detailed identification of pottery types, this analysis attempted to make use of clay source samples, although access to many source localities on Fort Bliss was restricted, impeding this effort. Exploring this question thus focused more squarely on analysis of non-local pottery types, and was contingent upon the recovery of these types within Formative-period components.

Identification of lithic material types provided another line of evidence for investigating patterns of regional interaction, and prompted the following question:

What can lithic and other artifact classes reveal about patterns of regional interaction involving the past occupants of the targeted sites?

Using existing geological and archeological literature for the area (e.g., Church *et al.* 1996), an attempt was made to identify specific source materials in the lithic assemblages. Quantitative analyses of material type frequencies and their relationships to lithic artifact categories and debitage classes was conducted, and the results were compared with similar studies in the general region. Even with such data in hand, the investigator must still try and determine to what extent nonlocal materials were acquired through trade as opposed to direct procurement facilitated by seasonal mobility.

Of special relevance to the questions surrounding regional interaction are obsidian artifacts. Obsidian was widely circulated within exchange networks in the prehistoric Southwest (see Baugh 1997), and the closest primary geologic sources of this volcanic glass are located some distance from the central Jornada Mogollon region. However, secondary sources are available in the gravels deposited by the Rio Grande, in the form of small, water-worn pebbles. In either case, obsidian arrived at the US 54 sites from non-local sources, but use of the gravel vs. primary geological sources would make a big difference in terms of evidence for extra-regional interaction. At any rate, a first step in this analysis involved identifying primary geologic sources for the recovered obsidian artifacts. This was accomplished through X-ray fluorescence analysis (XRF) analysis, and comparison of these results to an existing chemical-characterization database for the region

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(see Shackley 1995). A second step involved analysis of obsidian debitage; specifically, whether or not obsidian flakes were restricted to small size range expected from procurement from Rio Grande gravels. From the results of these analyses, obsidian procurement patterns were inferred, and the inferences in turn contributed to a fuller understanding of prehistoric interaction involving prehistoric groups in the project area.

Non-local materials, used mainly for the manufacture of ornaments and other prestige items, are occasionally documented in the Jornada region from Archaic times through the El Paso phase. These items increase in frequency through time, probably reflecting shifting but expanding social networks as the complexity and scale of the local economies increased. One non-local material used for manufacture of ornaments was marine shell. The Los Tules site (see Chapter 3), for example, contained bracelets and pendants made from *Glycymeris* shells and beads from drilled *Olivella* (Lehmer 1948). Whalen (1994b) recovered *Olivella*, *Glycymeris*, and *Pyrene* from Turquoise Ridge. *Olivella*, *Glycymeris*, and *Vermetus* shell have been recovered from sites in and around Alamogordo (Lehmer 1948). All of the shell found in the southern Jornada could have come from the Gulf of California or the Pacific coast of Baja California, and indicates the trade networks through which marine shell arrived in the Jornada region operated mainly to the west and southwest.

Other non-local ornaments in the Jornada Mogollon sites include copper bells and turquoise. Two copper bells were reported from the Bradfield site (Lehmer 1948). Turquoise has been reported from a number of sites. The Jarilla Mountains, which a segment of the US 54 corridor skirts the base of, contain a well-known source of turquoise with evidence of prehistoric turquoise mining (Carmichael 1986). It was anticipated that turquoise from this source might be recovered from the US 54 sites.

Historic Economic and Social Development

The US 54 investigations encountered historic Euroamerican remains, most of which were in and around the town of Orogrande. The testing phase documented substantial historic remains at Orogrande sites LA 115258, LA 128707, LA 128708, and LA 128709, but only LA 128708 was investigated during data recovery, and none of these sites were recommended for data recovery on the basis of their historic archaeological potential. Nevertheless, these sites are part of a sprawling complex of remains dating mostly from the heyday of Orogrande. This community was a bustling center for mining activities in the nearby Jarilla Mountains in the late nineteenth and (especially) early twentieth centuries. Historic sites in the vicinity of Orogrande relate to the prospecting, extraction, processing, and transportation of ores, as well as support services and community facilities in the town itself. Although the boom years of Orogrande lasted only about three decades (1890s to 1910s), the community survived, and indeed is still occupied to this day (although its population is considerably reduced from its peak a century ago). Historic remains may, therefore, relate to the boom or post-boom periods, although it was anticipated that the majority of artifacts and features encountered would relate from the Orogrande's zenith in late nineteenth/early twentieth century.

Archaeological data recovered from the historic components in and around Orogrande were limited to field recording of remains, with relatively few historic artifacts collected and returned for analysis. LA 115258 was a segment of a railroad spur line that connected Orogrande with the mines in the nearby Jarillas. The other sites contain scatters or discrete dumps of historic trash, virtually all of which relates to the Orogrande boom years. While the historic-archaeological potential of each of these sites was limited, and the data potential of the historic remains was exhausted during testing, these sites are nonetheless part of a larger, important cultural-historical resource.

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Thus, to construct a detailed historic context for these remains, it was agreed that the data recovery phase would involve archival and oral-historical research into the town of Orogrande and its mining district, along with the analysis of artifacts recovered from the both the testing and (in the case of LA 128708) data recovery phases. To help guide this research, the original research design posed the following questions:

What historic time period(s) is (are) represented at the investigated sites in and around Orogrande? If there are different time periods represented, can different functions be attributed to different periods of deposition through an examination of features and artifact classes?

Which of the industrial activities that occurred in and around Orogrande were identified from the historic sites, features, and artifacts?

What is the spatial relationship between targeted sites and the platted town, mines, ore processing facilities, or the railroad?

Can the identity of the complex north of LA 128709, visible in the northern portion of a 1941 aerial photograph, be determined from archival, and/or oral history investigations?

Because of limited data potential of the historic archaeological remains themselves, and the lack of some critical details in the archival records, it was not possible to provide detailed answers to first two questions. Many of the artifacts were not temporally sensitive enough to extract the sorts of fine-grained chronological information required to answer some of these questions. Although it appeared likely that the small dumps encountered were associated with some sort of ephemeral residence during the peak use of Orogrande, most of the dumps encountered had been bulldozed and redeposited, thus compromising any spatial-functional information that might otherwise have been obtained. Despite efforts to document them, evidence of structures, such as tent platforms or small frame and board houses, were not encountered.

Addressing the third question was aided by the use of a period blueprint map for the town of Orogrande that was obtained during the archival research, although information from this simple street map was also limited. A follow-up visit to Orogrande by the author, including oral historical interviews, helped shed light on this question. The oral-historical interviews also answered the fourth question, concerning the feature visible in the historic aerial photo, which the archival records had not provided any information on.

Descriptions of the relatively few historic artifacts recovered at the US 54 sites within Orogrande are included within the individual site chapters, and most of these are covered in Chapter 18. The archival and oral-historical research, as well as recent literature on Orogrande and a family history manuscript, did allow us to construct a historical context for the Orogrande sites, and the history of this rambunctious mining town is detailed in Chapter 32.

Chapter 5

METHODS

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Field Strategies

This chapter describes the general field and laboratory methods used in the investigations at the 11 data recovery sites. The methods were designed to maximize data recovery and to address the research issues discussed in Chapter 4. To retrieve data necessary for this research, a field program of intense manual and mechanical excavations was implemented within the right-of-way portions of the sites. These methods are described below.

Mapping and Surface Reconnaissance

The first tasks of preliminary surface reconnaissance and site mapping were conducted as part of site testing. Reconnaissance was designed to identify and evaluate site boundaries, surface features, artifact assemblages, and subsurface prospects. An attempt was made to relocate the existing site datum and previously described features and concentrations using the survey maps and inventory forms. The reconnaissance entailed systematic close-spaced transects across each site area, at which time all cultural materials were pin flagged.

State-of-the-art total station and AutoCAD technologies were used to produce detailed maps of each site. These maps included site boundaries, all recognized features, artifact occurrences, disturbed areas, and the location of backhoe trenches, backhoe scrapes, and manual excavation units in relation to highway features. On sites located in relatively flat, coppice-dune covered environments (LA 6829, LA 115260, LA 115262, LA 115263, and LA 115265), the outlines of dunes were plotted with the total station, or digitized from aerial photos, and presented graphically. On three other sites (LA 115256, LA 115259, and LA 126181), topography was more variable, and topographic contour maps were produced for these. For the three sites in the town of Orogrande (LA 128699, LA 128700, and LA 128708), high-resolution aerial imagery was available, and total station and GPS information were collected and subsequently overlaid onto the imagery. In order to ensure mapping accuracy between testing and data recovery phases, a permanent datum was established at each site during the testing phase. During data recovery, a baseline and a metric grid system was established at each site, and was oriented to magnetic north.

Surface Collection

Surface collection within the right-of-way portions of the sites was carried out during testing at LA 115260, LA 115264, and LA 115265, which occur on lands administered by Fort Bliss. At sites on BLM land (LA 6829, LA 110358, LA 115255, LA 115256, LA 115257, LA 115258, LA 115263, LA 126178, LA 126181, LA 128699, LA 128700, LA 128701, LA 128707, LA 128708, and LA 128710), at most only a sample of artifacts was collected during the testing phase, and for those sites that went to data recovery, complete surface collection within the right-of-way was carried out during this final phase, after the receipt of an Archeological Resource Protection Act (ARPA) permit. On sites extending onto private land, and not including federal property (LA 115259 and LA 115262), surface collection was limited to newly acquired right-of-way, and was also completed during the data recovery phase. At sites LA 6829 and LA 126181, localized areas of exceptionally dense artifact concentrations were encountered; in these areas, grids of 4 x 4-m surface units were laid out, and artifacts were collected and provenienced by these individ-

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ual units. Otherwise, surface artifacts at these sites were piece-plotted, as elsewhere. The surface collection grid at LA 6829 included a borrow pit previously excavated by the highway department, around which the high-density artifact concentration was arrayed. Surface artifact data from the 4 x 4-m grids at these two sites were computerized, and isopleth maps were generated to display surface density distributions. Data collected from the surface reconnaissance and systematic surface collections assisted in both the definition of features and suspected feature locations, and in targeting areas for subsurface investigations during the data recovery phase.

Data Recovery Excavations

Data recovery investigations involved a combination of manual and mechanical excavation of portions of each site within the highway right-of-way and other impact areas. Sites with relatively small numbers of features within their impact areas were completely excavated in this fashion. At larger, more complex sites (such as LA 6829), features such as structures (and remains in their associated activity areas) were completely excavated, while more isolated and scattered features were systematically sampled. This effort allowed for greater expediency in the data recovery investigations, while still allowing for a clear understanding of the archeological site structure (distribution on the landscape of habitations, activity areas, refuse areas, and other features) and the range of activities that occurred on each site.

Manual Excavations

The goals of the manual excavations were to search for and identify subsurface features and cultural deposits, and to systematically collect data necessary to address the research design topics. Subsurface features and cultural deposits yielded most of the data needed to address the various research issues. In general, all data retrieved from these excavations were maintained in proveniences that did not exceed 1 x 1-m units. These units were excavated in arbitrary 0.1-m levels except where cultural strata, feature fill, or occupational surfaces were encountered. In such cases, the strategy was adjusted to excavate discrete cultural strata or episodes of feature filling within the 1 x 1-m grid coordinates (if the feature was larger than one square meter). In addition, cultural strata were also excavated in 10-cm increments within large features (>1 m^2), and/or by cultural zones within these features. Certain expedient tests, along with deposits that were clearly post-occupational, were in some cases excavated without screening. All cultural deposits were screened through 1/8-inch mesh, with a few instances of 1/4-inch mesh utilized on nonfeature or cultural fill. Flotation, soils, pollen, and phytolith samples were taken from all features, occupational surfaces, general middens, and certain other contexts. Control samples from nearby, noncultural contexts were also collected.

The major focus of excavations at the sites was on features. These cultural anomalies represented discrete loci of behavior and were essential for addressing many of the research issues of the study. All features recognized on the surface or during mechanical stripping were hand excavated. For surface features that exhibited subsurface potential, an excavation block of appropriate size was established around it. In general, most small, discrete features were excavated within blocks of at least 5 x 5 m. Larger blocks of varying sizes were placed around structures, larger features and activity areas. The blocks were expanded as necessary to encompass associated remains. Many of the features exposed with mechanical scraping were excavated by trowel, with the exception of structures and larger features wherein an excavation block was established over the feature following mechanical exposure.

Methods used for feature excavation depended on feature type and size. In general, most small- to medium-sized features were bisected along the long axis and half excavated either by a profile trench or by removal of the feature fill. This procedure allowed the archaeologist to identify the nature of the feature and examine the feature's profile and internal stratigraphy. Profiles were

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then drawn and photographs were taken. The final portion of the feature was then excavated in arbitrary levels, or if observable, by cultural lenses.

Midden deposits often occur within structure basins; such middens were first investigated with a 1-m wide trench. If pits or other features were documented, blocks were then established and the entire feature was excavated. Bioarchaeological and chronometrical samples were collected routinely from *in situ* feature contexts.

The investigation of architectural remains and their associated extramural activity areas was a major focus of the data recovery phase. Collection of data on the individual households, their size, season of occupation, and nature of their subsistence economy was needed to address research questions on lithic artifacts, regional interaction, and changes in cultural adaptation to the social and natural environment. At LA 6829, LA 115262, and LA 128699, architectural remains in the right-of-way included mainly pit structures, along with above ground structures at LA 6829. As an initial step in site treatment, the edges or margins of the features were carefully defined, and structures were then bisected with a 0.25–1.0 m wide exploratory trench to ascertain their nature and integrity. The trench was positioned to divide the structures into equal halves, to assist in identifying structure edges. Excavation then proceeded by natural stratigraphic units, within 1 x 1-m grid coordinates. Special care was exercised while excavating structures, in an attempt to recover data on interior spatial activity areas, construction methods, and subsistence data. Accordingly, all artifacts found *in situ* on structure floors were point provenienced. Flotation, pollen, and chronometrical samples were recovered from structure floors and intramural features in order to address questions concerning chronology, seasonality, and subsistence. Finally, a block of sufficient size was excavated to capture any extramural activity areas surrounding the structure.

Mechanically Assisted Excavations

Mechanical excavations were used to define onsite stratigraphy, to search for buried cultural deposits, to explore featureless portions of sites, to determine the areal extent of the site (or at least within the impact areas), to remove sterile overburden from cultural strata, and to completely strip each site after the completion of hand excavations to ensure that all cultural deposits have been treated. Portions of the majority of the 11 sites occur beneath coppice and dune deposits, and a backhoe was considered the most efficient way to excavate trenches into the deep deposits of the sites. This equipment allowed trenches to be excavated down to sterile subsoil or bedrock and to explore the vicinities of locations previously found to contain cultural remains. The orientation and placement of these trenches depended on a variety of factors, including surface conditions and the location of the cultural materials. The investigations adhered to all Occupational Safety and Health Administration (OSHA) stipulations and regulations for mechanical excavation.

In order to mechanically remove overburden from cultural deposits, and to search for isolated features, the backhoe also was used to strip the surface of the site. The backhoe contained a specially mounted blade for scraping soil a few centimeters at a time. This method left a clean and typically even surface. After manual excavations were completed on a site, scraping commenced over at least the core area to search for additional undisturbed portions of the cultural deposits. This effort ensured that the subsurface evidence of human activity within the right-of-way portion of the site had been fully documented. Additional features were often encountered as a result. These were mapped, sectioned, and in most cases completely excavated. Some exposed features, such as pithouses or concentrations or pit or thermal features, warranted the hand excavation of blocks following stripping.

An archeologist monitored all mechanical excavation. As mechanical excavations continued, trench sidewalls or stripped surfaces were carefully

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inspected for artifacts, staining, cultural strata, or other cultural inclusions. When features were identified during these activities, they were examined as discussed above. Representative profiles were drawn of all trenches and descriptions prepared on the strata by the project geomorphologist.

Site-Specific Excavation Procedures

The foregoing discussion was concerned with the general strategy for data recovery. Unique circumstances were encountered at each site. Site-specific methods are discussed in the individual site chapters. Maps showing the location of features, size and location of excavation blocks, location of backhoe trenches and scraped areas, are also presented in the individual site chapters.

Treatment of Human Remains

Human remains were encountered during the course of excavations at LA 6829, and very small fragments of human bone were also encountered during lab analysis of remains from LA 115260. Whenever human bone was encountered in the field (in this case at LA 6829 only), activities were immediately halted and the appropriate agency (BLM and/or Fort Bliss), NMSHTD archeologists, and Native American groups were notified. Subsequently, in-place procedures were implemented; a proposed NAGPRA plan of action was developed for BLM at the request of that agency. As it turned out, no additional, recognizable human bone was encountered during fieldwork, and so no further work stoppages occurred. Provisions of the Native American Graves Protection and Repatriation Act (NAGPRA) (25 USC 3001 *et seq.*) and its implementing regulations (43 CFR Part 10) were observed.

Burials were present on the floor and under the floor of a structure on LA 6829, and fragments of a burial were found in bagged remains from a midden at LA 115260. The burials were discernable on LA 6829 and after their initial discovery; and once regulatory guidance had been obtained, the burials on LA 6829 were mapped and photographed prior to further excavation. Treatment of burials then followed the methods used for excavation of other features. Each was bisected along its long axis, and careful excavation proceeded. A profile was drawn, and this exposure was photographed. Each burial feature contained a single cultural stratum, and these were excavated as a single level to fully expose the human remains. The burial discovered during general floor excavations was exposed in 1 x 1-m units. Regardless of the context, once the burial was fully exposed, a second map was prepared and additional photographs were taken. The body orientation (the direction toward which the top of the skull points), facing (the direction the skull is facing), position (extended, bent, flexed), and associated funerary offerings (i.e., ceramic vessels, sherds, lithic artifacts) were carefully noted; associated artifacts were piece plotted and collected. These funerary items were provenienced by burial during cataloguing. Charcoal, botanical, and pollen samples were taken from each burial. Each burial was subsequently removed in accordance with NAGPRA regulations. These remains will be reburied on the sites, outside the impact zones in accordance with NAGPRA.

Artifact Analyses

In addition to washing and cataloguing, the basic laboratory operations included processing materials from the field, preparing and distributing materials and samples for analysis, and packaging materials for curation.

Ceramic Analyses

Ten of 11 sites contained ceramic artifacts. The quantity varied between sites having few ceramics (LA 115256, LA 115259, LA 115262, LA 115265, and LA 128708), a moderate assemblage (LA 115260, LA 126181, LA 128699, and, LA 128700), and one with abundant pottery sherds (LA 6829). The following section outlines the ceramic analysis methods employed for this project and the research issues that these data addressed.

Lori Reed and Joell Goff, of Animas Ceramic Consulting, conducted ceramic analysis. The general focus of the ceramic analysis was to record data relevant to issues concerning chronology, subsistence, settlement, and regional interaction. By combining ceramic data with the absolute dates obtained from radiocarbon assays, the span and duration of occupation at the various sites was established. Wear pattern studies on ceramic vessels helped address subsistence research questions. Specifically, wear patterns identified on locally produced ceramics were compared to those observed on nonlocal vessels in an attempt to determine how the different vessels were used on a day to day basis. Also, wear patterns were compared among the different vessel forms to evaluate how different vessel forms were used in subsistence functions such as cooking and storage. The possibility of functional differences between El Paso Brown and Jornada Brown were of special concern to this analysis.

Some of the most important applications of ceramic data were used in addressing regional interaction studies. Temper analysis focused on distinguishing locally made versus imported ceramic vessels. Petrographic analysis focused on temper sources. Of specific interest was the presence of Mimbres Black-on-white, and the question of whether such wares were imported or produced locally (or both). Remains of the Doña Ana phase (ca. A.D. 1150–1250) and early portion of the El Paso phase (ca. A.D. 1250–1475) dominate at most of the data recovery sites. Accordingly, the ceramic analysis was especially alert to any evidence of interaction with the contemporary Black Mountain phase of the Mimbres area, and the wider Casas Grandes interaction sphere centered in northwestern Chihuahua.

All ceramics were analyzed in two sequential steps. First, ceramics underwent rough sort analysis. Any sherds smaller than 2 cm in diameter were counted and weighed in grams and recorded as “too small for analysis.” The remaining sherds were separated into lots based on similar attributes; rough sort type, vessel form, vessel portion, count, and weight were recorded. Preliminary identification of reconstructible vessels was included in the rough sort phase. A comment field was included in the rough sort database to record the presence of use wear, vessel appendages, or postfiring modifications. Body sherds were the least diagnostic portions of brownware vessels, providing minimal data with which to address research questions. These sherds received no additional analysis.

Upon completion of the rough sort analysis, diagnostics from each site were selected for the full analysis phase. First, all whole or reconstructible vessels and floor assemblages received full analysis. Second, all rim, neck, and base sherds from brownware vessels were selected. These vessel portions generally represent the most diagnostic sherds from utility vessels. Body sherds identified during the rough sort as having use wear, vessel appendages, or postfiring modifications, however, were brought into the full analysis phase to fully characterize those attributes. Third, all potentially typeable decorated sherds were selected for full analysis. Fourth, all redware sherds and any items considered potentially nonlocal were selected. Finally, any ceramic artifacts identified as specialty items (e.g., pipes, miniatures, effigies, etc.) were included in the full analysis phase.

After the rough sort and sampling were completed, the sampled segment of the large assemblages and all sherds from small assemblages received full analysis. The full analysis attributes were separated loosely into those related to either typology, vessel function, or ceramic technology. Typological attributes included ceramic series, ceramic ware, ceramic type, temper, and vessel portion. Functional attributes included vessel form, vessel appendages, use wear, postfiring modification, rim radius, and rim arc. Technological attributes included exterior and interior pigment, exterior and interior surface treatment, and temper. Additional analyses, discussed below as special analyses, provided supplemental data for these three general attribute categories. Petrographic analysis and refiring

experiments were conducted on a selected sample of sherds in an effort to determine whether ceramics were produced using the same clay source and where the vessels were likely produced.

Lithic Analyses

Laboratory analysis involved typological and attribute-based analysis of debitage, chipped-stone tools, as well as ground stone and pecked-stone artifacts. Lithic analysis was conducted under the direction of Jonathan Van Hoose, who supervised data collection by Lance Lundquist, Dawn Frost, and David Demar. Debitage was analyzed for technological information, material type, and evidence of possible use. Attributes for all artifacts include material, completeness, weight, and modification. Attributes peculiar to debitage include lip, platform, and presence of cortex on the platform and dorsal surface, and the number of facets. The retouched tool form retains many of these same attributes (e.g., material, lip, platform, cortex, heat modification, dimensions, weight) but adds categories for retouch, retouch location, retouch type, wear type and location. The projectile point coding form adds categories to include dimensions for shoulders, proximal and distal shoulder angle, as well as type. Mano and metate/grinding slab data sheets include categories for ground stone type, dimensions, thickness, weight, striations, pecking, and shape. Raw lithics data are included in Appendix D.

The analysis was designed to record both technological and functional aspects of stone tool manufacture and use. Technological aspects of stone tool manufacture included:

- Characterization of each site with a focus on reduction mode based on debitage variation,
- Distributions of debitage condition and size class to determine lithic reduction methods,
- Specific debitage technological characteristics representing variation in reduction, and
- Material type.

The functional aspects of stone tool use included:

- Working or use edge morphology,
- Use-wear characteristics on working or use edges,
- Implement type,
- Implement size (e.g., spear versus arrow points).

Most of the lithic assemblages from the US 54 project were relatively small, and all lithics from most sites were subjected to the full and complete attribute analysis described above. The use of 1/8-inch mesh in the field produced a large assemblage of retouch and other small debitage.

Only LA 6829 was subjected to artifact sampling procedures due to its large assemblage size. All lithic artifacts from the other ten sites were fully analyzed. See Chapter 21 for more detail on the sampling strategy employed for the LA 6829 lithics.

Lithic remains provided information relevant to all of the research issues outlined in Chapter 4. Chronological issues were addressed through careful analysis and comparisons of diagnostic artifact types, especially projectile points. Accordingly, projectile points were described according to basal morphology (e.g., unnotched, side-notched, corner-notched) and size. Comparisons with dated projectile points recovered from other sites in the region (utilizing primarily original excavation reports) were then carried out to determine the chronological and stylistic affiliation of the recovered projectile points.

Subsistence issues were explored through lithic analysis. Besides inferring general tool function from the overall morphology of chipped-stone and groundstone tools, some examination of wear patterns was conducted on stone tools in order to determine function at a more precise level. These data should enhance the understanding of both subsistence patterns and the range of activities associated with the respective site components.

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Potential subsistence information was also gleaned from an analysis of ground stone artifacts, especially manos and metates. As noted in the research issues section, studies have suggested that increasing size of grinding surfaces on these tools over time correlates with intensifying agricultural production and associated commitment to time-consuming grinding activities. Accordingly, morphological attribute data for manos and metates was compared with those from other sites in the Southwest.

Chipped stone tool manufacture patterns were examined through an analysis of waste debitage. Statistical analysis of multiple debitage attributes was carried out to help better characterize debitage assemblages, to discriminate between Archaic and Formative chipped stone technologies, and to examine varying patterns of raw material exploitation over time and between sites as an aid to understanding mobility patterns and regional interaction. Specific methods employed in the debitage analysis are detailed in Chapter 21.

As noted above, lithic studies also contributed to the investigation of regional interaction patterns. A variety of raw materials were encountered in the recovered assemblages, including rhyolite, silicified shale, basalt, chert, quartzite, chalcedony, and obsidian. Material types were coded and quantified in relation to both tools and debitage categories. Both the geological and archaeological literature was consulted in identifying lithic source materials. The study of Jornada Mogollon lithic sources conducted by Church *et al.* (1996) provides an especially useful guide in this task. Discrete attributes were analyzed for debitage, cores, hammer stones, retouched tools, projectile points, manos, and metates. A sample of obsidian artifacts was subjected to XRF, and the resulting measures were compared with existing chemical characterization databases for the region. Such data assisted in illuminating patterns of regional interaction and exchange, which in turn provided inferences concerning the social and political systems to which the site occupations were linked. Non-local lithic sources yield data important in understanding exchange networks operative during the period. Of special interest was the identification and source of lithic materials that do not occur in the area.

Historic Artifact Analysis

Few historic artifacts were recovered during the testing and data recovery phase of the project. Because of the small quantity of historic artifacts recovered, these are not reported in a separate chapter, but rather are described in the site investigation chapters (including Chapters 18 and 19). Gwyneth Duncan analyzed the historic artifacts, and classified them according to both form and function. All artifacts were separated by material type (glass, ceramic, metal, and nonmetal construction materials for example). Artifact dating utilized manufacturing techniques and marker's marks, thereby providing *terminus post quem* dates (a date after which an artifact type is first made or a technique introduced).

Ceramics were analyzed according to ceramic type such as stoneware, whiteware, and porcelain, and form including cup, plate, and bowl for example. The decoration and technique used to apply the decoration was recorded such as underglaze polychrome hand painted. Marker's marks, if present, were researched in order to date the piece, or to locate the point of origination of the piece. As it turned out, however, very few ceramics were recovered.

Glass was analyzed according to type, namely form and function. Types included bottle glass, tableware, decorative ware including pressed glass, and flat glass. Flat glass included paneled bottle fragments; therefore, window glass was separated out based on thickness. Bottle shape can indicate function, especially when used in conjunction with neck and finish characteristics as well as orifice diameters. Glass manufacturing techniques were the most useful criteria for dating and are more reliable than dating through the use of color alone. However, color was also an important criterion and was noted and quantified.

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Seam lengths of bottles and lip finishes were examined when present. Bottle base marks, patent numbers, embossed lettering, and other miscellaneous marks was examined in order to properly identify the artifact.

Metal artifacts also were analyzed according to form and function. Cans were assessed for manufacturing characteristics, types of alloys used, and their uses as containers. Nails were analyzed according to alloy, manufacturing technique, and possible use.

Miscellaneous historic artifacts included nonmetal architectural materials, metal toys, marbles, worked bone objects such as toothbrushes and combs, and other items. These were analyzed accordingly.

Macrobotanical Analysis

The presence of intact features and/or midden deposits at the targeted sites provided good recovery rates for macrobotanical remains. These remains were used to address research questions related to subsistence patterns. A large number of flotation samples were collected, processed, and analyzed. Sample size was up to 25 liters from house floor and midden contexts, or up to one-quarter of the fill volume for large features. All fill from small features was collected if evidence existed for productive results. These samples were processed using a standard water separation technique. The light and heavy fractions were searched using a stereoscopic zoom microscope. Identification of charred wood and plant seeds provided direct indicators of important wild plant resources and cultigens used by the inhabitants. Quantitative methods were used to derive measures of both ubiquity and total frequency. Flotation analysis and wood identification was conducted by Thomas O'Laughlin, and a more detailed description of the methods used are detailed in Chapter 24.

Pollen and Phytolith Analysis

Besides macrobotanicals, pollen and phytoliths provide additional evidence of past subsistence patterns and environments. Special effort was made to recover and identify cultigen pollen and phytoliths, to examine questions concerning the presence or absence of corn and other domesticates and to evaluate the relative dependence on corn agriculture.

Pollen and phytolith samples were collected from appropriate cultural contexts, including floors, middens, and features. A pollen sample was collected from an off-site context to control for modern pollen rain. Intensive Systematic Microscopy was used during pollen and phytolith analysis, and concentration values were documented for each. For the phytolith analysis, only species of potential economic significance (i.e., domesticated plants) were identified. Dr. John Jones of Texas A & M University analyzed the pollen samples, and Dr. Steven Bozarth conducted the phytolith analysis. More detailed explanations of the processing and analytical methods involved in these analyses are presented in Chapters 25 and 26.

Faunal Analysis

Faunal remains provided direct evidence bearing on issues of subsistence and settlement research questions. It was anticipated that settlement analyses might use faunal remains, which in some cases can provide specific information on the season of occupation and, to a lesser extent, the various roles the respective site components played in the settlement pattern model. Tooth eruption of specific species, the presence or absence of certain species such as migratory birds, or of remains such as egg shell, provided valuable information on the season of occupation. The seasonal dispersion and aggregation of animal populations might directly affect settlement patterns (e.g., small residential structures might be strategically placed to exploit seasonally present game). For the subsistence-related domains, the primary concern was the importance of animal food resources to the occupants, and indicators of the kinds of hunting strategies involved.

To examine these issues, faunal samples were cleaned, sorted, and identified as to taxon and

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skeletal element. Calculations on the minimum numbers of individuals were conducted in order to compare faunal assemblages between the data recovery sites and other small sites and pueblos in the region. Burning, gnawing, and cut marks if present were recorded, along with other attributes appropriate for making cultural and taphonomic inferences. The faunal remains were carefully assessed to determine the seasons of occupation. Gwyneth Duncan and Dee Jones-Bartholomew conducted the analysis of the faunal remains. See Chapter 23 for a more detailed description of the faunal analytical methods.

Chronological Analyses

Other research questions hinge on the ability to place sites in an accurate temporal framework. To provide a solid chronological basis for other research questions, chronometric samples, including radiocarbon and archaeomagnetic, were collected. Other methods, such as dendrochronology, obsidian hydration, and OCR are also available. The reliability of some of these methods (including OCR, obsidian hydration, and TL) is questionable, however; and materials suited to dendrochronological dating were not encountered during the investigations. Thus, these alternative chronometric techniques were not employed in this project. Whenever encountered, samples for archaeomagnetic and dendrochronological dates were collected and processed. Charcoal and charcoal-laden soils were relatively ubiquitous in features and surface deposits and therefore radiocarbon dating was the primary chronometric technique used. At any rate, a major goal of the project was to document the subsurface stratigraphy and contextual integrity of subsurface deposits at each site, and recover datable materials. Laboratory analysis of ceramics also provided valuable chronological information useful in addressing the research design. A priority in the chronological analyses involved absolute dating of structures, with samples from other features and non-feature midden contexts also processed and evaluated. In the end, 77 radiocarbon dates were obtained from the investigations.

Analysis of Human Remains

All recovered human remains were either dry-brushed or washed to remove sediments adhering to the bones. Decisions regarding the specific procedure were based on the condition of the remains and regulatory guidance. All stages of processing were conducted in such a manner so as to ensure that the provenience information was kept with all artifacts or skeletal remains. The remains were catalogued using a card placed with the remains. Cataloguing was one essential way to keep provenience data with all remains and their associated artifacts.

The analysis of remains was conducted by individuals with training in physical anthropology and included:

- Determination of sex, age, and stature, as specified by standard practices of physical anthropology
- Determination of trauma and pathologies

Until final disposition is determined, the remains are stored in storage boxes, which minimize damage. All remains were kept secure in a locked area with restricted access. Skeletal material were not treated disrespectfully or put on public display during short-term curation. John Torres and Dee Jones-Bartholomew analyzed human remains. See Chapter 29 for descriptions of both methods and results.

Project Database

All data collected in the field and in the laboratory, including those collected by individual artifact and sample analysts, were incorporated into a single project database. This relational database was designed and implemented by Jonathan Van Hoose, Gwyneth Duncan, and Catherine Heyne, with Clarissa Hoover providing crucial guidance. The US 54 database was implemented in Microsoft Access 2000. All data were entered from field, lab, or analysis forms into a series of linked tables within the database, or imported from data files provided by individual analysts and

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modified structurally to integrate with the database. In its final form, this database allowed complex queries which enabled the examination of complex relationships between different data sets.

Curation

All materials and records collected and produced during the project were handled in accordance with the 36 CFR Part 79: Curation of Federally Owned and Administered Archaeological Collections. The collections from sites on BLM-administered land and right-of-way obtained from private sources are curated at the Museum of New Mexico at Santa Fe. These materials were processed in accordance with current standards identified in the Museum of New Mexico curation manual. Materials recovered from Fort Bliss property were processed and curated in accordance with that installation's specifications and standards.

Report Production

Prior to the production of this final report, TRC produced four previous reports on the US 54 investigations. The first two reports described the results of the testing phase and presented the data recovery plans (Acklen *et al.* 1999; Graves *et al.* 2000). Following data recovery, two interim reports were prepared (Acklen 2000; Acklen *et al.* 2001). The interim reports documented the field activities, preliminary results, adherence to the data recovery plan, and problem and plan variance resolution. A listing of all materials and samples collected during the course of excavations accompanied the interim report.

This final report documents all aspects of the testing and data recovery phases. It emphasizes the findings at each site both descriptively and analytically as required in the data recovery plan. A complete listing of all materials retrieved from the sites is submitted with the final report, as well as updated Archaeological Records Management System (ARMS) Site Record forms and updated maps. Collection/curational sheets for sites located on BLM land will be submitted to the BLM. Copies of the final report also will be submitted with the collections from the sites to the Museum of New Mexico, Santa Fe, and the U.S. Army at Fort Bliss.

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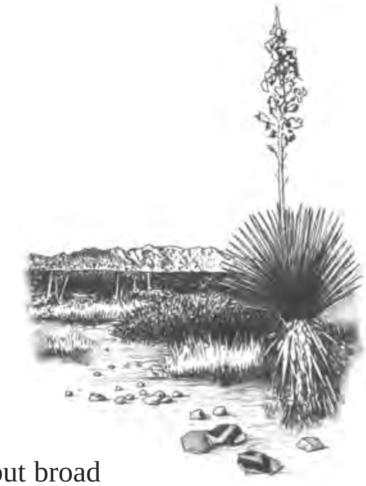
Chapter 6



The Jaca Site (LA 6829)

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Introduction

The Jaca site (LA 6829) is a large, Jornada Mogollon residential site in the southern Tularosa Basin. Lying on the south side of the Jarilla Mountains, the site sits at the base of the bajada apron that blankets the flanks of this small mountain range (Figure 6.1). The site's terrain ranges from nearly level to slightly sloping with a south to southwest grade (Figure 6.2). Immediately south of the site is a small, playa-like depression. Mesquite-stabilized coppice dunes with broad, uneven interdunal areas characterize most of the site's surface. These dunes are generally 2–3 m high. Toward the northern limit of the site, dunes give way to extensive, grass-stabilized sheet sand deposits. Shallow but broad arroyos drain the surface in the southern portion of the site. These drainages range from a few cm to two meters wide, and from a few cm to 30 cm deep. Caliche cap surfaces are exposed in some of the deeper arroyos. The site lies within the Chihuahuan biotic zone, and the local flora includes mesquite, fourwing saltbush, broom snakeweed, dropseed grass, narrow leaf yucca, prickly pear, and a few creosote bushes. Surface visibility averaged 70 percent across the site.

The site extends across both sides of US 54, and includes remains both inside and outside of the right-of-way. Planned construction activities will take place from the centerline of the existing road

Figure 6.1 Overview of the Jaca Site.

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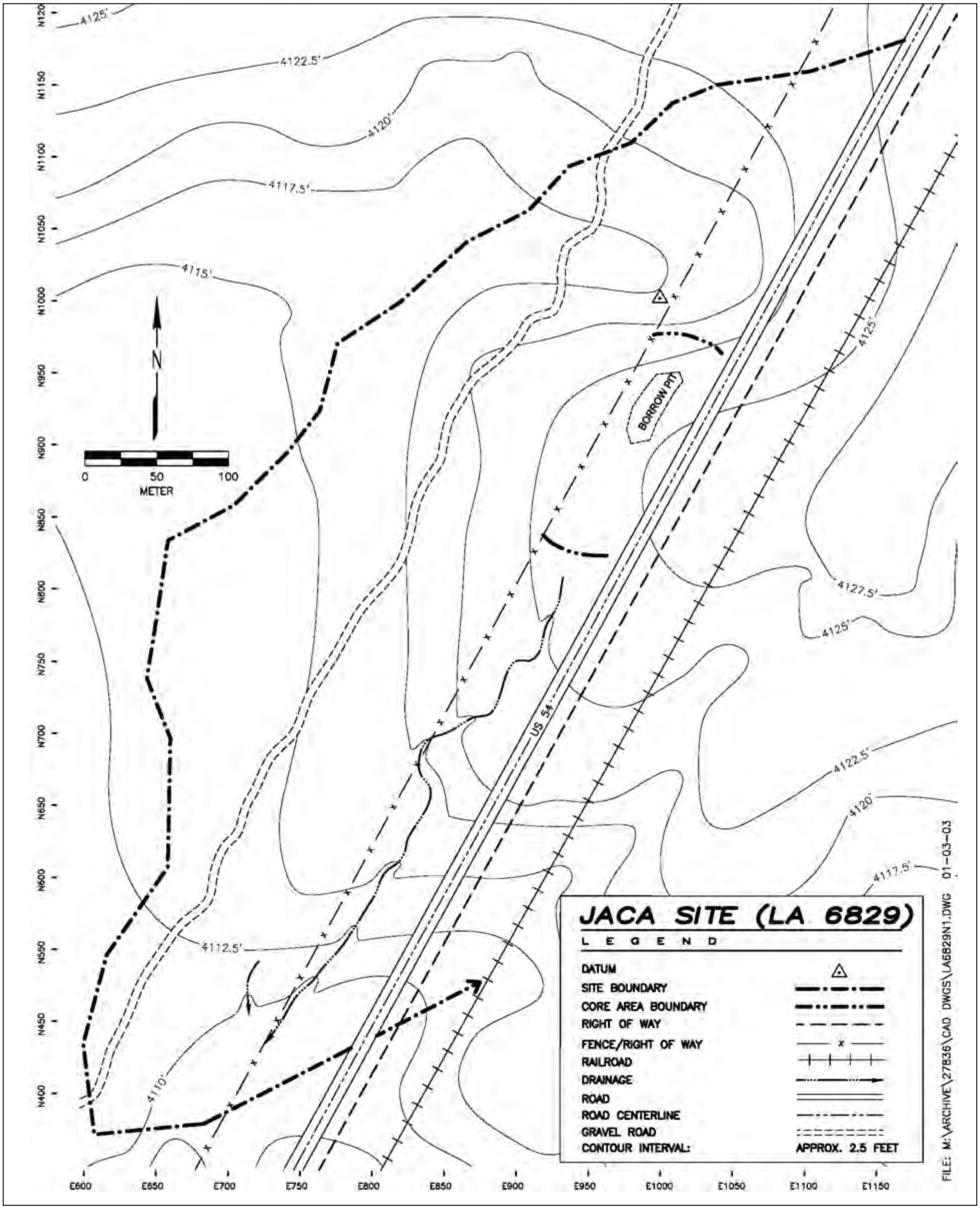

Figure 6.2 **Topographic Map of the Jaca Site (LA 6829).**

to the right-of-way edge located 61 m to the west. The investigated portion of the site lies on lands administered by the BLM. Following TRC's investigations and agreements reached between the NMSHTD and the BLM, the right-of-way will be restricted to 54 m west of centerline in the area where the highest concentration of artifacts and features were located. Hereafter this is referred to as the *core area* of the site (see Figure 6.2).

Major sources of soil redistribution at the site include the US 54 roadbed and the Southern Pacific railroad bed that bisect the site. Other disturbances include a borrow pit excavated in 1963 for the present US 54 roadbed, a power line road, and a barbed wire fence at the edge of the right-of-way on the west side of the highway. The borrow pit was located within the core area, and extended roughly 48 m north-south by 13 m east-west, with a depth of roughly 1–4 m. The base of the pit extended well below all cultural evidence, and into, and below, the caliche calcrete. The power line road bisects the western portion of the site, outside of the right-of-way. This road ranges 3.0–5.0 m in width and has cut into the site surface to depths ranging from a few cm to more than 30 cm. This transmission line and associated road are historic, being greater than 50 years in age. Historic insulator glass is scattered along the road, with some insulators still perched on some of the historic poles. The fence disturbance was minimal, and the fence itself has fallen into disrepair. The fence is historic and marks the right-of-way edge west of US 54.

Previous Investigations

The site was first recorded in 1963 during a highway cultural resource inventory conducted by Gerald Wood. The 1963 records describe the site as a habitation locality containing possible pit-house remains, with cultural debris scattered through a series of "blowouts." Ceramics recorded in 1963 include the following types: one Three Rivers Red-on-terracotta, one Casa Colorado, 178 El Paso brownware, 135 El Paso polychrome, 92 Chupadero Black-on-white, one Alma Punched, 12 Jornada Brownware, 19 El Paso tooled, one Four Mile polychrome, Ramos Polychrome (quantity unknown), and four sherds of unidentified brownwares. Lithic artifacts originally recorded on the site included 39 lithic flakes, six hammerstones, six utilized pieces of debitage, a scraper, two mano fragments, and four metate fragments.

In 1977, Karen Way of the BLM re-visited the site, and documented it as NM-030-151. This investigation noted an assemblage generally similar to that recorded by Wood, although Way did record substantially more groundstone artifacts.

More recently, Marshall and Marshall (1998) investigated the site as part of a preliminary phase of the US 54 widening project. These investigators confirmed that the site is a Jornada Mogollon habitation, and documented six features and an extensive ceramic and lithic artifact scatter extending 200 m east-west x 360 m north-south. With the exception of two large midden/ash stains, all of the features observed by Marshall and Marshall were small ash stains and scatters of fire-cracked rock. Widely scattered fire-cracked rock also was noted throughout the site area. Ceramics recorded by Marshall and Marshall included 148 El Paso brownwares, 33 El Paso Polychrome, 18 Chupadero Black-on-white, one Alma Plain, one St. Johns Polychrome, one Playas Red incised, and an indented brownware. Lithic artifacts included lithic debitage, a chopper, a hammerstone, two abraders, and two manos.

Even more recently, Parsons Brinckerhoff recorded portions of the site as part of a cultural resource survey for a proposed fiber optics line within the railroad right-of-way (Kovacik *et al.* 2000). The site was recorded this time as LA 127400. The Parsons Brinckerhoff team reported a large, prehistoric flaked stone and ceramic scatter, with a small number of historic artifacts, extending 315 m north-south x 150 m east-west area (47,250 m^2). The report indicates the site extends partially onto the west side of US 54 and well to the east of the railroad onto Fort Bliss

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property. No features were noted on the surface. Surface artifacts were estimated to be in the thousands, although only a few hundred were observed within the railroad right-of-way. A sample recording of artifacts was conducted within a 3 x 3-m unit. Observed ceramics included El Paso brownwares, El Paso Polychrome, Chupadero Black-on-white, Three Rivers Red-on-terracotta, utilitarian gray wares, and possibly Lincoln Black-on-white. Lithic artifacts included flaked stone debitage of hornblende, quartzite, diorite, quartz and chert along with two chert cores, a quartzite hammerstone, and a modified flake. Six shovel tests were excavated and these indicated a lack of subsurface cultural materials with the exception of one utilitarian gray ware in one test from 0–8 cm bgs. Monitoring of the fiber optics line uncovered an ash-stained feature reported as 2 m in diameter; the feature had already been heavily impacted upon discovery, however, and its original dimensions remain unknown. The feature contained bone (burned and unburned), ceramic sherd fragments, fire-cracked rock, a mano, and angular flaked stone debris. According to Kovacik *et al.* (2000:111), "charcoal associated with the feature was about 30 cm below the surface and appeared to measure 60 cm in diameter."

Fort Bliss archaeologists also recently began recording LA 6829 on the east side of the railroad right-of-way (James Bowman personal communication 2000). They report that the site extends for several hundred meters east-northeast. The site's extent in this direction has yet to be determined. Several large ash stains, thousands of scattered ceramics, lithic debris, and thermal materials are exposed on the surface within the Fort Bliss portion of the site. A single, Chihuahuan ware pot drop was also recorded.

Testing Investigations

TRC conducted testing at LA 6829 in the fall of 1999 (Acklen *et al.* 1999). These investigations found the site to be much larger and considerably more complex than indicated by the previous investigations. Testing began with careful inspection of the site's surface, mapping with a total station instrument, and plotting features and other notations on aerial photographs of the site (Figures 6.3 and 6.4). Mapping involved drawing of contours and plotting of coppice dunes, the site datum, cultural features, US 54, the right-of-way fence, and other landmarks. Random samples of diagnostic surface artifacts were collected. Features were described and trowel tested to determine depth potential. Backhoe trenches and shovel tests were excavated, and these are described below. Geomorphological investigations were also carried out through observation of profiles exposed in the backhoe trenches.

Surface Investigations

TRC's testing investigations determined that, on the west side of U.S. 54, the site extends 954 m north-south x 420 m east-west, covering roughly 400,000 m^2. The site was found to extend 220 m to the west of the present highway edge onto BLM lands, and at least 200 m east of the present highway edge onto Fort Bliss Military Reservation property. The 954-m maximum north-south axis is contained within the 61-m wide right-of-way west of the highway. Portions of the site within the railroad right-of-way to the east of US 54 were recently impacted by fiber optics line construction. Archaeological materials within the railroad right-of-way, and the site area to the east on Fort Bliss property, were not mapped. Detailed mapping and surface documentation by TRC was restricted to the right-of-way, and to the west of the right-of-way onto BLM lands. Within these areas, the site encompasses 134,714 m^2. The investigated portion of the site, within the highway right-of-way, covers 36,796 m^2. This amounts to just over nine percent of the total site area.

The site surface contains a highly variable density of artifacts and features exposed on the surface. The testing investigations documented 36 features, both inside and outside the right-of-way (Table 6.1). Four of the six features documented

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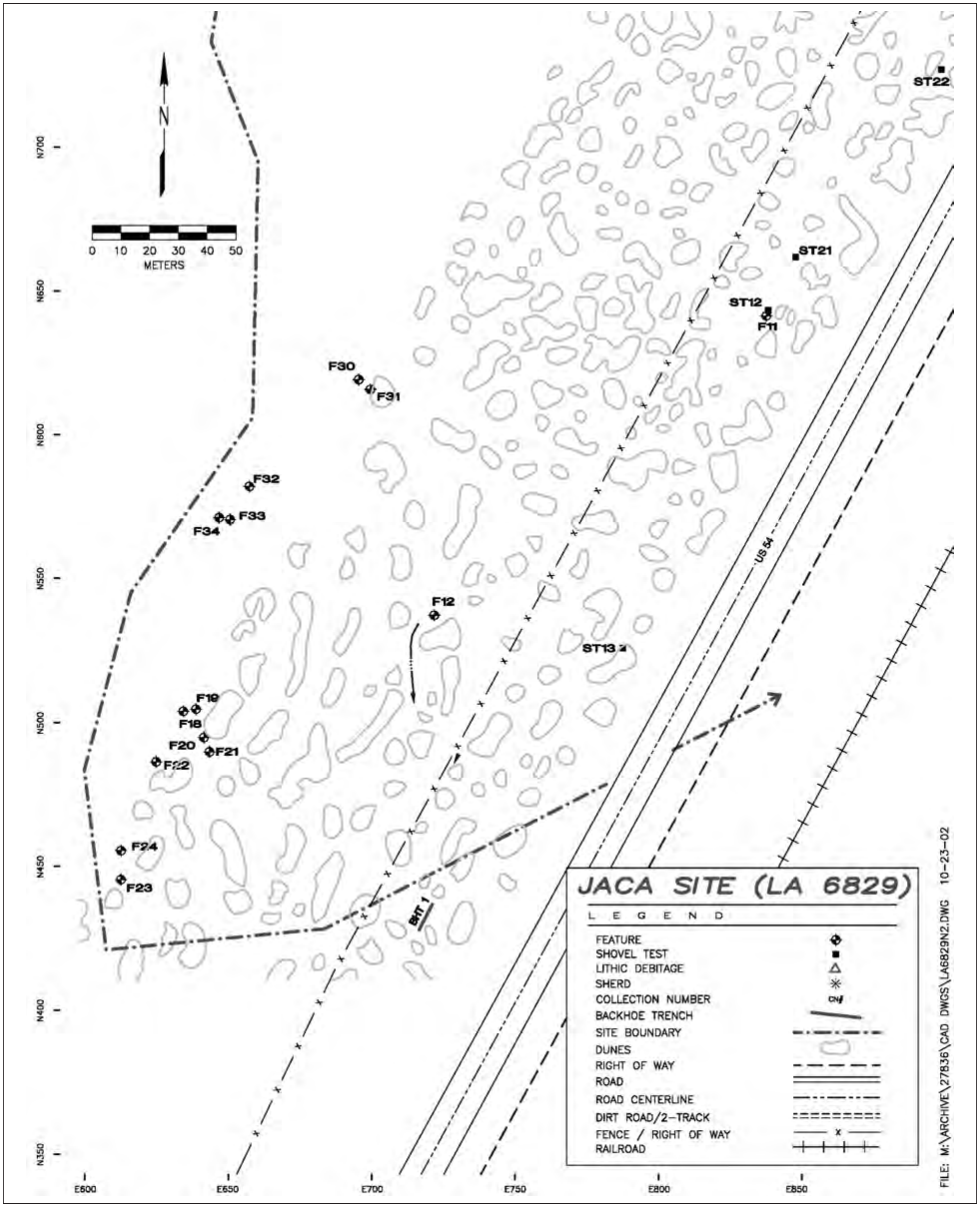

Figure 6.3 Southern half of the Jaca Site (LA 6829), showing locations of features, shovel tests, and backhoe trench from the testing phase.

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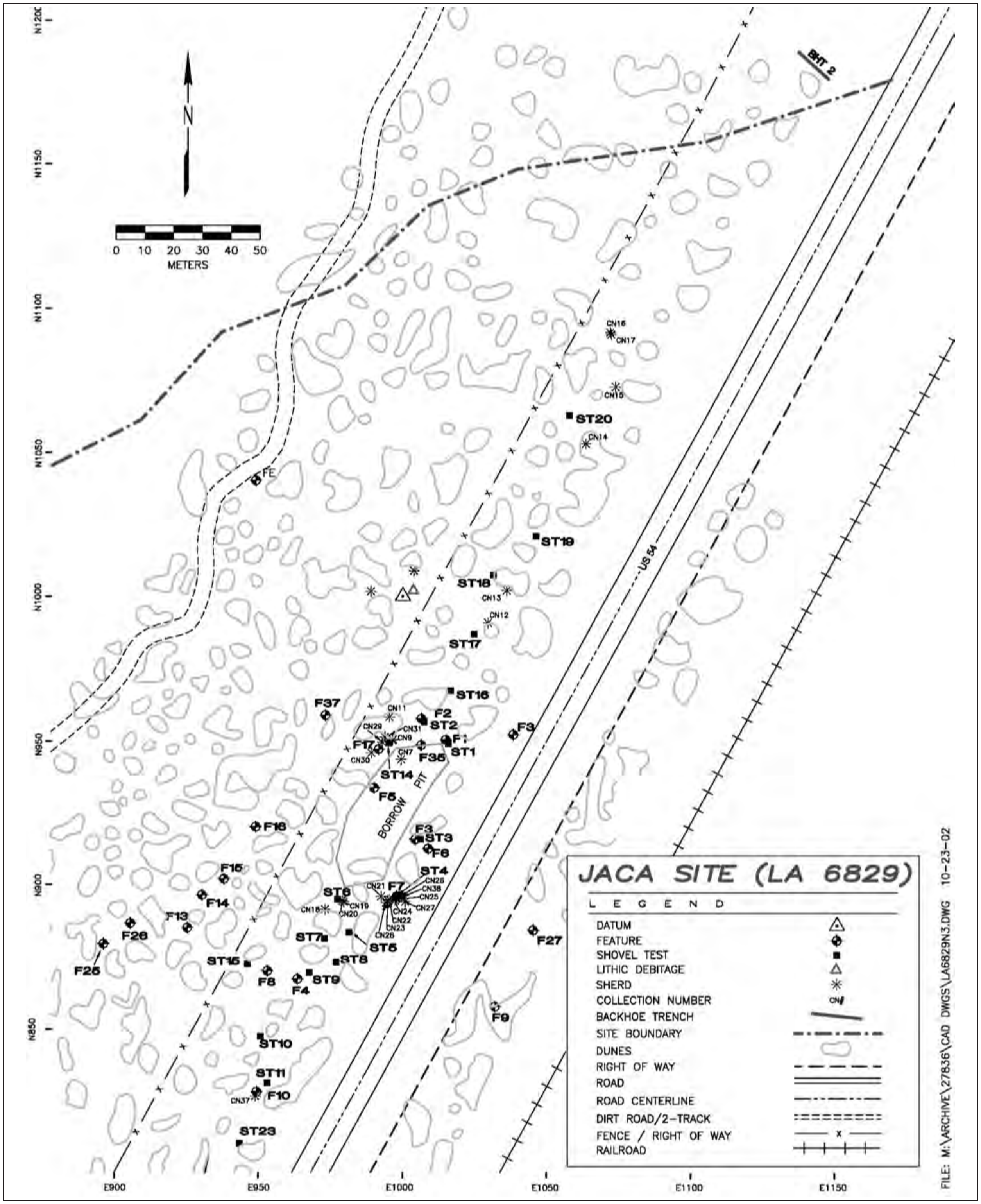

Figure 6.4 Northern half of the Jaca Site (LA 6829), showing locations of features, shovel tests, artifacts, and backhoe trench from the testing phase.

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by Marshall and Marshall (1998) were relocated (their Features 1, 3, 4, and 6). Marshall's Feature 2 (a small ash stain on the west side of US 54) could not be positively located again, and Feature 5 was plotted in an area subsequently impacted by fiber optic line installation on the eastern side of US 54 (note: this feature was not located again by the Parsons-Brinckerhoff team during their work on the fiber optics line; re-inspection of this area by TRC during data recovery suggests the presence of a midden feature, portions of which may still remain intact). The 32 newly recorded features were located both within the right-of-way and on BLM-managed property to the west.

The 36 observed features include 14 fire-cracked rock concentrations, four fire-cracked rock/artifact concentrations, six thermal stains, 10 middens, one midden-filled pithouse, and one probable pithouse floor hearth. Thirteen of these features were identified within the right-of-way, including the probable pithouse floor hearth, three middens (dense scatters of cultural materials often associated with dark ash stains), and nine thermal features (i.e., FCR features and thermal stains). The midden features were interpreted as repeatedly used dumps associated with nearby living and activity areas, and include filled-in house pits. One feature was identified as a midden-filled pithouse, and a probable floor hearth marked another likely pithouse.

Besides the discrete features, surface documentation at LA 6829 revealed a pattern of highly variable artifact density, with dense artifact concentrations surrounded by larger, more diffuse scatters. The highest density of cultural materials was located in the core area of the site and included Features 1–8, 17, and 35. The core area surrounds the borrow pit, and covers 112 m north-south by 46 m east-west within the right-of-way, extending an additional 28 m outside of the highway right-of-way to the west. Altogether, the core area encompasses 5,152 m^2. Another area with a moderate density of surface features (Feature 19–24) and cultural materials was identified in the far southwest portion of the site, well outside the highway right-of-way.

Subsurface Testing Results

The subsurface testing strategy for the Jaca site involved manual excavation of 23 shovel tests, and machine excavation of two backhoe trenches. The backhoe trenches were excavated within the highway right-of-way, to the north and south of the site boundaries. The shovel tests were placed at feature localities, within high-density surface artifact concentrations, in areas covered by sheet sands to assess the potential for subsurface remains in these covered areas, and in areas with low-density surface materials to explore for buried cultural remains. Shovel tests (ST) 1–4, 9–10, and 14–16 were excavated in the vicinity of features. ST 5–8, and 23 were excavated in the core area of the site. ST 8, 11, and 23 were excavated in dune and sheet sand deposits. ST 12, 13, 21, and 22 were excavated in the southern portion of the site, in an area of very sparse cultural remains. ST 17, 18, and 19 were excavated in the northern portion of the site in search of buried features. ST 21 was excavated within a diffuse, fire-cracked rock scatter.

The shovel tests collectively exposed 5.5 m^2. Table 6.2 summarizes the findings of all the shovel tests. Ten of the 23 shovel tests produced subsurface materials, including a floor hearth or storage pit in a potential pithouse structure (Feature 17). Cultural materials recovered from surface collections and shovel test are listed in Table 6.3. Not surprisingly, virtually all of the artifacts came from shovel tests placed in features or within the core area of the site.

Site Stratigraphy and Geomorphology

The geomorphological/geoarchaeological investigations focused on 23 backhoe trenches excavated on the site during testing and data recovery (Figure 6.5), and on the hand excavations as well. The majority of the backhoe trenches were excavated in the northern half of the site. Over the course of the investigations, it became clear that topography had a large influence on both the use of the site in the prehistoric past, and on strati-

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Table 6.1 LA 6829, Feature Data from TRC's Testing Investigations

Feature No.	Location	Type	N/S	E/W	Depth	Cultural Materials
1	Highway right-of-way, north-central	Midden	5 m	3 m	0.2 m	Marshall's Feature 1–10+ El Paso Brown ceramics, 10 granite fire-cracked rocks (FCR)
2	Highway right-of-way, north-central	Thermal feature	2 m	2 m	Unk	Marshall's Feature 2–1.0 m diameter stain with 5 granite FCR, 5 El Paso Brownware (EPB) ceramics. Not located again during testing
3	Highway right-of-way, central	FCR/Artifact concentration	5 m	5 m	Unk	10+ granite FCR, 5 granite ground stone, 10+ siltstone flakes, 100+ ceramics (EPB), El Paso Polychrome (EPP)
4	Highway right-of-way, central	FCR/Artifact concentration	2 m	2 m	Unk	Marshall's Feature 4--20 limestone, granite FCR, 10 El Paso Brown, 6 EPP, 1 siltstone flake, 1 chert flake, 1 Chupadero Black-on-white (ChupBW)
5	Highway right-of-way, central	Thermal feature	2 m	3 m	>0.1 m	Marshall's Feature 3 ash stain eroding out of dune – 65 large granite, limestone FCR, 1 chert flake, 1 EPB ceramic
6	Highway right-of-way, central	FCR/Artifact concentration	4 m	2 m	Unk	30+ scattered granite FCR, limestone core, 10+ lithic flakes of limestone, basalt, and siltstone, 20+ ceramics of EPB, EPP, one ChupBW
7	Highway right-of-way, central	FCR/Artifact concentration	3 m	2 m	Unk	20 large scattered pieces of limestone and granite FCR, one EPP rim, 1 limestone flake, 20 EPB ceramics
8	Highway right-of-way, central	Midden	8 m	14 m	>0.2 m	Ash stained soils with 50+ granite, sandstone, limestone FCR, 100+ ceramics–EPB, 1 EPB rim, EPP, ChupBW, 5+ sandstone mano fragments, 5+ limestone and granite metate fragments
9	Railroad right-of-way, central	Midden	8 m	8 m	>0.3 m	Marshall's Feature 6–20+ limestone and granite FCR, 50+ ceramics–EPB, EPP, ChupBW, and Ramos Polychrome
10	Highway right-of-way, central	FCR concentration	1 m	1 m	Unk	7 limestone FCR, 1 EPB, 1 EPP, 1 Playas Red incised
11	Highway right-of-way, south-central	FCR concentration	2 m	2 m	Unk	7 granite FCR, 1 rhyolite metate fragment
12	BLM southwest	FCR concentration	3 m	2 m	Unk	15 limestone, granite FCR/burned caliche, 1 basalt flake, 1 granite metate fragment
13	BLM central	Midden	12 m	5 m	>0.1m	Dark ash stained sands extending under dune with 150+ ceramics–EPB, EPP, ChupBW, 1 sandstone mano fragment, 10+ granite FCR, 10+ flakes of siltstone, chert, and basalt
14	BLM central	Midden	7 m	15 m	>0.1 m	Dark ash stained sands–1000+ ceramics–EPB, EPP, ChupBW, Corrugated EPB, 1000+ lithic flakes–limestone, chert, siltstone, 50+ granite, limestone, sandstone FCR, 10+ mano fragments, siltstone marginal tool, burned bone fragments
15	BLM central	Midden	13 m	>5 m	>0.1 m	Extends under dune dark ash stained sands–1000+ ceramics – EPB, EPP, ChupBW, 100+ lithic flakes of siltstone and chert, burned bone, 5 large granite FCR
16	BLM central	Midden	22 m	22 m	>0.1 m	Dark ash stained sands–1000+ ceramics–EPB, EPP, ChupBW, Playas Red incised, Ramos Polychrome, 1 ChupBW handle, 1 EPP handle, 1000+ lithic flakes of siltstone, cherts, basalt, and limestone, siltstone core, chert core, 100+ granite FCR, 1000+ burned bone fragments
17	Highway right-of-way, north-central	Midden Pithouse	18 m	18 m	>0.4 m	Dark ash stained sands and charcoal extending under several small dunes – 1500+ ceramics – EPB, EPP, ChupBW, Playas Red incised, 500+ lithic flakes siltstone, chert, sandstone, 5 ground stone granite, 5+ granite FCR, 1 siltstone marginal tool, 100+ burned bone

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Table 6.1 LA 6829, Feature Data from TRC's Testing Investigations (continued)

Feature No.	Location	Type	N/S	E/W	Depth	Cultural Materials
18	BLM southwest	FCR concentration	2 m	3 m	Unk	Eroding from edge of dune – 20+ granite FCR, 1 chert flake
19	BLM southwest	FCR concentration	2 m	2 m	Unk	Eroding from edge of dune – 20+ granite, limestone FCR
20	BLM southwest	FCR concentration	3 m	3 m	Unk	Interdune location – 20+ rhyolite, granite, limestone FCR, 2 granite metate fragments
21	BLM southwest	Thermal feature	0.5 m	0.5 m	>0.1 m	Dark ash stained sands with charcoal and 1 chert flake
22	BLM southwest	FCR concentration	6 m	6 m	0	Surface diffuse scatter of 50+ limestone and granite FCR, 1 limestone core, 1 chert marginal tool all on hardpan
23	BLM southwest	FCR concentration	2 m	2 m	Unk	Scatter of 30+ limestone and granite FCR and one large granite basin metate slab
24	BLM southwest	FCR concentration	2 m	2 m	0	Diffuse scatter of 20+ limestone and granite FCR on hardpan
25	BLM central	Midden	10 m	8 m	>0.2 m	Dark ash stained sands with charcoal at edge of dune – 20+ ceramics – EPB, 10+ siltstone flakes, 20+ granite FCR, 1 sandstone metate fragment
26	BLM central	Thermal feature	1 m	1 m	>0.1 m	Dark ash stained sands with charcoal at southwestern edge of dune
27	Railroad right-of-way, northeast	Midden	6 m	8 m	>0.2 m	Located in fiber optics disturbance – 5 ChupBW, 150+ ceramics of EPB and EPP, 25+ limestone and granite FCR, 20+ burned bone
28	BLM northwest	FCR concentration	1 m	2 m	Unk	Eroding into old telegraph line road – scatter of 10 limestone and granite FCR and 1 EPB ceramic
29	BLM northwest	Thermal feature	0.5 m	0.5m	>0.1 m	Ash stain in rodent burrow with 3 limestone and granite FCR, 1 EPB ceramic
30	BLM northwest	FCR concentration	10 m	5 m	Unk	Diffuse scatter of 100+ limestone and granite FCR scattered along old telegraph line
31	BLM northwest	Thermal feature	0.5 m	0.5m	>0.1 m	Dark ash stained sands with charcoal
32	BLM southwest	FCR concentration	5 m	5 m	Unk	Diffuse scatter of 30+ limestone and granite FCR and 2 siltstone flakes just west of telegraph line
33	BLM southwest	FCR concentration	0.5 m	0.5m	Unk	Articulated concentration of 20+ granite FCR from single basin metate
34	BLM southwest	FCR concentration	0.4 m	0.3m	Unk	Semi-circle articulated concentration of 7 large granite FCR
35	Highway right-of-way, north central	Thermal feature	>0.2 m	>0.2m	>0.2 m	Charcoal stain eroding out of northern edge of borrow pit
36	Floor hearth in Feature 17	Pithouse floor Thermal feature	0.5 m	0.5m	>0.1 m	Floor hearth of pithouse (Feature 17) located at 0.3 m below ground surface (bgs)
37	BLM north central	Midden	8 m	5 m	>0.2 m	Charcoal stain – 33 EPB ceramics, 2 ChupBW, 6 basalt and siltstone flakes, 15 scattered FCR

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Table 6.2 Shovel Test Results for LA 6829

Test No.	North	East	Location	Depth	Surface	Cultural Evidence	Stratum 1	Cultural Evidence	Stratum 2	Cultural Evidence
ST 1	950.29	1014.76	North-central, in Feature 1	0.5 m	Friable, reddish-gray, ash-stained sand (5YR5/2) with some caliche, surface to 0.10–0.2 m	4 EPB ceramics, 1 flake, Feature 1 fill	Semi-compact, reddish-yellow to yellowish-red sandy loam with caliche (5YR6/8–5/6), 0.1–0.2—0.38–0.5+ m	None	Caliche or calcrete layer 0.38–0.5—0.5+ m	None
ST 2	957.67	1006.32	North-central, area of Feature 2	0.3 m	Friable reddish yellow sand (5YR6/8), surface to 0.1 m	None	Semi-compact yellowish red sandy loam with caliche (5YR5/6), 0.1 to 0.3+ m	None	N/A	N/A
ST 3	915.83	1004.15	North-central, in Feature 3	0.4 m	Friable reddish yellow sand (5YR6/8), surface to 0.1 m	None	Semi-compact yellowish red sandy loam with caliche (5YR5/6), 0.1 to 0.4+ m	None	N/A	N/A
ST 4	896	997.68	North-central, in Feature 7	0.4 m	Friable, reddish-yellow sand (5YR6/8), surface to 0.1 m	None	Semi-compact, yellowish-red, sandy loam with caliche (5YR5/6), 0.1 –0.4+ m	None	N/A	N/A
ST 5	883.57	981.33	North-central	0.4 m	Friable, yellowish-red sand (5YR5/6) with some caliche, surface to 0.08 m	1 flake, 2 burned caliche, 2 EPB ceramics, 2 bone	Semi-compact, yellowish-red sandy loam (5YR5/8), 0.08–0.18—0.35 m in burrow	None	Semi-compact, reddish-yellow sandy loam with caliche (5YR6/6), 0.08–0.18—0.35+ m	None
ST 6	895.01	977.34	North-central, southern end of borrow pit	0.5 m	Friable, yellowish-red sand (5YR5/6) with some caliche, surface to 0.05–0.12 m	4 EPB body ceramics, 1 rim, 1 ChupBW body and handle	Semi-compact, reddish-yellow sandy loam with caliche (5YR6/8), 0.05–0.12—0.5+ m	None	N/A	N/A
ST 7	881.38	972.79	North-central	0.38 m	Friable, yellowish-red sand (5YR5/6) with some caliche, surface to 0.08–0.12 m	3 flakes, 1 ChupBW, 6 burned caliche, 6 EPB ceramic, 1 mano fragment	Semi-compact, yellowish-red sandy loam (5YR5/8), 0.08–0.12—0.33 m	None	Caliche or calcrete layer 0.33–0.38 m	None
ST 8	873.26	976.74	North-central	0.4 m	Friable yellowish red sand (5YR5/6) with some caliche, surface to 0.05 m	3 EPB ceramics, 1 ChupBW	Semi-compact yellowish red sandy loam (5YR5/8), 0.05–0.38 m	None	Caliche or calcrete layer 0.38–0.40+ m	None
ST 9	869.57	967.56	Central, 2 m north Feature 4	0.4 m	Friable yellowish red sand (5YR5/6) with some caliche, surface to 0.1 m	1 EPP ceramic	Semi-compact yellowish red sandy loam (5YR5/8), 0.1–0.4+ m	None	N/A	N/A
ST 10	847.49	950.45	Central	0.37 m	Friable yellowish red sand (5YR5/6) with some caliche, surface to 0.07 m	2 EPB ceramics	Semi-compact yellowish red sandy loam (5YR5/8), 0.07–0.17 m	None	Compact yellowish red sandy loam with caliche (5YR 5/6), 0.17–0.33 on top of caliche 0.33–0.37+ m	None
ST 11	831.28	952.79	Central, in Feature 10	0.4 m	Friable, yellowish-red sand (5YR4/6) with some caliche, surface to 0.27 m	None	Semi-compact yellowish red sandy loam (5YR5/6), 0.27–0.4 m	None	N/A	N/A

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Table 6.2 Shovel Test Results for LA 6829 (continued)

Test No.	North	East	Location	Depth	Surface	Cultural Evidence	Stratum 1	Cultural Evidence	Stratum 2	Cultural Evidence
ST 12	642.59	837.95	South, in Feature 11	0.35 m	Friable, light brown sand (7.5YR6/4), surface to 0.1–0.14 m	None	Semi-compact, light brown, sandy loam with some caliche filaments (7.5YR6/4), 0.1–0.14—0.35 m	None	N/A	N/A
ST 13	524.91	787.29	South, area of surface bone	0.3 m	Friable, yellowish-red sand (5YR4/6) with some caliche, surface to 0.05 m	Bone	Semi-compact, yellowish-red sandy loam (5YR5/6), 0.05–0.2 m	None	Caliche	None
ST 14	949.2	995.15	North-central, in Feature 17	0.3 m	Friable, dark gray, ash-stained sands (7.5YR4/3), surface to 0.06 m	15 bone, 75 ceramics 1 burned caliche, 18 flakes, 1 seed—Feature 17 fill	Semi-compact, dark gray, ash-stained sandy loam (7.5YR4/3), 0.06–0.22 m; Feature 17 fill on top of Feature 36 (possible floor hearth with dark gray ash and charcoal (7.5YR5/1), 0.22–0.3+ m	12 bone, 14 flakes, 35 ceramics (all types), 1 quartz crystal, 1 burned caliche	Feature 17 fill within reddish-brown, sandy loam with caliche (5YR5/6), 0.22–0.3+ m	None
ST 15	872.62	946.04	Central, 3 m west of Feature 8	0.6 m	Friable, yellowish-red sand (5YR5/6), surface to 0.02 m	1 core, 1 flake, 4 EPB ceramics, surface to 0.1 m	Semi-compact, yellowish-red sandy loam (5YR5/8), 0.02–0.3 m	None—see previous list	Compact, yellowish-red, sandy loam with caliche inclusions (5YR4/6), 0.3–0.6 m	None
ST 16	967.45	1016.56	North-central	0.4 m	Friable, yellowish-red sand (5YR5/6), surface to 0.02–0.07 m	None	Semi-compact, yellowish-red sandy loam (5YR5/8), 0.02–0.07—0.12–0.18 m	None	Compact, yellowish-red sandy loam (5YR5/8), 0.12–0.18—0.4+ m	None
ST 17	986.99	1024.69	North	0.6 m	Friable, strong brown sand (7.5YR4/6), surface to 0.1 m	None	Semi-compact, strong brown sand (7.5YR4/6), 0.1–0.18 m	None	Compact, strong brown, sandy loam with few caliche nodules (7.5YR5/6), 0.18–0.6 m	3 EPB ceramics 0.2–0.3 m
ST 18	1007.39	1031.33	North	0.4 m	Friable, brown sand (7.5YR5/4), surface to 0.04–0.08 m	None	Semi-compact, brown sand (7.5YR5/4), 0.04–0.08—0.1–0.18 m	None	Compact, strong brown, sandy loam with few caliche nodules (7.5YR4/6), 0.1–0.18—0.4+ m	None
ST 19	1020.81	1046.14	North	0.3 m	Friable, brown sand (7.5YR5/4), surface to 0.05–0.09 m	None	Semi-compact, brown sand (7.5YR5/4), 0.05–0.09—0.3+ m	None	N/A	N/A
ST 20	1062.55	1057.84	Not excavated	0	N/A	N/A	N/A	N/A	N/A	N/A
ST 21	661.83	847.45	South	0.3 m	Friable, reddish-yellow sand (5YR6/6), surface to 0.1 m	None	Semi-compact, yellowish-red, sandy loam with some caliche (5YR5/6), 0.1–0.3 m	None	N/A	N/A
ST 22	726.51	898.23	South	0.3 m	Friable, yellowish-red sand (5YR5/6), surface to 0.1 m	None	Semi-compact, reddish-yellow sandy loam with some caliche (5YR6/6), 0.1–0.3 m	None	N/A	N/A
ST 23	810.44	943.22	Central	0.3 m	Friable, yellowish-red sand (5YR5/6), surface to 0.1 m	None	Semi-compact, yellowish-red sandy loam with some caliche (5YR5/6), 0.1–0.3 m	None	N/A	N/A

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Table 6.3 Artifacts Collected During Testing at the Jaca site (LA 6829)

Horizontal Provenience	Prehistoric									Historic					
Unit/Level	**FS**	**FT**	**PP**	**GS**	**FCR**	**CER**	**C14**	**Other**	**Fau**	**Cans**	**Glass**	**Metal**	**Cer**	**Other**	**TOTAL**
Surface						32									32
Surface, Feature 10						1									1
ST 1, Level 1	1					4									5
ST 5, Level 1	1				2	2			2						7
ST 6, Level 1						6									6
ST 7, Level 1	3			1	6	7	1								18
ST 8, Level 1						4									4
ST 9, Level 1						1									1
ST 10, Level 1						2									2
ST 14/Feature 17, Surface	6			3		13									22
ST 14/Feature 17, Level 1	18				1	75		1	15						110
ST 14/Feature 17, Level 2	8					28		1	10						47
ST 14/Feature 17, Level 3	6					7		1	2						16
ST 15, Level 3	2					4									6
ST 17, Level 3						3									3
TOTALS	45			4	9	189	1	3	29						280

FS= Flaked stone PP=Projectile point FCR= Fire cracked rock FAU= Faunal FT=Flaked tool
GS= Ground stone CER= Ceramic (prehistoric) Cer= Ceramic (historic)

graphic preservation of cultural materials. The majority of the features on the site occur on the uphill, or northern portion of the site. Although coppice dunes are present across the site, in the northern portion the interdunal areas are relatively well preserved. In particular, soil/sediment units that correspond to the Formative age Organ III eolian sediments (Ab and Bw horizons) tend to be preserved in this area. Downslope to the south, in the 850 N–700 N area, the slope increases, surfaces are deflated, and there is poor preservation of features. Although there are coppice dunes in this area, they tend to be composed almost entirely of historic sands, and interdunal areas are eroded down to either the Organ III Bw horizon or Organ I Bk horizons (e.g., BT 7, Figure 6.6). Some interdunal areas in this more steeply sloping section are even eroded to the middle Pleistocene calcrete. Finally, at the south end of the site, the slope decreases again as it gives way to a marginal playa and dunal area. Preservation in this area is variable as many interdunal areas are eroded to calcrete or the Organ I Bk horizon. There are, however, pockets of better-preserved matrix here; excavations into the large (> 2m) coppice dunes in this area did reveal some preserved examples of an Ab/cultural horizon overlying the Organ I Bk horizon (e.g., BT 3, see Figure 6.6).

The surface slope and resulting variability in preservation on this site are a direct result of it being located at the distal margin of a bajada (coalesced alluvial fans) that extends from the Jarilla

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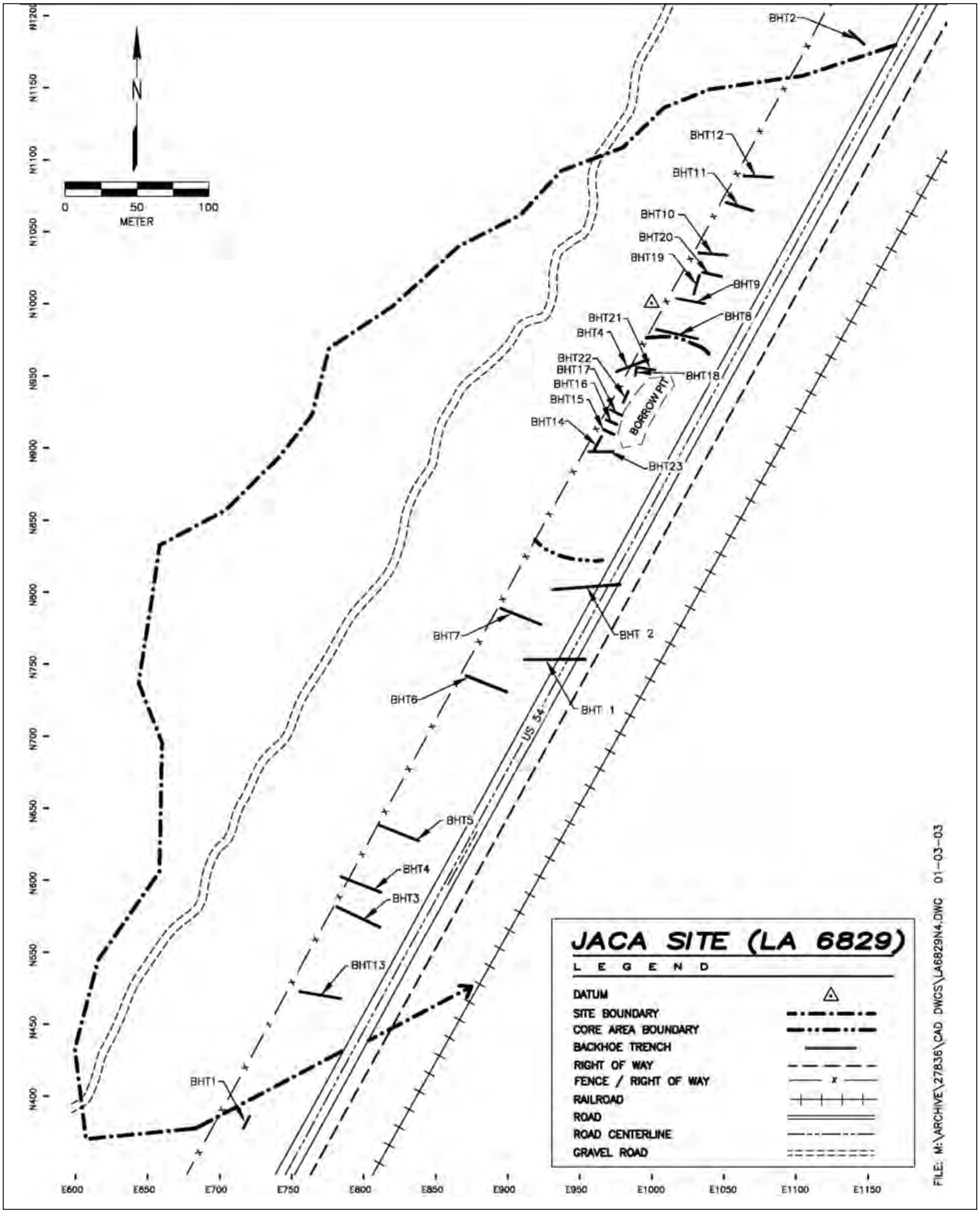

Figure 6.5 Distribution of Backhoe Trenches at Jaca Site (LA 6829).

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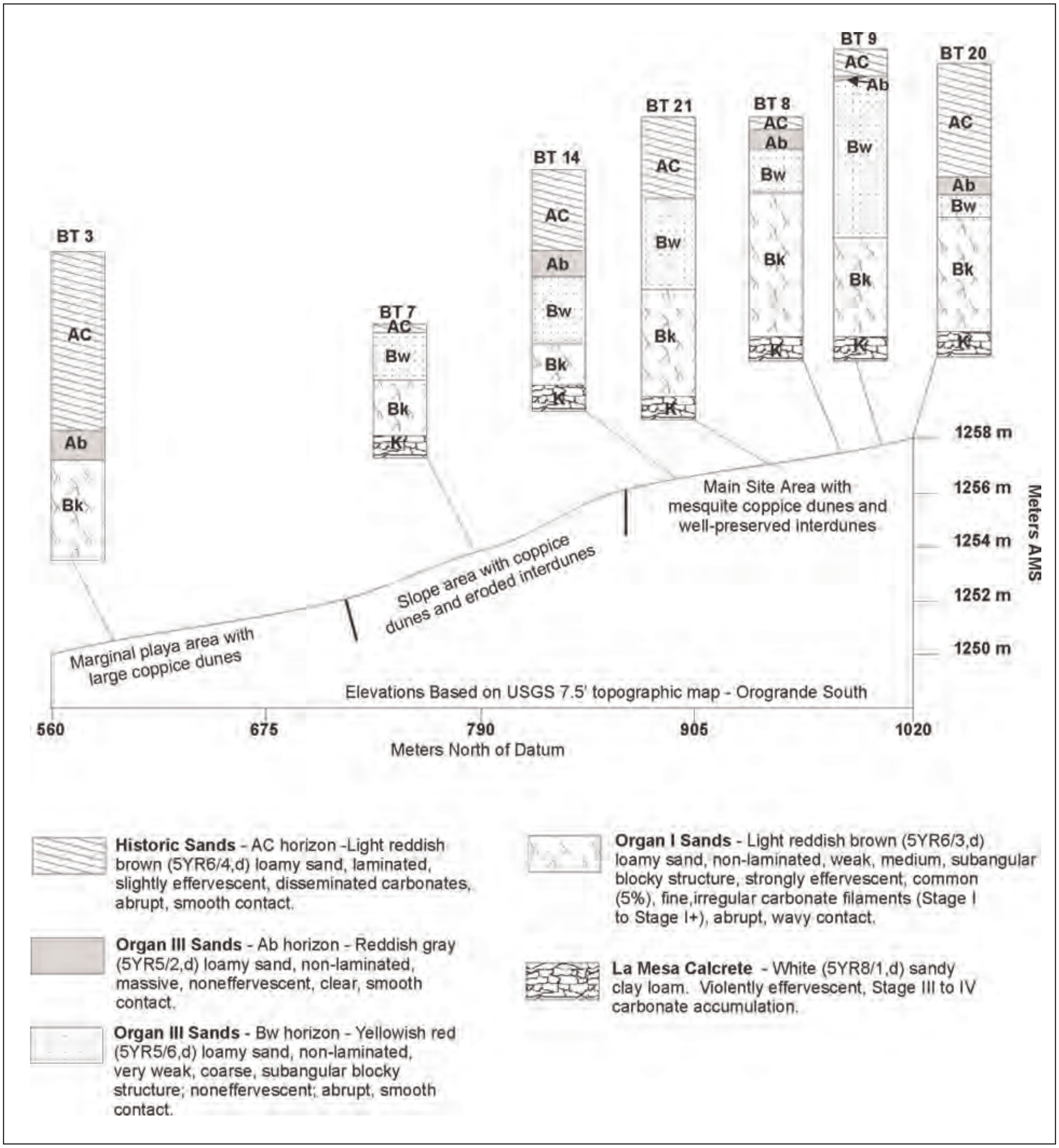

Figure 6.6 **Selected backhoe trenches, their stratigraphy, and relationship to the landscape at LA 6829.**

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Mountains. The majority of features are located on a well-drained, higher portion of the bajada that would have been less subject to flooding during periods of rainfall. The lower portion of the study area falls on the margin of a playa area that occurs at the terminal end of the bajada. These relationships are apparent on a three dimensional net plot of the USGS digital elevation model (DEM) of the 7.5' Orogrande South topographic map (Figure 6.7). From a strictly geomorphological/geoarchaeological perspective, the site is well positioned to take advantage of water runoff from the bajada while keeping the occupied area dry, and also benefit from the horticultural possibilities within the adjacent playa.

With regard to the general stratigraphy observed at the site, most trenches exhibit sediments that appear to correlate to the Historic, Organ III (100–1,100 B.P.), and Organ I (2,200–7,000 B.P.) eolian units proposed by Monger (1993). These units overlie the middle Pleistocene-aged La Mesa calcrete. With regard to the age estimates for the Organ units, recent studies by Smith (1999, 2001; Smith *et al.* 2001) suggest that the sediments with Organ III characteristics may actually span a time frame of ca. 100–2,400 B.P. The cultural materials on the site are primarily associated with the Ab and Bw horizons of the Organ III sediments, although excavated features often intrude into the Organ I Bk horizon and La Mesa calcrete.

The surficial deposit at the site (Unit 1) consists of 20–30 cm of historic sands. These sediments are generally light reddish brown (5YR6/4, d) and have a loamy sand texture. In general, the Unit 1 sediments are coarsely laminated and lack a significant gravel component. Preservation of the historic sands across the site is variable. In interdunal areas, Unit 1 may vary from 0–40 cm thick. Within the mesquite coppice dunes, over two meters of these laminated sands may be preserved and, as a result, this is the predominant material comprising the dunes. Older Organ III and Organ

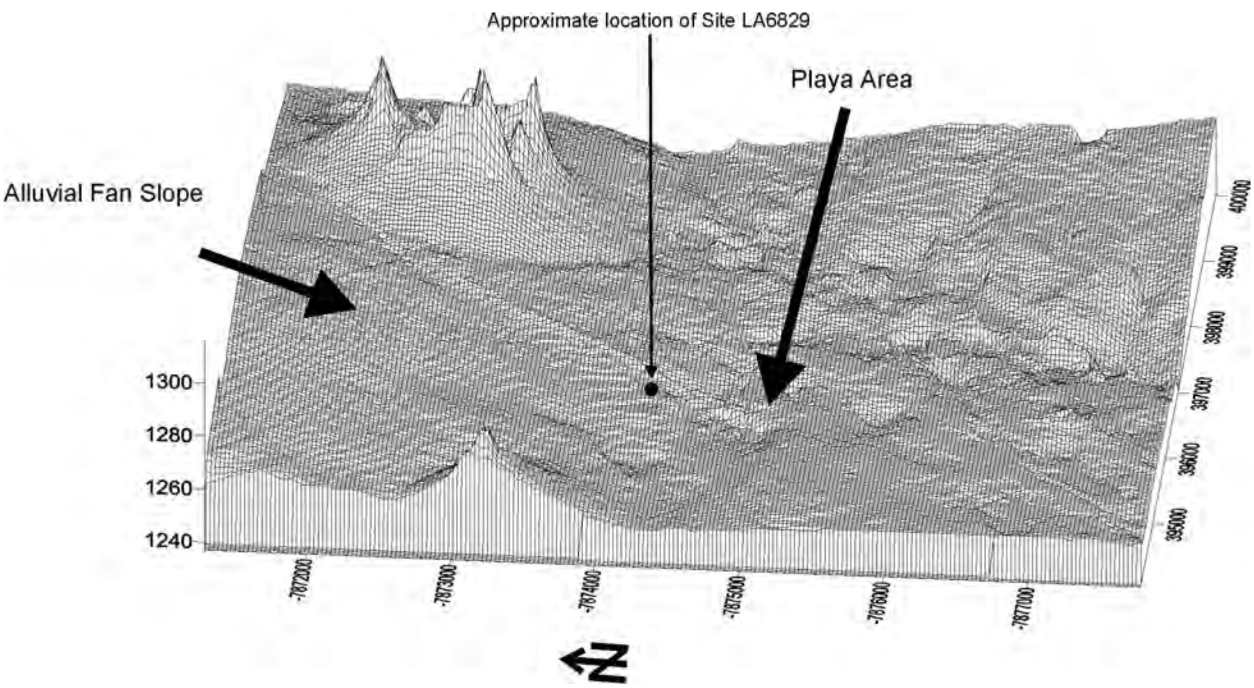

Figure 6.7 Three dimensional net plot of the USGS digital elevation model for a portion of the 7.5' Orogrande South topographic map.

(Notice the position of the site at the distal margin of the bajada and immediately above the potholed playa terrain to the south of the bajada. The northeasterly trending trace that goes immediately by the site is the US 54 roadbed.)

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I sediments, however, are often preserved at the base of the dunes. The surficial Unit 1 sediments appear to be historic in origin and probably date to within the last 100 years. For this reason they are considered to have low archeological potential. It is possible, however, that some historic cultural materials may be incorporated into the sands. On the site, cultural features were observed on the surface only in areas where Unit 1 was absent or very thin (e.g., in interdunal areas).

In relatively undisturbed interdunal and dunal areas Unit 1 is often underlain by a thin (approximately 10-cm thick) remnant of a soil Ab horizon (Unit 2). It is composed of a reddish-gray (5YR5/2, d) loamy sand. The humate-enriched appearance of Unit 2 is very apparent and often grades into an even darker cultural horizon (still part of the Ab), making differentiation between natural Ab horizons and culturally darkened horizons a challenge. Based on its stratigraphic position and underlying Bw horizon (see Unit 3 below), this unit appears to correlate with the Organ III (100–1,100 B.P.) described by Monger (1993) or the Q3 sediments (100–7,300 B.P.) described by Blair *et al.* (1990). The Ab horizon is significant because it indicates a stable surface that supported vegetation and was probably a very favorable surface for prehistoric inhabitants.

During the testing phase, an example of the A horizon was observed directly overlying the Organ I Bk horizon (2,100–7000 B.P.) and tentatively was considered to be contemporaneous with the Bk horizon. The additional backhoe trenches conducted during the mitigation phase indicate that the Ab horizon actually is associated with the Organ III interval (100–1,100 B.P.). Over the course of the investigations, it was found that the Ab horizon is typically underlain by the Organ III Bw horizon. The Ab horizon only overlies the Organ I Bk horizon in areas where eolian deposition during the Organ III interval was minimal (e.g., BHT 23, within the southern portion of the core area). Where the Organ III sands accumulated to a greater depth (which is the case over most of the site), the Bw horizon was able to develop and separate the Ab and Bk horizons. Thus, the Ab horizon is considered to be contemporaneous with at least the latter part of the Formative-period component observed on the site. As a result, this suggests that occupation of the site occurred (or at least concluded) during a period of landscape stability that supported a vegetative cover. Considering that the sediments were deposited as sand sheets, this vegetative cover was probably dominated by grasses.

Unit 2 transitions smoothly into the non-calcareous Bw horizon. The Bw horizon is distinct because of its slightly harder consistence (though still friable) and brighter chromas (yellowish-red, 5YR5/6) relative to the overlying Ab horizon. The characteristics of this Bw horizon match those associated with the Organ III eolian sediments, with similar age estimates as those proposed for the overlying Ab horizon. Given the Formative age estimates for the cultural materials observed in the field, the sediments comprising the Ab and Bw horizons were probably accumulating during the Late Formative occupation and stablized and underwent pedogenesis during the later part of this occupation.

A Bk horizon (Unit 3) with a Stage I accumulation of calcium carbonate filaments unconformably underlies the Bw horizon. The boundary between the Bw and Bk horizons is sharp and often wavy, indicating an eroded unconformity. The sediments comprising the Bk horizon are typically a light reddish-brown (5YR6/3), loamy sand to sandy loam. These characteristics suggest that this unit correlates with the Organ I eolian sediments (ca. 2,100–7,000 B.P.). As a result, the potential for these sediments to yield non-intrusive cultural materials is limited to Middle and Late Archaic components. Several features that appear to originate from the Organ III Formative level were excavated through this unit, however, a testament to the induration imparted to the sandy sediments by the pedogenic carbonates.

The basal unit at site LA 6829 is the La Mesa calcrete. This unit is white (5YR8/1, d) and has a

clay loam texture. In excavations, this unit is evident by its white color and hardness. Previous work in the region (Gile *et al.* 1981; Blair *et al.* 1990; Monger 1993) has proposed that the calcrete is Mid-Pleistocene in age (ca. 250,000 B.P.) and thus predates the accepted range for human occupation of North America. Accordingly, the calcrete is considered to be the sterile level for archeological excavations. The calcrete provides a barrier that cannot easily be breached by the backhoe or hand excavations. Considering that many of the cultural pits on the site are excavated into the calcrete, this helps illustrate the determination and the amount of effort that prehistoric inhabitants must have expended to dig such pits.

Another factor that may have affected the vertical position of cultural materials on the site, and the state of some of the sediments, is foot traffic on sandy sediments. Sandy sediments are particularly susceptible to vertical displacement of artifacts by foot traffic. Thus, artifacts may not necessarily be in the same place in which they were originally deposited. In previous studies of sandy sediments, vertical displacements of up to 10 cm (Schiffer 1987) were typically observed. As a result, materials originally deposited on the surface of the Ab horizon may have been displaced downward in the profile so that they are within the Bw horizon or even rest on the surface of the Organ I Bk horizon.

Evidence of disturbance by foot traffic was observed in the vicinity of BT 14. Whereas the boundaries between the Ab, Bw, and Bk horizons were typically easy to distinguish over much of the site, the boundaries of these horizons were very difficult to discriminate in this specific area. In addition, the sediments here displayed an unusual coarse crumb or granular structure that was not typical of pristine Organ III and Organ I sediments. In previous studies of finer-grained sediments Nials (1982) noted that foot traffic or vehicular traffic frequently caused the formation of a coarse, platy structure. The sandy nature of the sediments at LA 6829 is probably not conducive to the formation of platy structure, but there appears to be enough of a silt component in these sands that foot traffic caused a weak aggregation of sand and silt (the crumb structure). The fact that the overlying Historic sands exhibited no evidence of such disturbance indicates that the formation of the crumb structure occurred in prehistoric time. It is no coincidence that several features and structures were observed in the sediments immediately south and southeast of BT 14, and it is clear from the sediments that this area received a substantial amount of foot traffic. As a result, vertical displacement of artifacts may have occurred in this area.

Data Recovery Strategy

Data recovery investigations at LA 6829 were initiated in the spring of 2000. During testing, a datum was established in the northwest portion of the site, just outside the right-of-way on BLM land. A topographic map had been prepared as part of the testing phase. During data recovery, a site grid was established, with the datum assigned the grid provenience of N1000/E1000, and an arbitrary elevation of 100 m. All surface artifacts within the right-of-way were collected during data recovery.

The data recovery plan developed for LA 6829 called for investigations to be concentrated in the core area of the site. The core area investigations began with a controlled surface collection, using a grid of 4 x 4-m units. Outside of the core area, the sparsely concentrated artifacts were point provenienced with the total station instrument, and collected. As for subsurface investigations, the plan called for the following:

- Small thermal features excavated in 5 x 5 m blocks.
- Larger midden features or possible pithouses, such as Features 1, 8, and 17, excavated in blocks large enough to encompass the stains.
- Fire-cracked rock scatters (Features 2, 3, 6, and 7) trenched in search of associated stains.
- Mechanical stripping of the core area subse-

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quent to completion of hand excavations, and any additional features encountered mapped and sectioned, with important features fully excavated.

These goals were accomplished during the course of data recovery excavations. The surface assemblage was collected and 30 excavation blocks, ranging in size from 2 x 2–11 x 12 m,[1] were established over the features identified during site testing and data recovery. Table 6.4 summarizes relevant data on all hand excavations carried out at the site during the data recovery phase, and Figures 6.8 and 6.9 show the distribution of hand excavations across the site.

All but four of the unit blocks (Block 9, 13, 19, and 30) were excavated before mechanical scraping was carried out. Mechanical scraping was conducted in the core area (Figure 6.10) to remove extensive dunal and sheet sand deposits, which ranged from 50 cm–2 m above cultural remains exposed in surrounding areas. The mechanical scraping uncovered extensive portions of the Ab horizon formed within the upper portion of Organ III-age sediments (100–1,100 B.P.). These portions of the Ab horizon extended from close to Block 13 at the south end, east to Block 18, and west of the borrow pit north to Block 16. Initially, what proved to be the Ab horizon was thought to represent possible cultural features with anthropogenic staining. Six 0.5 x 0.5-m shovel test pits were excavated into this horizon to determine if the staining was cultural, or simply an organic humic lens formed within the Organ III age sediment. This testing strategy revealed that most of this staining was not anthropogenic, but rather was indeed an Ab horizon, which formed naturally within sediments already containing cultural materials. The majority of Ab-horizon-stained sediments were preserved under mesquite coppice dunes.

In some instances features were found in association with the Ab horizon. A few of these cultural features were identified as contemporary with the formation of the Ab horizon within Organ III age sediments, while others were situated below the Ab horizon. This indicates occupation of the site occurred before, and during, formation of the Ab horizon within the upper Organ III sediments. After excavation of these features was completed, several backhoe trenches were excavated into other areas of the Ab horizon, and three of these trenches uncovered additional subsurface features. They also revealed the Ab soil horizon to be 10–20-cm deep. Cultural materials were also observed in the uppermost few cm of the lower Organ III sediments, underlying the Ab soil horizon within the upper portion of the Organ III.

Where not exposed within shovel test pits or backhoe trenches, portions of the core area containing the Ab horizon were investigated with shovel trenches (see Figures 6.8 and 6.9). These trenches were all 0.25-m wide (the approximate width of a shovel), and their lengths varied to cover the horizontal extent of the Ab horizon patches or potential features. The trenches were excavated in natural levels. Where subsurface cultural features were exposed through shovel trenching, block excavations were then placed over these features (Blocks 9, 13, and 19). In the area where BHT 15–22 were excavated, the Ab horizon was mechanically scraped, down to the lower Organ III sediments (i.e., the depth at which Ab horizon staining was lacking). This scraping was conducted to determine if additional features were present below the Ab horizon. Some additional features were indeed exposed within the lower Organ III sediments, and these were bisected, profiled, and, in most cases, completely excavated. Given that these features were completely exposed by mechanical scraping, it was not necessary to lay out excavation blocks around them. The only

[1] Although it was initially agreed that 5 x 5 m blocks would be excavated over each feature, this strategy was modified somewhat given the high number of surface features and subsurface findings, and the fact that many features uncovered were small, in deflated context, and/or immediately adjacent to larger blocks. Accordingly, some features were excavated within units as small as 2 x 2 m, and some others were not excavated within units. This modification was approved following consultation with the NMSHTD, the New Mexico HPD (SHPO), and the BLM.

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Table 6.4 Excavation Units at LA 6829

Type	Unit No.	Size (m^2)	Northing	Easting	Feature	Depth Below Datum (100 m)	Volume (m^3)	Comment
Block	1	40	947–951	1010–1017	001, 041, 043, 044, 045, 046, 048	99.53–98.93	4.61	
Block	2	39	945–951	1003–1009	035, 042, 061, 062	99.68–98.60	4.83	
Block	3	88	942–953	992–1002	017, 017.1, 017.2, 036, 079, 080–084, 086, 087, 089–091, 091a-z, 096, 116, 120, 121, 153–155, 157, 160, 162, 163, 171–173, 180–182, 184, 188	99.70–98.00	35.3	
Block	4	9	934–936	1009–1011	049, 063	99.17–98.69	0.52	
Block	5	10	895	990–999	7	98.60–98.43	0.54	
Block	6	10	915	1000–1009	003, 101	99.00–99.74	0.89	
Block	7	24	872–876	952–956	008,064, 065	98.52–98.10	1.92	
Block	8	25	865–869	961–965	4	98.27–98.01	2.42	
Block	9	58	895–904	961–969	110, 111, 137, 138, 140, 141,142, 164–169, 178, 189, 190, 191, 197	98.45–97.86	6.11	
Block	10	19	932–936	985–989	5	99.30–98.29	3.06	
Block	11	31	870–877	960–963	066, 132, 135, 1/2 of F. 038, 151	98.44–97.94	4.51	
Block	12	12	872–876	957–959	(1/2 of F. 038)	98.69–98.00	2.08	
Block	13	31	889–894	953–961	057, 185, 186, 195	98.70–97.76	6.94	
Block	14	29	889–894	967–972	056, 076, 077, 078, 085	98.76–98.02	3.34	
Block	15	15	939–941	988–992	75	99.22–98.62	1.95	
Block	16	79.4	942–951.4	983–992	054, 054.1-22, 114–116, 158, 159,174, 196, 198, 201	99.60–97.85	26.78	
Block	17	21	1021–1026	1022–1026	047, 092, 093, 094, 095	100.05–99.60	1.66	
Block	18	13	900–903	972–975	058, 134, 179	98.66–97.65	4.33	
Block	19	16	884–887	969–972	119	98.50–98.26	1.03	
Block	20							unassigned block #
Block	21	6.25	862.75–864	966–968	060, 170	98.32–97.89	0.54	
Block	22	6	617–618	816–818	39	98.92–98.55	0.46	
Block	23	6	641–642	834–836	11	91.14–94.03	0.92	
Block	24	4	650–651	840–841	40	94.15–93.97	0.21	
Block	25	4	677–678	858–859	52	94.47–94.23	0.77	
Block	26	4	832–833	950–951	53	97.63–97.49	0.25	
Block	27	6	869–871	976–977	059, 183	98.22–98.01	0.33	
Block	28	4	664–665	854–855	177	94.92–94.79	0.19	
Block	29	11	938–941	983–985	147	98.91–98.15	1.88	
Block	30	15	933–936	973–977	146, 146.1, 150, 199, 200	98.75–98.35	1.77	
Block	31	7.8	899–900	956–959	109, 192	98.36–98.08	0.52	
Shovel Test Pit	24	0.25	920.04	975.39	74	98.55–98.10	0.11	0.5 x 0.5 m shovel test
Shovel Test Pit	25	0.25	916	973	72	98.71–98.11	0.15	0.5 x 0.5 m shovel test

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Table 6.4 Excavation Units at LA 6829 (continued)

Type	Unit No.	Size (m^2)	Northing	Easting	Feature	Depth Below Datum (100 m)	Volume (m^3)	Comment
Shovel Test Pit	26	0.25	924	971	73	99.58–99.28	0.08	0.5 x 0.5 m shovel test
Shovel Test Pit	27	0.25	900	958	68	98.35–98.05	0.08	0.5 x 0.5 m shovel test
Shovel Test Pit	28	0.25	916	968	71	99.64–99.34	0.08	0.5 x 0.5 m shovel test
Shovel Test Pit	29	0.25	910	966	70	98.45–98.25	0.05	0.5 x 0.5 m shovel test
Shovel Trench	1	0.5	885	970–974	119	98.41–98.17	0.04	Trench 5 m long x .25 m wide; 3 m within Exc. Block 19
Shovel Trench	2	0.25	883–887	971.75	119	98.35–98.13	0.03	Trench 5 m long x .25 m wide; 4 m within Exc. Block 19
Shovel Trench	3	1.25	890–895	964	117	98.40–98.21	0.07	Trench 5 m long x .25 m wide
Shovel Trench	4	1.19	892.5	962–966	117, 136	98.43–98.25	0.14	Trench 5 m long x .25 m wide, bisects Trench 3=4.75 m total length
Shovel Trench	5	0.63	895	962–964	117	98.40–98.35	0.02	Trench 2.5 m long x .25 m wide
Shovel Trench	6	0	897–901	965.5	110, 137, 138, 140, 141, 188, 189, 191	98.40–97.88	0	Trench 5 m long x .25 m wide; Entirely within Exc. Block 9
Shovel Trench	7	2.5	881	952–961	139	98.27–97.98	0.23	Trench 10 m long x .25 m wide
Shovel Trench	8	2.19	881.25–889	959.5	118, 128	98.57–98.09	0.19	Trench 8.75 m long x .25 m wide
Shovel Trench	9	1	894–900	958	109, 143	98.36–98.00	0.12	Trench 6 m long x .25 m wide. 2 m within Block 31
Shovel Trench	10	0	899.5	963–968	141, 142, 166, 189	98.40–98.10	0	Trench 5.75 m long x .25–.50 m wide; Bisected by Trench 6. Entirely within Block 9
Shovel Trench	11	0	901.5	963–965	197	98.33–98.98.25	0	Trench 2.75 m long x .25 m wide; Entirely within Exc. Block 9
Shovel Trench	12	2	828–835	947.8	10	97.75–97.69	0.08	Trench 8 m long x .25 m wide
Shovel Trench	13	1.44	831	946–951	0	97.75–97.69	0.06	Trench 5.75 m long x .25 m wide. Trench bisected by ST 12
Shovel Trench	14	2.5	639–648	835–840	11	94.12–94.00	0.15	Trench 10 m long x .25 m wide
Shovel Trench	15	1.44	443.8	835–840	0	94.14–94.00	0.09	Trench 5.75 m long x .25 m wide. Trench bisected by ST 14
Shovel Trench	16	1.13	546.25	771–775	50	93.03–92.86	0.08	Trench 4.5 m long x .25 m wide.
Shovel Trench	17	0.56	546–548	773.7	50	93.03–92.90	0.04	Trench 2.25 m long x .25 m wide. Trench bisected by ST16
Shovel Trench	18	1	598	798–801	51	93.45–93.23	0.16	Trench 4 m long x .25 m wide
Shovel Trench	19	0.94	596–599	799.7	51	93.55–93.25	0.15	Trench 3.75 m long x .25 m wide. Trench bisected by ST 18
Feature Excavation	55	0.09	929.95	980.45	55	98.58–98.52	0.01	50% of feature excavated
Feature Excavation	97	0.39	929.52	1007.12	97	99.07–99.02	0.02	50% of feature excavated
Feature Excavation	98	0.24	927.5	1003.7	98	99.01–98.96	0.01	50% of feature excavated

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Table 6.4 Excavation Units at LA 6829 (continued)

Type	Unit No.	Size (m^2)	Northing	Easting	Feature	Depth Below Datum (100 m)	Volume (m^3)	Comment
Feature Excavation	99	0.32	921.19	1003.72	99	98.97–98.94	0.01	100% of feature excavated
Feature Excavation	100	0.4	915.05	1001.42	100	98.81–98.77	0.02	100% of feature excavated
Feature Excavation	101	0	915.32	1000.37	101	98.81–98.79	0	Sectioned and identified as NOT A FEATURE
Feature Excavation	102	0.08	913.73	1001.53	102	98.80–98.78	0	Sectioned
Feature Excavation	103	0.12	913.49	1001.99	103	98.79–98.77	0	50% of feature excavated
Feature Excavation	104	0.18	913.33	1000.72	104	98.79–98.77	0	50% of feature excavated
Feature Excavation	105	0.46	910.25	1005.71	105	98.77–98.68	0.04	100% of feature excavated
Feature Excavation	106	0.2	908.6	1005.2	106	98.75–98.66	0.02	100% of feature excavated
Feature Excavation	107	1	919.68	1003.9	107	98.97–98.88	0.09	Identified as NOT A FEATURE
Feature Excavation	108	0.33	905.75	969.3	108	98.51–98.51	0	No definable depth
Feature Excavation	113	0	908.01	973.46	113	98.25	0	Rodent burrow—NOT A FEATURE
Feature Excavation	122	0	1026.47	1028.55	122	99.92	0	Rodent burrow—NOT A FEATURE
Feature Excavation	123	0.3	1026.26	1029.9	123	99.83–99.78	0.02	100% of feature excavated
Feature Excavation	124	0.15	1024.81	1028.62	124	99.85–99.82	0	100% of feature excavated
Feature Excavation	125	0.18	1023.31	1028.4	125	99.81–99.74	0.01	100% of feature excavated
Feature Excavation	126	0.18	1024	1030.56	126	99.81–99.78	0.01	100% of feature excavated
Feature Excavation	127	0.2	1022.55	1033.24	127	99.91–99.85	0.01	100% of feature excavated
Feature Excavation	128	0	883	959	128	98.29–98.22	0	Trowel probe
Feature Excavation	129	0.25	880.22	956.31	129	98.24–97.64	0.19	80% of feature excavated
Feature Excavation	130	0.35	876.52	950.48	130	98.19–98.12	0.02	100% of feature excavated
Feature Excavation	131	0.24	880.4	947.71	131	98.11–98.05	0.01	100% of feature excavated
Feature Excavation	144	0.19	920.71	971.29	144	98.49–98.45	0.01	100% of feature excavated
Feature Excavation	145	0.25	933.9	974.76	145	98.70–98.62	0.02	100% of feature excavated
Feature Excavation	149	0.28	927.97	972.09	149	98.52–98.44	0.02	Probable rodent burrow—NOT A FEATURE
Feature Excavation	152	0.2	774.3	872.92	152	95.62–95.54	0.02	100% of feature excavated, Within West end of BHT 6

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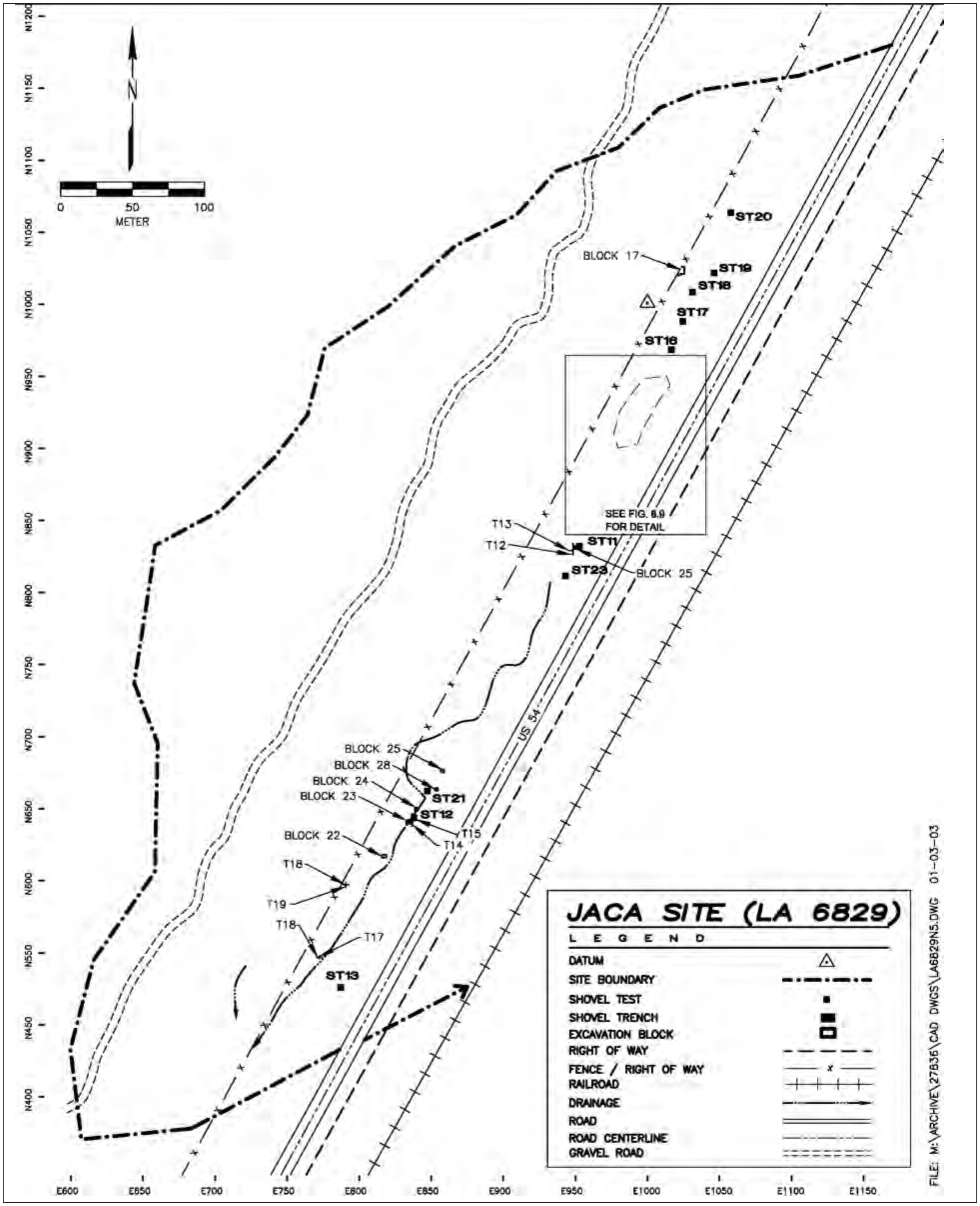

Figure 6.8 Distribution of hand excavation units at the Jaca site (LA 6829).

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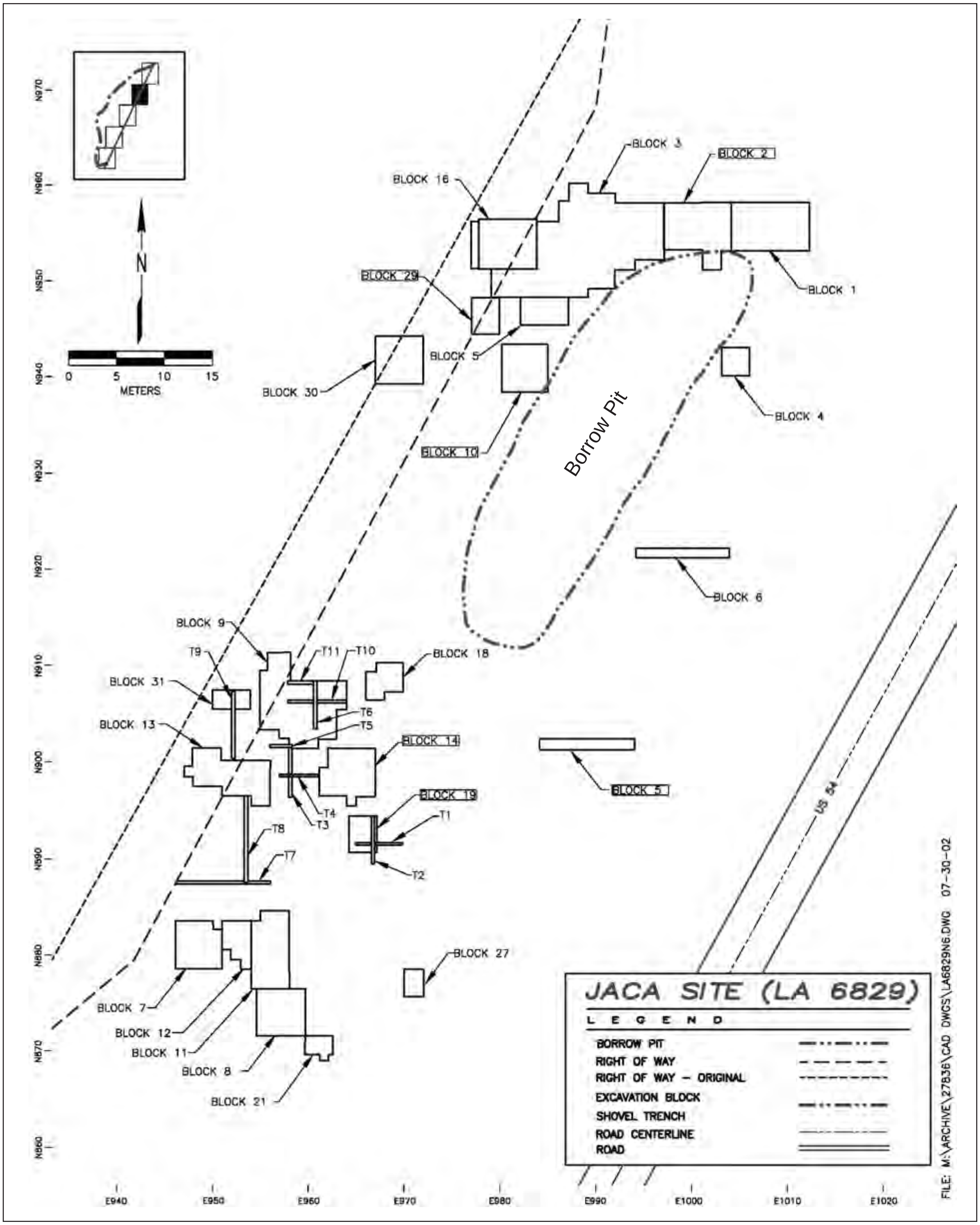

Figure 6.9 Distribution of hand excavation units in the core area of the Jaca site (LA 6829).

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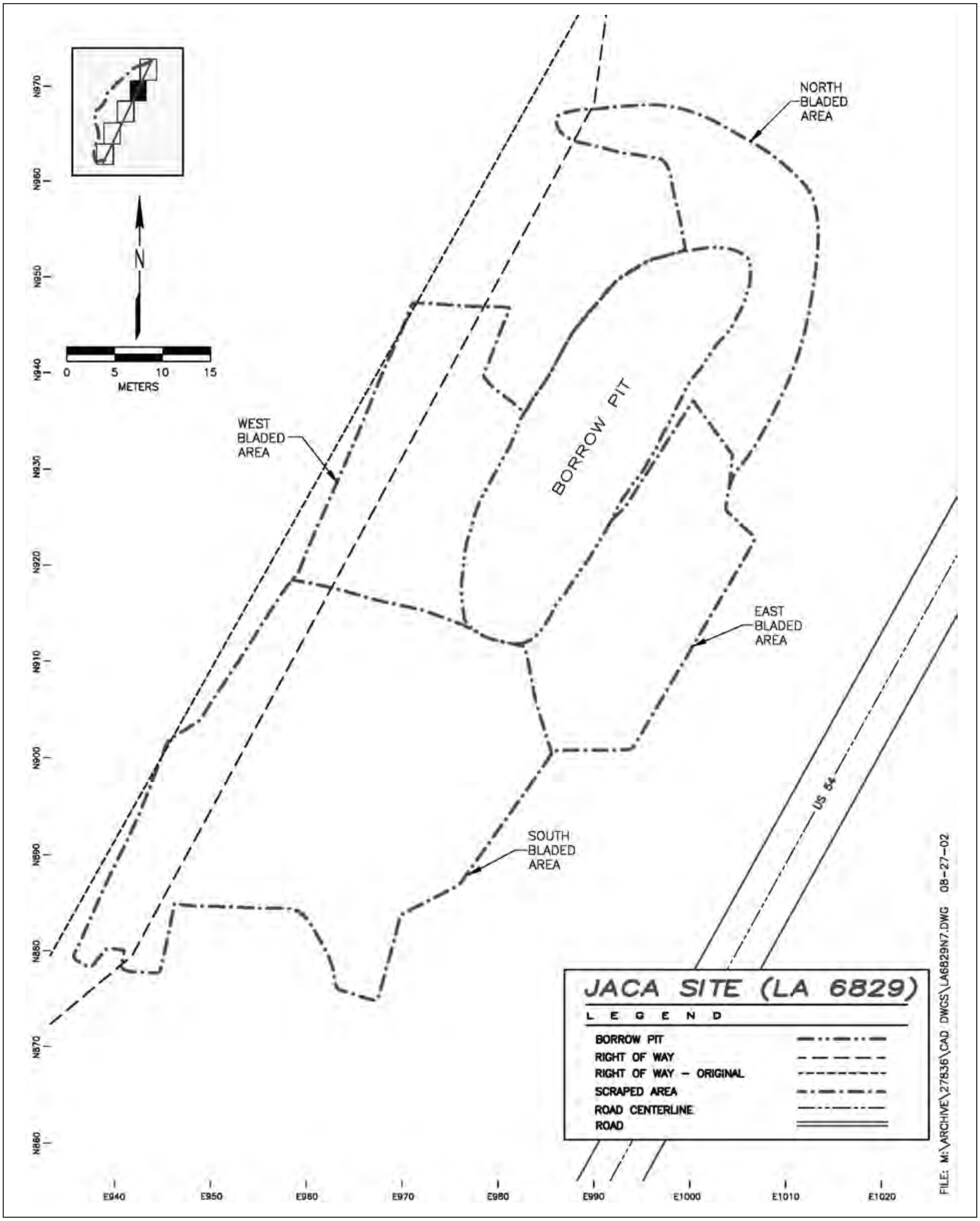

Figure 6.10 Extent of machine-stripping within the core area at the Jaca site (LA 6829).

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exception here was a block excavation (Block 30) that was established and excavated over one large, complex stain that proved to contain structural remains.

In all, a total of 643.45 m^2 was excavated in 30 excavation blocks, which ranged in size from 4–88 m^2. Shovel tests and shovel trenches added to the total hand-excavated area. Six of the shovel trenches fell completely or mostly within block excavations. The remaining 14 shovel trenches did not expose cultural features, and so did not lead to the opening of excavation blocks. The six additional shovel tests, and shovel trenches and portions thereof not within block excavations, exposed a total of 20.52 m^2. Features hand excavated outside of excavation blocks exposed an additional 6.58 m^2. During the testing phase, 22, 0.5 x 0.5-m shovel tests were excavated, although two of these were dug within areas where block excavations were eventually opened, and thus these previously excavated shovel tests add only an additional 5.0 m^2 to the area exposed during data recovery. A total of 120.66 m^3 was excavated within the blocks, 2.5 m^3 in shovel test pits not within blocks, 1.65 m^3 within shovel trenches not within blocks, and 0.56 m^3 within features excavated outside hand excavation units. In total, hand excavations during both testing and data recovery exposed 675.55 m^2 or 1.8 percent of the total site area within the right-of-way. Total excavated fill by hand was 125.37 m^3.

Twenty-three backhoe trenches were excavated across the site, covering a total of 282.7 m^2 (Table 6.5; see Figure 6.5). This does not include the two backhoe trenches that were excavated just off site to the south and north during the testing phase, which exposed 20.25 m^2. Backhoe trench excavations on the site excavated a total of 217.47 m^3. Taken together, on-site backhoe trench excavations and hand excavations covered 958.25 m^2 or 2.6 percent of the site area within the right-of-way.

Portions of the site core area not excavated by hand or with backhoe trenches were stripped mechanically (see Figure 6.10). The stripped portion of the core area extended 104 m north-south x 39 m east-west. Not including block excavations, backhoe trenches, or the borrow pit (48 m x 13 m), mechanical stripping exposed over 2,050 m^2 within the core area. In the end, less than 18 percent of the core area was not excavated, either mechanically or by hand. This included a small portion against the west edge of the right-of-way, left so as to preserve intact features that would not be impacted following redesign of the right-of-way, the existing borrow pit, and a few small portions against the highway edge where surfaces were previously deflated to below cultural deposits.

North of the core area, backhoe trenching identified subsurface remains, and a small area here was also stripped to uncover features. This is referred to here as the Northeast Scraped area.

Surface Artifact Distributions

Surface artifacts occur in varying densities throughout the right-of-way portion of the site (Figures 6.11–6.14), with the highest concentrations within the core area. North of the core area were extensive sheet sand deposits and mesquite-stabilized coppice dunes. Still, surface artifacts were intermittently visible and recovered north of the core area. To the south of the core area, surface artifact densities decreased abruptly and remain very low over the remaining 600 m to the south site boundary. Among the artifacts recovered from the southern portion of the site was a Middle Archaic period projectile point.

Because of the high surface artifact density within the core area, surface documentation here included a controlled surface collection (Figure 6.15). The highest concentration of artifacts occurs immediately northwest of the borrow pit (Figures 6.16–6.19), which is also where the highest concentration of subsurface features was found on the site. Surface artifact concentrations, in fact, peak immediately east of Feature 54, the communal structure complex (see below). The high density of surface artifacts at this locality will be discussed further in the sections describing the features, below.

Table 6.5 Backhoe Trenches at LA 6829

BHT No	EDM Shot	North/East	North/East	EDM Elevation	Length (m)	Width (m)	Depth (m)	Size (m^2)	Volume (m^3)	Feature	Comment
1	1/2	426.60/716.16	435.40/720.75	92.23/81.14	11	0.75	1.6	8.25	13.2	0	S. of site; excavated during testing phase
2	1/2	1188.70/1137.25	1179.40/1147.53	100.90/101.33	16	0.75	1.2	12	14.4	0	N. of site; excavated during testing phase
3	2/1	568.31/812.50	582.48/780.54	94.08/94.25	31.96	0.75	1.15	23.97	27.57	0	
4	1/2	592.74/821.43	603.76/793.58	93.79/93.79	27.85	0.75	0.42	20.89	8.77	0	
5	1/2	635.76/811.99	624.83/839.77	93.73/93.93	27.78	0.75	0.42	20.84	8.75	0	
6	1/2	733.34/900.10	744.20/871.90	95.54/96.44	28.2	0.75	0.8	21.15	16.92	152	
7	1/2	789.90/895.30	779.81/923.56	96.43/96.36	28.26	0.75	0.42	21.2	8.9	0	
8	1/2	983.86/1003.38	977.31/1032.71	99.52/99.80	29.33	0.75	0.92	22	20.24	0	
9	1/2	1005.06/1017.59	1001.38/1.37.39	100.24/99.89	19.8	0.75	1.06	14.85	15.74	0	
10	1/2	1036.24/1033.45	1034.37/1053.58	100.45/100.20	20.13	0.75	1.05	15.1	15.85	0	
11	1/2	1071.17/1052.90	1065.26/1071.99	100.45/100.04	19.09	0.75	1.32	14.32	18.9	0	
12	1/2	1089.55/1065.45	1088.14/1085.45	100.26/100.34	20	0.75	0.9	15	13.5	0	
13	3/4	518.61/785.96	523.20/756.25	93.45/92.30	29.71	0.75	0.6	22.28	13.37	0	
14	1/2	1023.39/1035.03	1020.27/1049.36	100.06/100.03	14.33	0.75	0.99	10.75	10.64	0	
15	1/2	910.33/974.06	914.14/965.73	98.33/98.44	8.33	0.75	0.53	6.25	3.31	0	
16	1/2	917.91/976.82	921.05/968.80	98.46/98.67	8.02	0.75	0.55	6.02	3.31	144	
17	1/2	923.92/980.30	927.80/971.47	98.52/98.90	8.83	0.75	0.5	6.62	3.31	149	
18	1/2	951.20/988.92	958.41/990.34	99.12/99.42	7.21	0.75	0.68	5.41	3.68	0	
19	1/2	1021.46/1033.21	1008.00/1029.79	100.11/100.04	13.46	0.75	0.83	10.1	8.38	0	
20	1/2	1023.39/1035.03	1020.27/1049.36	100.06/100.03	14.33	0.75	0.99	10.75	10.64	0	
21	1/2	957.63/989.59	955.26/1001.75	99.22/99.22	12.16	0.75	0.74	9.12	6.75	148	
22	1/2	939.36/983.33	932.97/980.37	98.81/98.72	6.39	0.75	0.73	4.79	3.5	147	
23	1/2	898.51/978.15	899.00/972.00	98.32/98.37	6.15	0.75	0.45	4.61	2.08	0	

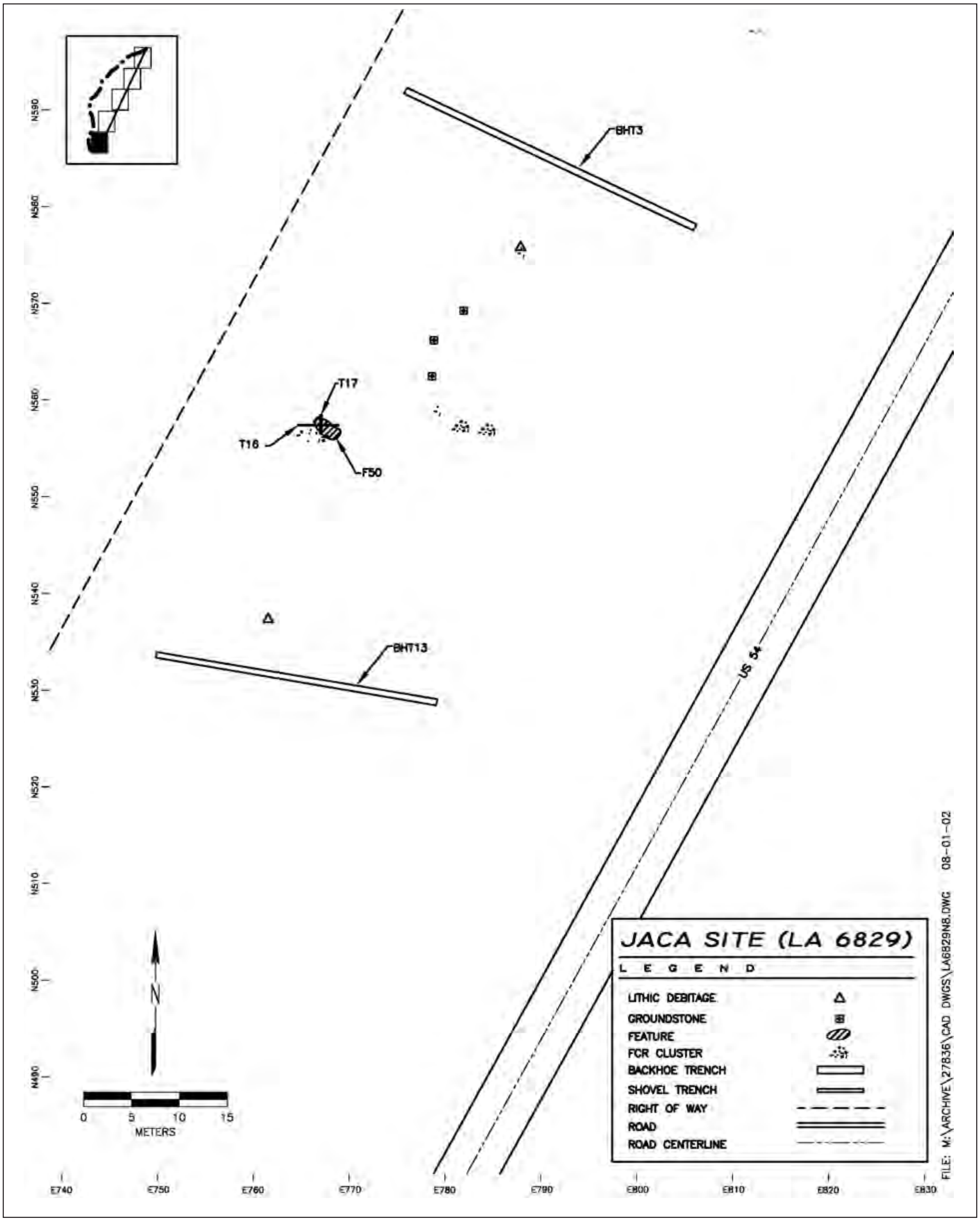

Figure 6.11 **Southern end of the Jaca site (LA 6829).**

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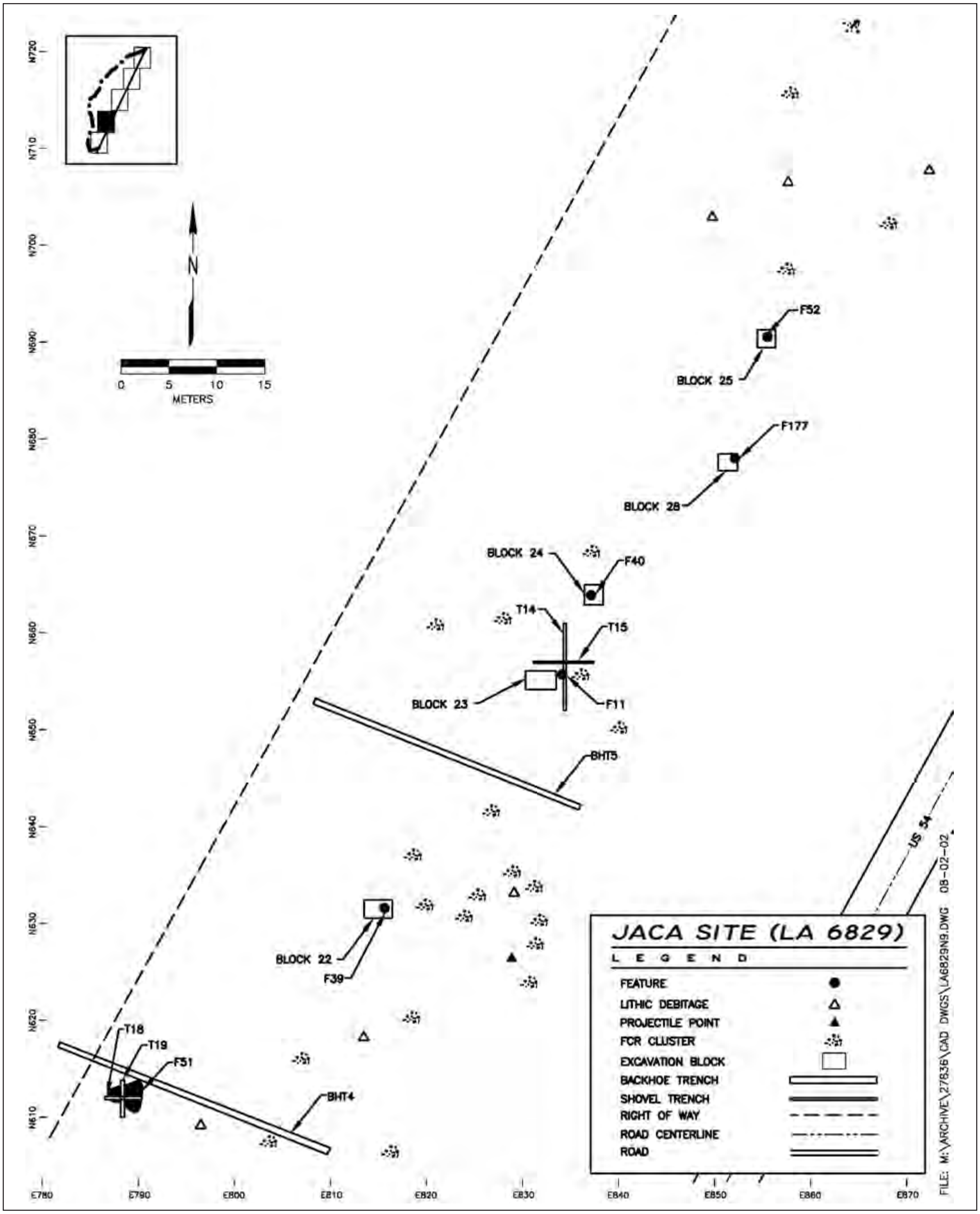

Figure 6.12 South-central portion of the Jaca site (LA 6829).

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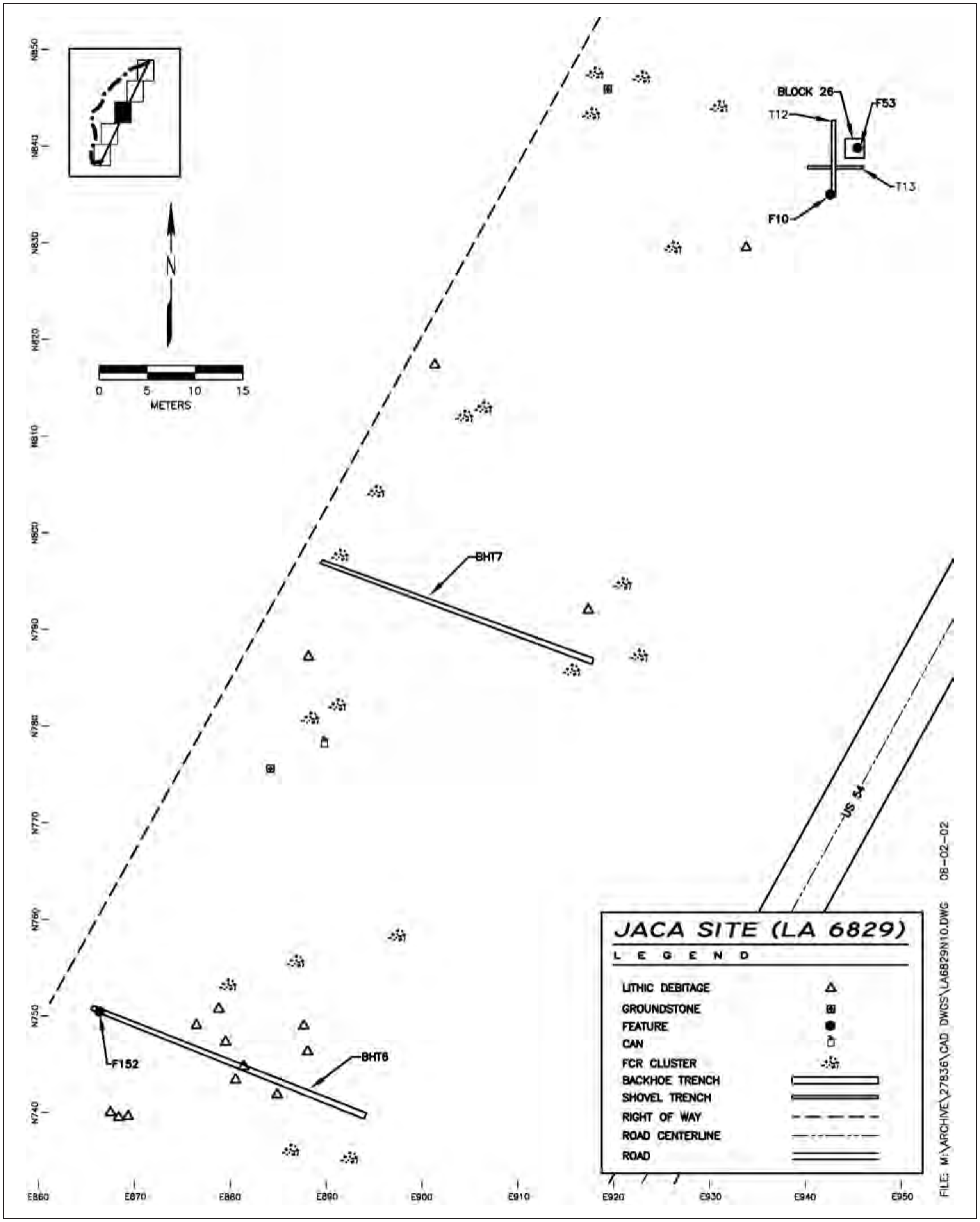

Figure 6.13 Central portion of the Jaca site (LA 6829).

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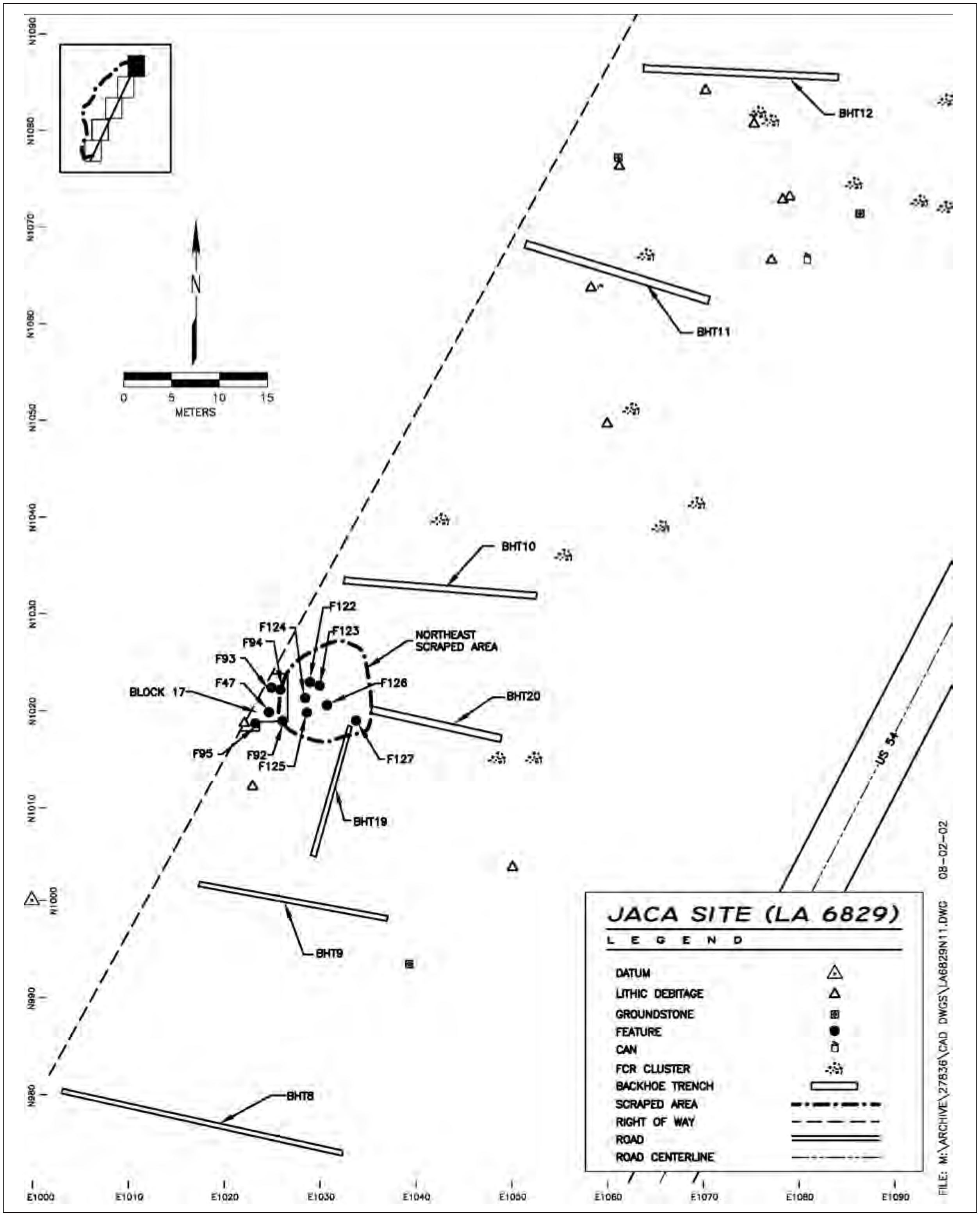

Figure 6.14 Northern end of the Jaca site (LA 6829).

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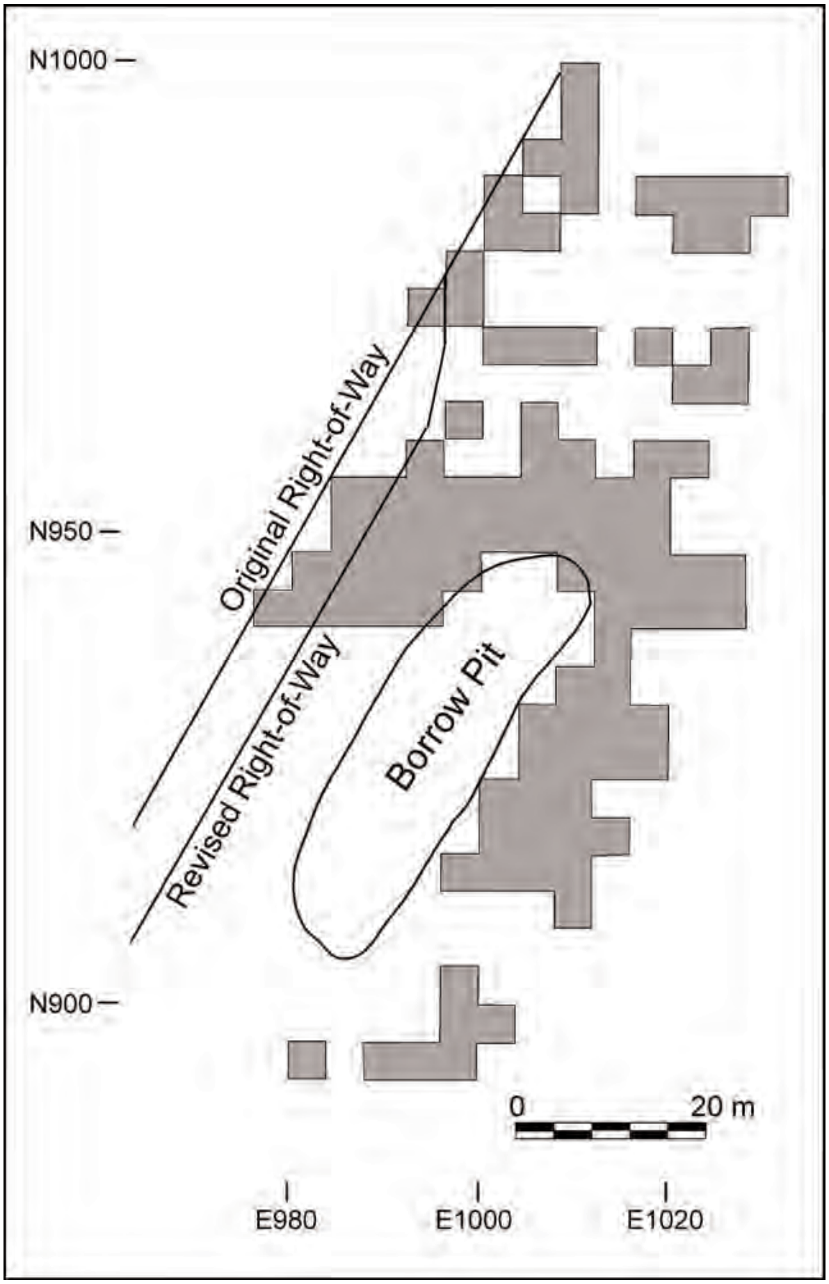

Figure 6.15 Core area at the Jaca site (LA 6829), showing 4 x 4 m surface units from which artifacts were collected.

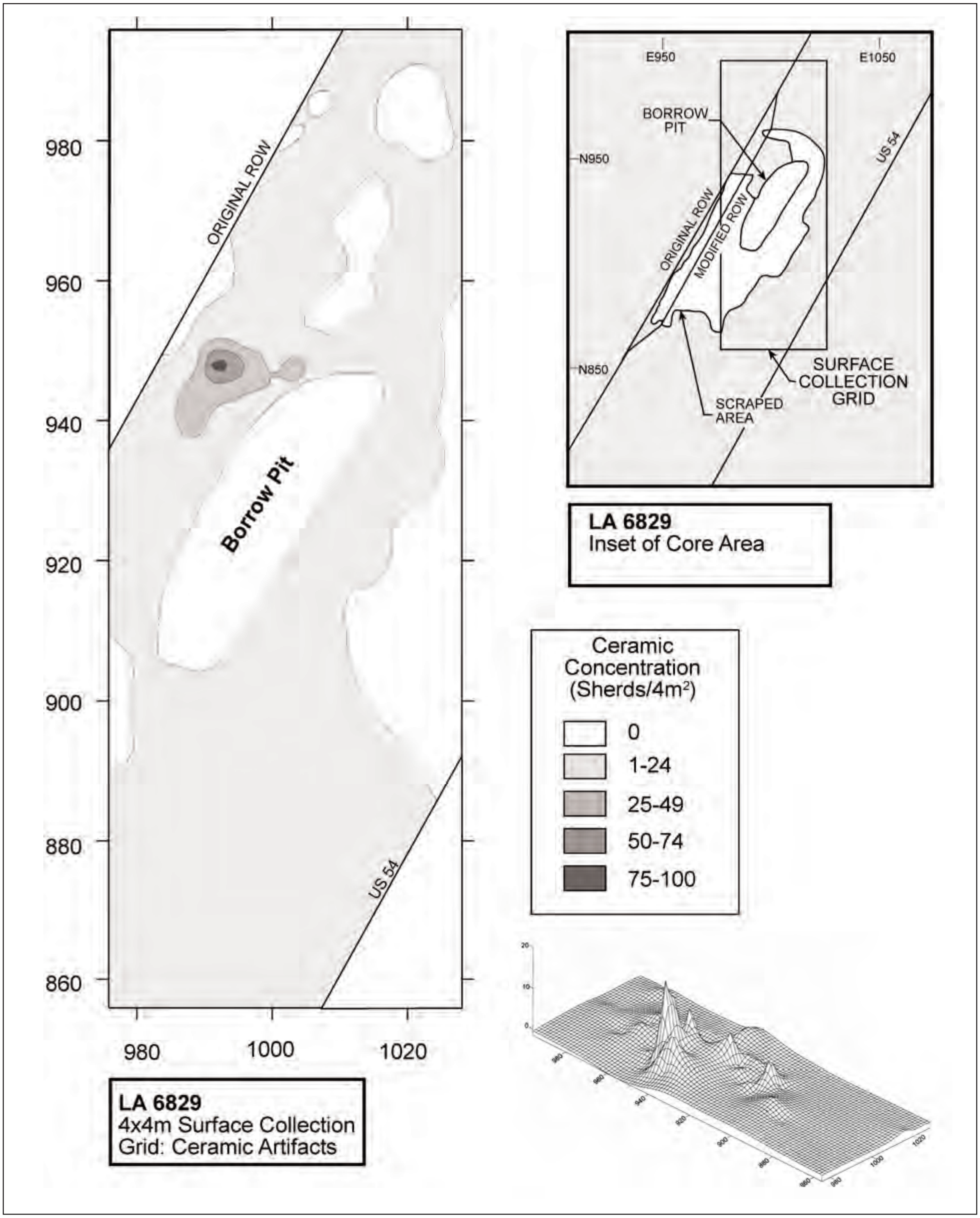

Figure 6.16 Surface density distribution of ceramics within the controlled surface collection area at the Jaca site (LA 6829).

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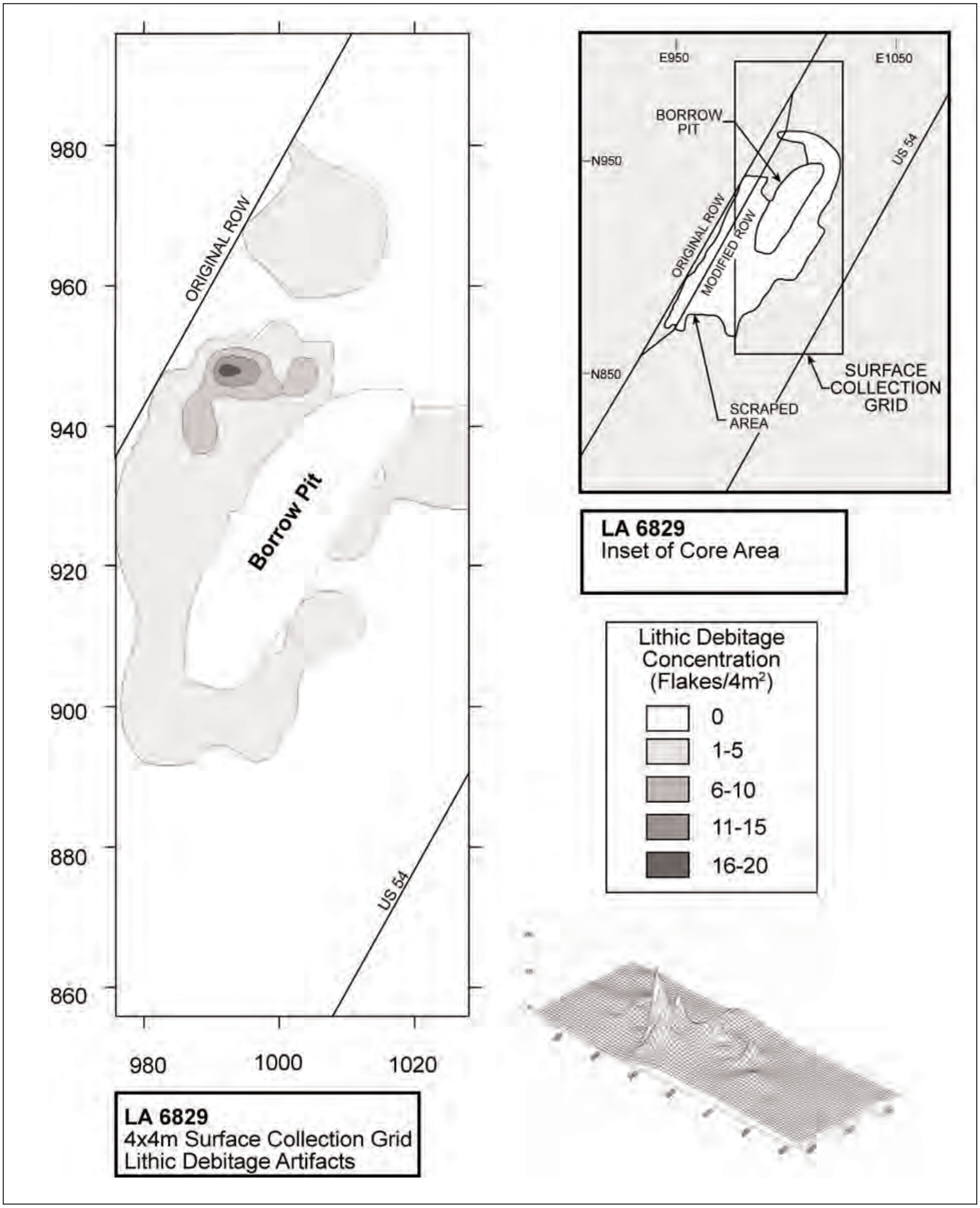

Figure 6.17 Surface density distribution of chipped stone tools within the controlled surface collection area at the Jaca site (LA 6829).

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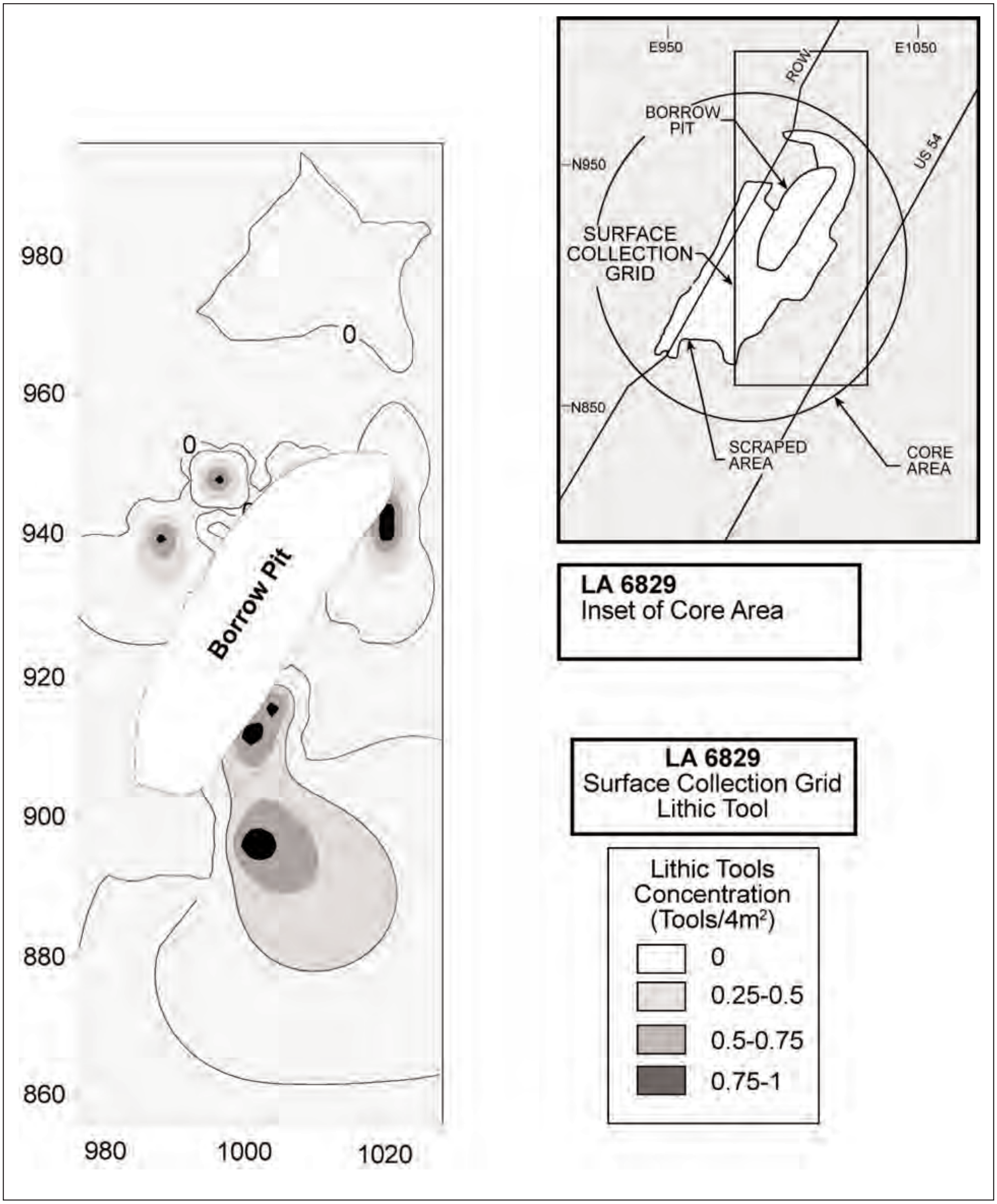

Figure 6.18 Surface distribution of chipped stone tools within the controlled surface collection area at the Jaca site (LA 6829).

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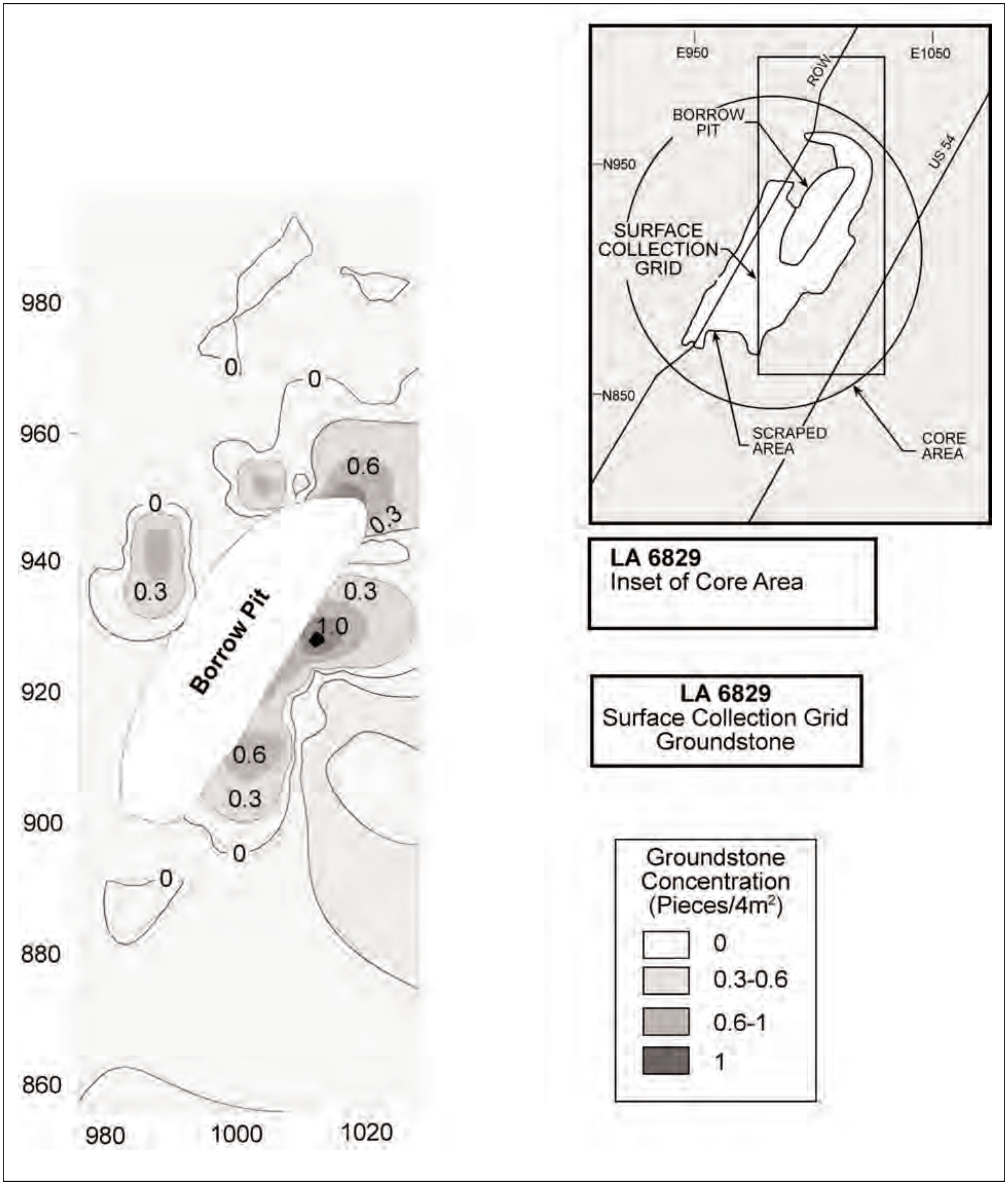

Figure 6.19 **Surface distribution of ground stone tools within the controlled surface collection area at the Jaca site (LA 6829).**

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Note that the distributions and densities of surface artifacts in the core area are due as much to the variable coverage of recent sands (including both sheet sands and coppice dunes) as they are to actual activity and discard patterns. At the southwestern end of the core area, for example, a high concentration of subsurface features was also exposed during data recovery, although few to no artifacts were visible on the surface here. This was due to extensive sheet sand deposits and coppice dunes in this area, and this cover of recent sands extended up into the west-central portion of the core area (immediately west of the southern half of the borrow pit), where surface artifacts were similarly absent or sparse. Mesquite coppice dunes covered an additional 1,000 m^2 or 25 percent of the core area. It is also unclear to what extent previous excavation of the borrow pit may have affected surface artifact distributions within the core area. From the observed distribution of features and surface artifacts, it would appear that excavation of the borrow pit probably impacted an especially rich and dense concentration of archaeological remains, especially within the northern portion of the pit. If so, then the extremely high density of surface materials along the margins of the borrow pit may be due, in part, to redeposition during the previous borrowing activities. Because of these various factors, the utility of surface artifact density data from the core area is somewhat limited, although in a general sense, at least, the overall high distribution of surface artifacts in the core area did reflect the most productive areas of the site in terms of subsurface archaeology. The lesson here is that, at sites with extensive but spatially variable deposits of recent sands, the observed distributions of surface artifacts reflect not only the spatial patterning of prehistoric activities at the site, but also the eolian processes that have affected the site's surface, including both scouring and deposition of recent sands.

Subsurface Data Recovery Investigations

Testing and data recovery investigations documented 247 features (including ones that proved to be non-cultural), and all or portions of 218 of these features were excavated. Of those that were not excavated, 24 were either outside the right-of-way to the west or east of US 54. These included 12 fire-cracked rock concentrations, four small ash stains, and eight middens. Another four features were not relocated. One includes a feature identified during the survey by Marshall and Marshall (1998) and three other small ash stains not relocated after initial mechanical scraping of the site surface because eolian erosion was extreme during data recovery. Data on all 247 features is presented in Appendix G. The discussion of the features on this site includes only some of the recorded features excavated within the highway right-of-way (n=218). The 218 excavated features include 18 structures, a structure entryway, 55 postholes, 72 thermal pits, 40 non-thermal pits, two burials, two ceramic concentrations or "pot drops," seven areas of sediment bearing a moderate to high density of cultural materials,[2] 10 concentrations of fire-cracked rock, two caliche caps, and nine features that proved to be non-cultural. These nine included seven rodent burrows and two natural concentrations of caliche. Six feature numbers (Features 88, 156, 161, 187, 193, and 194) were not used. The features originally assigned these numbers proved to be portions of larger features and thus these numbers were dropped in the final analysis. These numbers are not included in Appendix G.

The vast majority of the features were located within the core area (Figures 6.20–6.22), with another distinct cluster north of the core area (Figure 6.23). One hundred forty-nine features were encountered within the 27 excavation blocks that were hand excavated from the ground surface. Twenty-five other features were excavated within the three remaining blocks that were laid out upon mechanically stripped surfaces. Of the remaining 44 features, 35 were uncovered by mechanical scraping and excavated directly, without a surrounding excavated block. These included six tested with 0.5 x 0.5-m shovel test pits, two tested with shovel trenches, and the remainder simply sectioned and excavated. The six tested with

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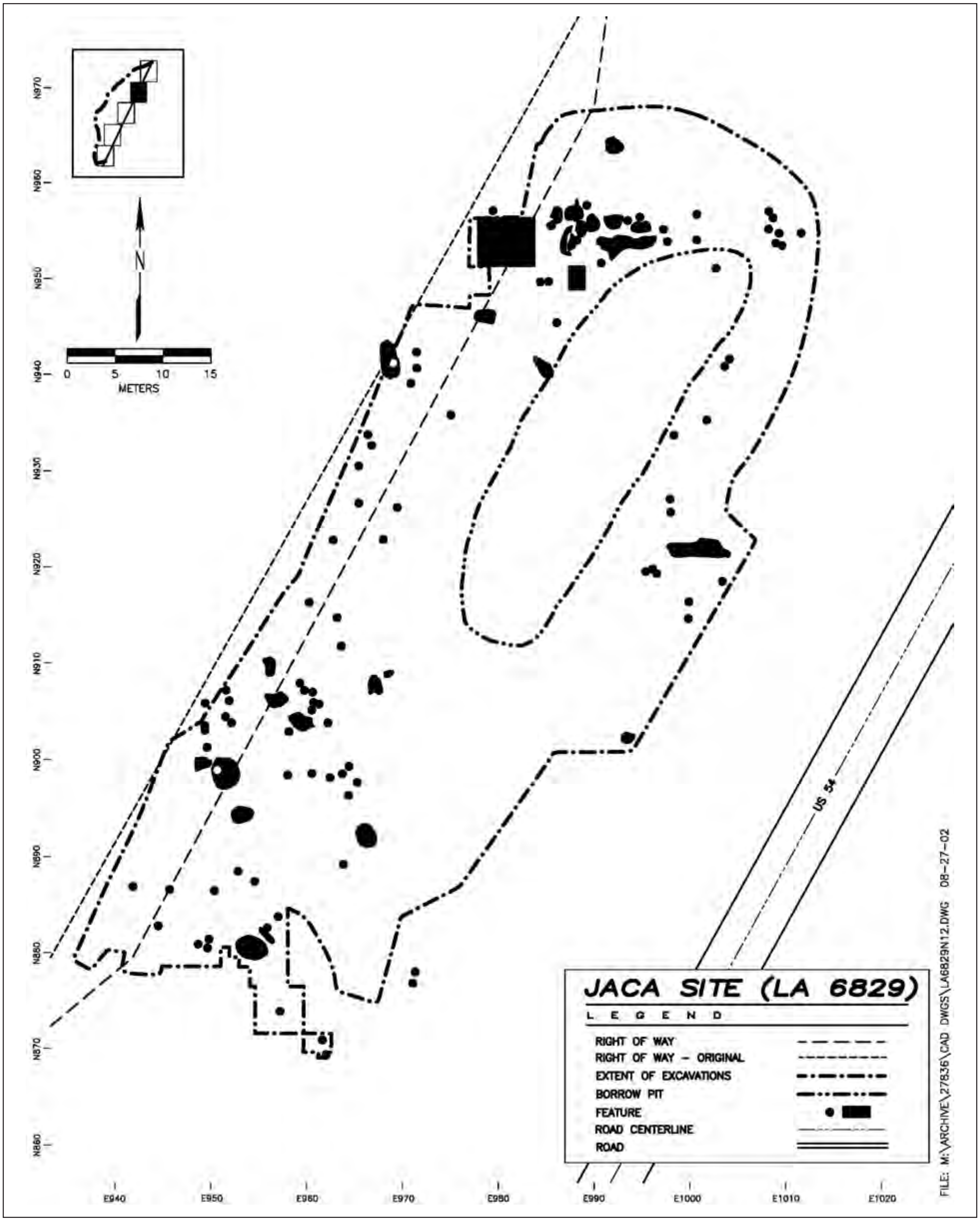

Figure 6.20 Jaca site (LA 6829) core area, showing locations of features.

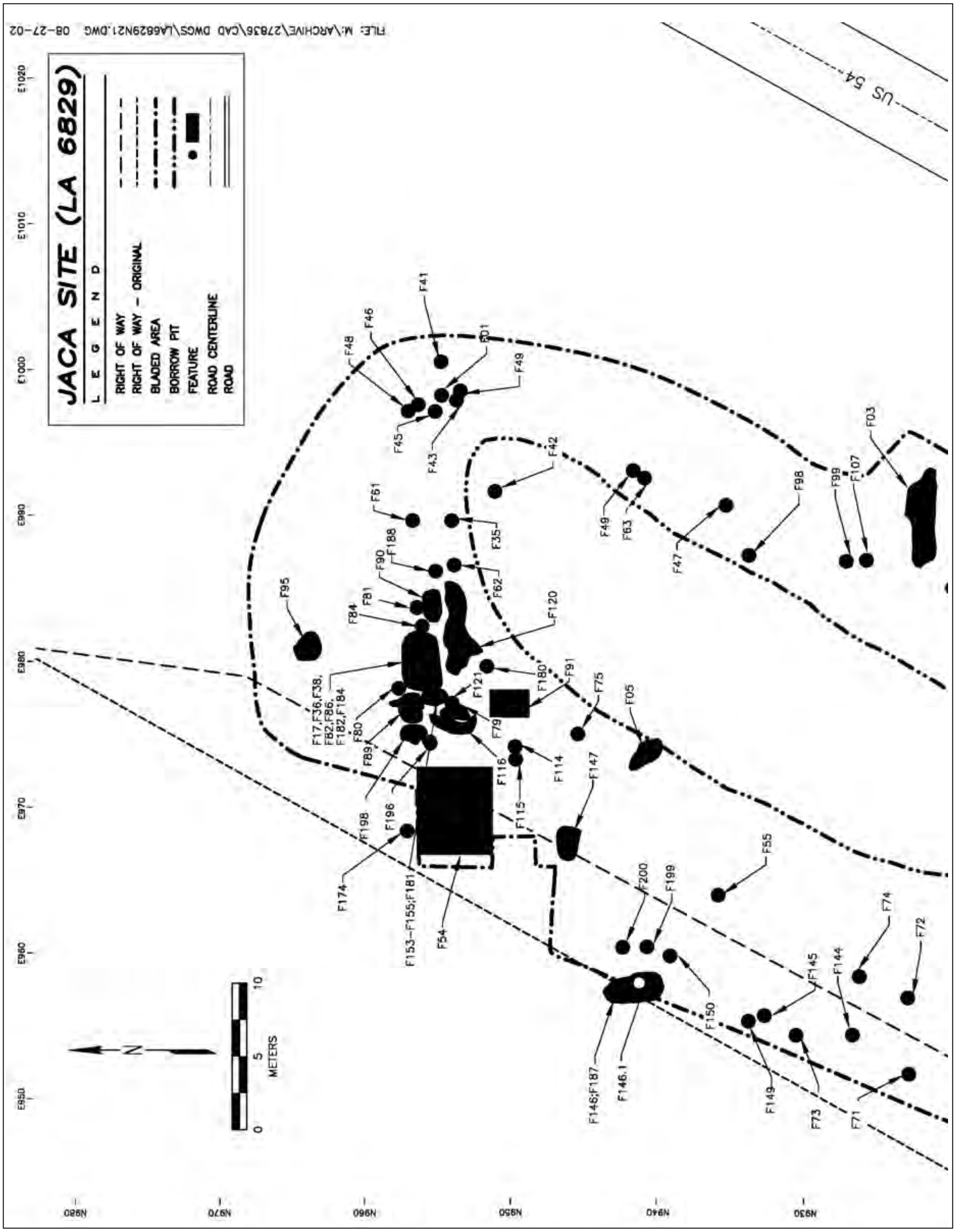

Figure 6.21 Northern half of the Jaca site (LA 6829) core area, showing locations of features.

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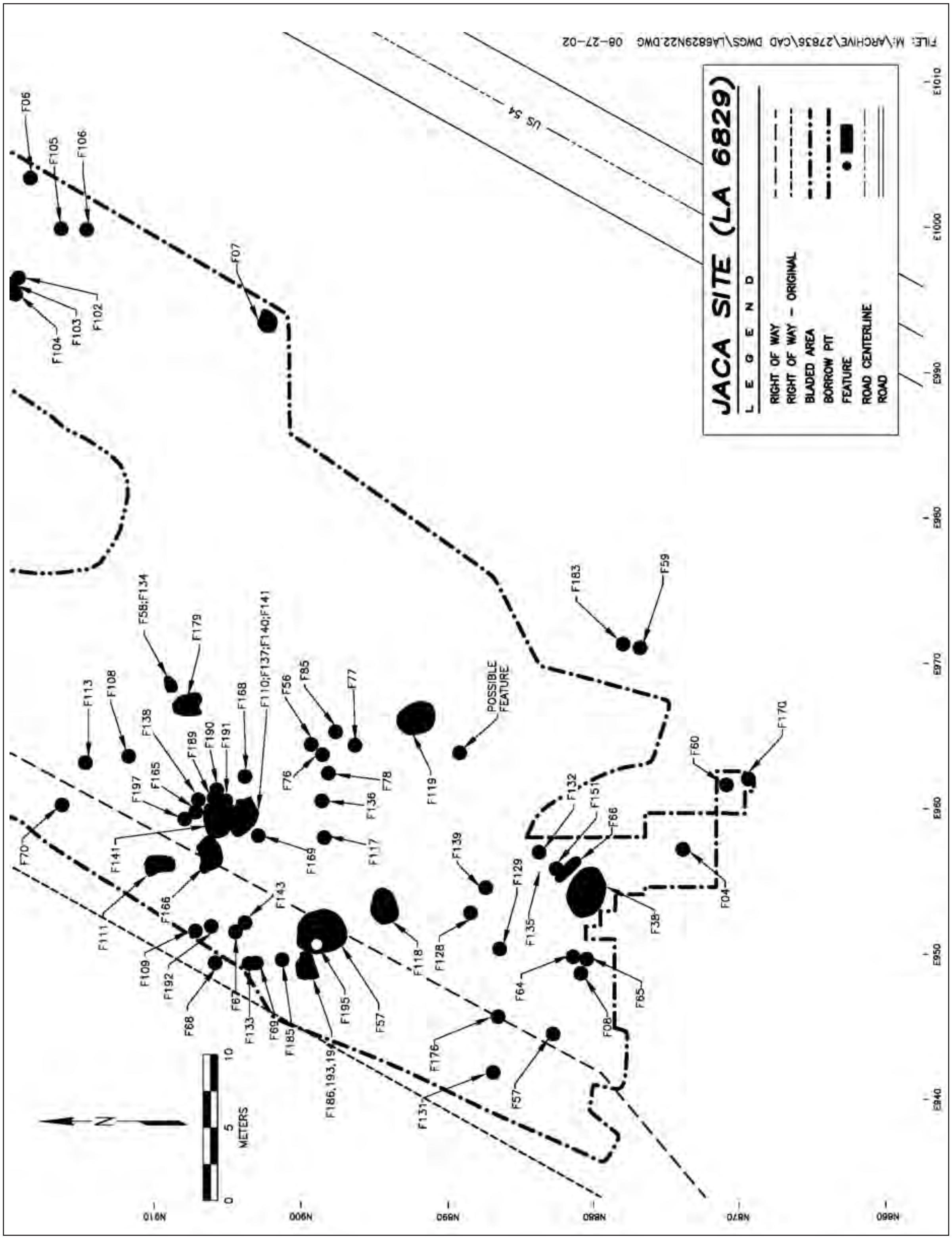

Figure 6.22 Southern half of the Jaca Site (LA 6829) core area, showing locations of features.

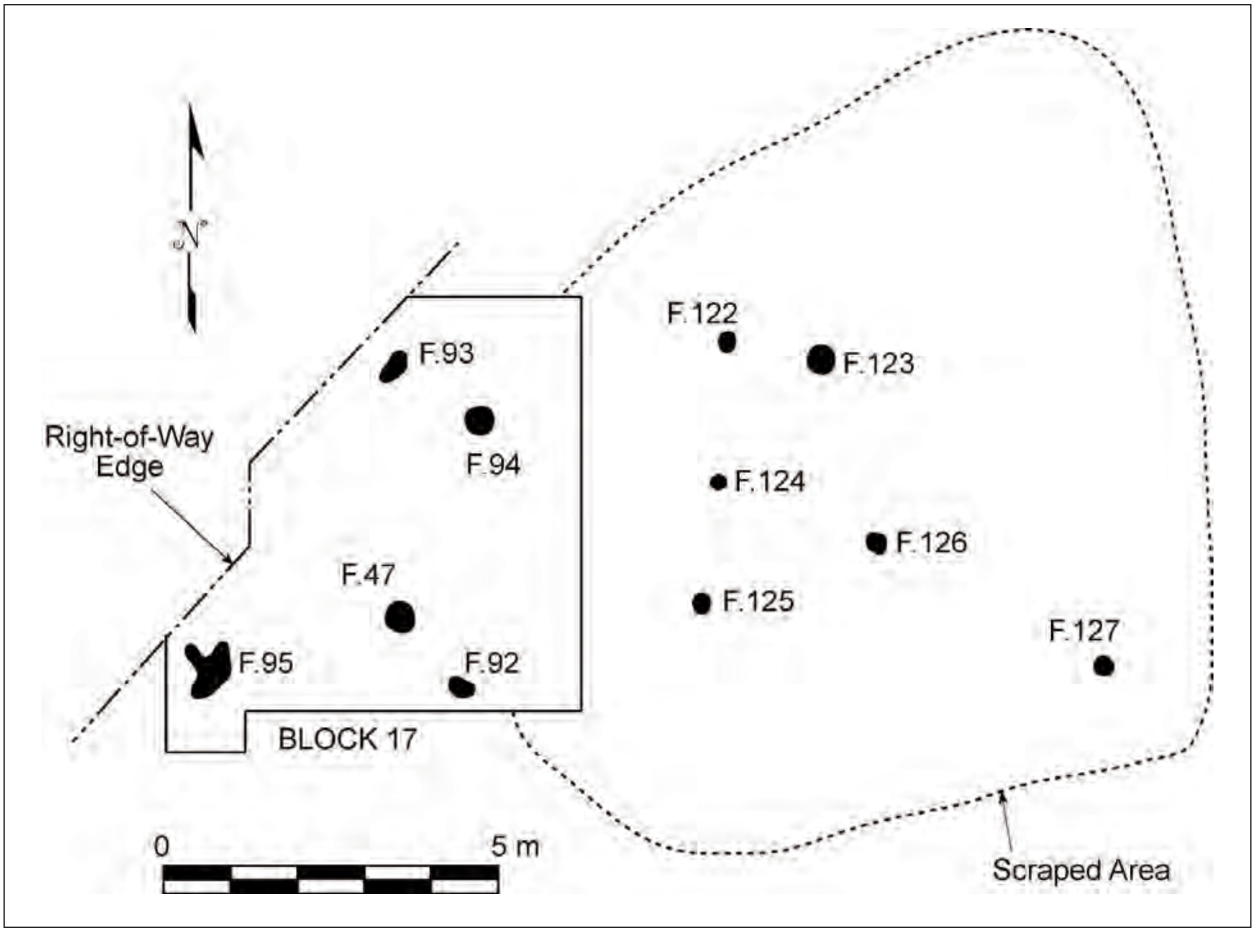

Figure 6.23 Cluster of features north of the core area, Jaca site (LA 6829).

0.5 x 0.5-m shovel test pits included five cultural-bearing strata (which were not investigated further), and one structure that will be protected against the edge of the right-of-way (Feature 68). The two features tested with shovel trenches (Features 117 and 128) were defined as cultural strata lenses (within the Ab soil horizon). One of the remaining nine features was a surface "pot drop." Another three were uncovered within backhoe trenches and subsequently excavated as features without a surrounding excavation block. Three other features were uncovered within 0.25-m-wide shovel trenches and subsequently excavated within an excavation block. Finally, two other features were excavated within 0.25-m-wide shovel trenches and an excavation block was not opened around these features, because each was deflated and the associated surrounding matrix did not contain intact associated cultural remains.

Structures

The excavations at Jaca uncovered 18 structures, all within the core area (Figure 6.24). Five structures (Structures 3, 11, 12, 15, and 18) were only partially exposed, and only incomplete data are available regarding their morphology and other details. Two of these (Structures 3 and 18) were uncovered at the extreme west edge of the right-of-way; each was identified as a structure and was subsequently covered and protected from any highway construction. Larger proportions of Structures 11, 12, and 15 were uncovered, but complete information is still lacking concerning the overall morphology and contents. The remaining 13 structures were excavated in their entireties, and these included one rectangular communal room (Structure 1), one formal pithouse (Structure 2), 10 simple pithouses and one Ramada or surface dwelling (Structure 4). Corresponding feature numbers with structure numbers is listed in Table 6.6. The structures occur in two clusters, one in the northern portion of the core area and the other to the south.

Structure 1 (Feature 54), Communal Structure

Structure 1 was initially detected as a moderate-sized ash stain exposed on the surface during the data recovery phase of the project. Foot traffic over the surface at this locality churned up and exposed the ash stain, where none had been observed during the testing phase. Block 16 (initially 8 x 8 m) was laid out over this feature. After excavations commenced, it became quickly apparent that the subsurface portion of this feature was much larger than the ash stain observed on the surface. Block 16 was thus expanded to 10 m east-west x 9 m north-south. After initial exposure of the horizontal extent of this ash stain, a trench was excavated east-west and then north-south, defining a rectangular, formalized structure with straight-sided walls and a floor partially plastered with a layer of prepared caliche and clay. This layer indicated purposeful preparation of the structure floor, although it was not as well plastered as are most prepared floors observed in El Paso-phase pueblos. The remainder of the structure was then hand excavated. After the two trench excavations exposed the wall edges of the structure, the remaining fill of the structure was excavated as a single level, within 1 x 1-m-grid units, to 0.10 m above the identified floor. This exposed the remaining wall edges in each cardinal direction. All fill was screened through $^{1}/_{8}$-inch mesh.

Excavations revealed the structure to extend 6.1 m east-west x 4.92 m north-south, with a floor area of 29.59 m^2. The structure was set in a shallow basin with an excavated depth of up to 35 cm. Twenty interior floor features were identified, including 19 that intruded below the structure floor and one burial set on the surface of the structure's floor (Figure 6.25). The structure had been built on top of a smaller, subrectangular pithouse with straight sides and rounded corners (Feature 54.22, Structure 2). To the west, Structure 1 abutted another straight-sided structure (Feature 158, Structure 3; see below), suggesting Structure 1 is part of a conjoined, room block.

Internal Stratigraphy

The fill within Structure 1 included four different strata (Figure 6.26), and some of these strata were horizontally discontinuous. The north portion of the structure was under the south end of a mesquite-stabilized coppice dune. Here, the

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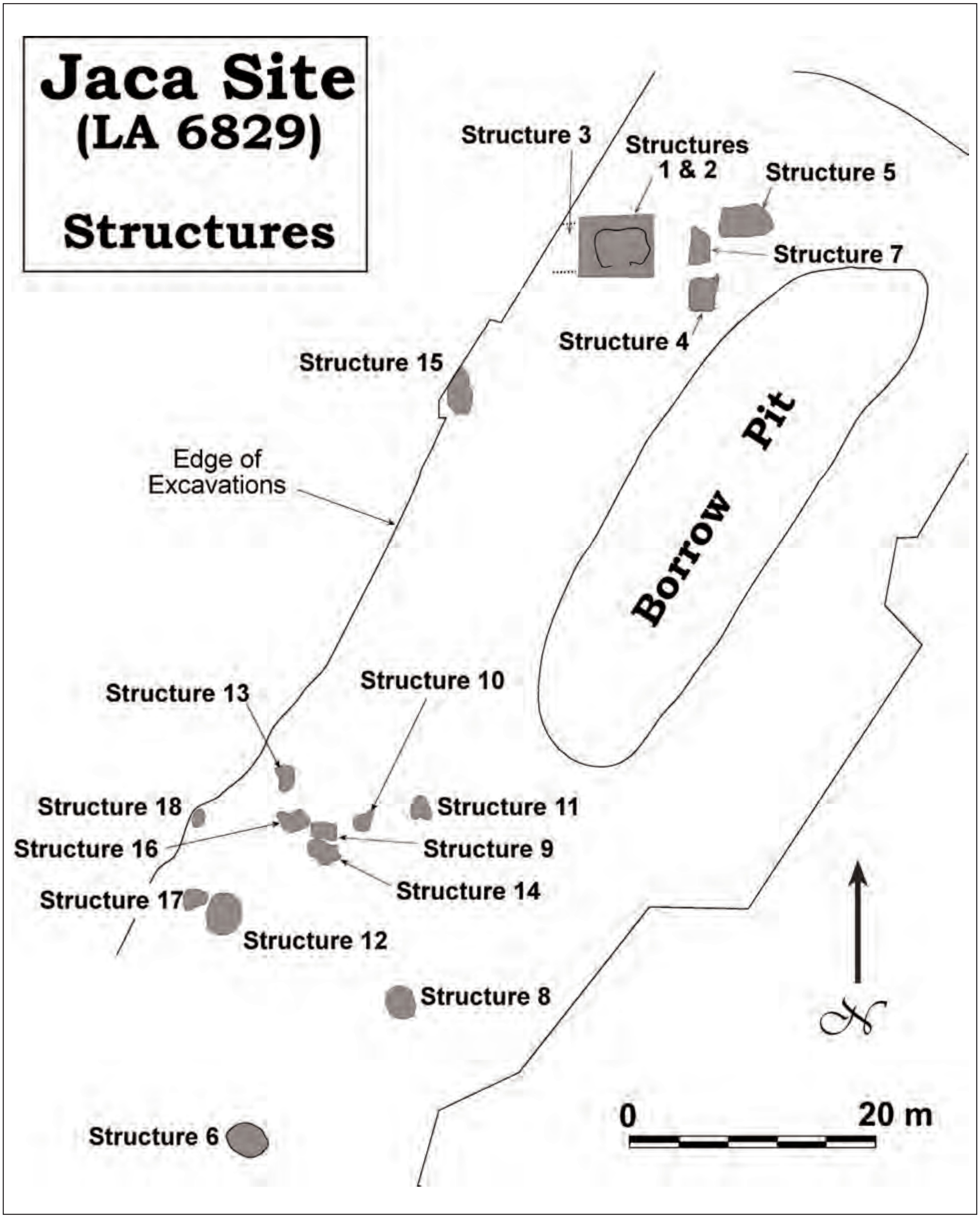

Figure 6.24 Prehistoric structures uncovered at the Jaca site (LA 6829). Structures 1 and 3 are surface pueblo rooms; all others are pithouses.

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Table 6.6 Jaca Site (LA 6829) Structure Characteristics

Structure Number	Feature No.	Type	Plan	Orientation	Length	Width	Floor Area	Depth	Floor Hearths	Postholes	Other floor features	Entry	% excav
1	54	Formalized Pithouse	Rectangular	East-west	6.1	4.92	29.59	0.43	2	12	5	East	100
2	54.22	Formalized Pithouse	Rectangular w/ rounded corners	East-west	4.3	3	11.57	0.2	0	0	0	South	100
3	158	Surface Room	Unknown	unknown	3.2	>0.84	>2.62	>0.07	0	0	0	Unknown	<10
4	91	Surface Post Structure	Rectangular w/ rounded corners	North-south	2.35	2.1	4.89	0	0	26	0	North	100
5	17	Simple Pithouse	Oval	East-west	5	2.8	10.35	0.4	0	5	5	Unknown	100
6	38	Simple Pithouse	Oval	East-west	3.3	2.54	6.28	0.4	0	0	0	Unknown	100
7	79	Simple Pithouse	Rectangular w/ rounded corners	North-south	2.55	1.95	5.2	0.33	0	0	0	Unknown	100
8	119	Simple Pithouse	Oval	North-south	2.75	2.5	5.93	0.06	0	0	0	Unknown	100
9	141	Simple Pithouse	Rectangular w/ rounded corners	East-west	1.9	1.65	2.69	0.1	1	1	0	East?	100
10	142	Simple Pithouse	Oval	SW-NE	2.3	1.42	1.88	0.26	1	0	0	Northeast	100
11	179	Simple Pithouse	Oval	North-south	>1.92	1.55	>2.21	0.19	0	0	0	Unknown	30
12	57	Simple Pithouse	Circular	N/A	2.5	>2.3	>1.72	0.2	0	0	1	Unknown	10
13	111	Simple Pithouse	Oval	North-south	2.26	1.6	2.5	0.29	0	0	0	Northwest	100
14	137	Simple Pithouse	Oval	East-west	2.5	2.4	2.6	0.12	0	0	0	East	100
15	146	Simple Pithouse	Oval	East-west	>3.3	>1.95	>4.30	0.29	1	0	0	Unknown	80
16	166	Simple Pithouse	Oval	East-west	2.55	2	3.4	0.37	0	0	0	Northwest	100
17	186	Simple Pithouse	Oval	East-west	3	1.6	3.06	0.36	0	0	0	West	100
18	68	Simple Pithouse	Unknown	East-west	<6.5	<3.5	Unknown	>0.10	0	0	0	Unknown	<5

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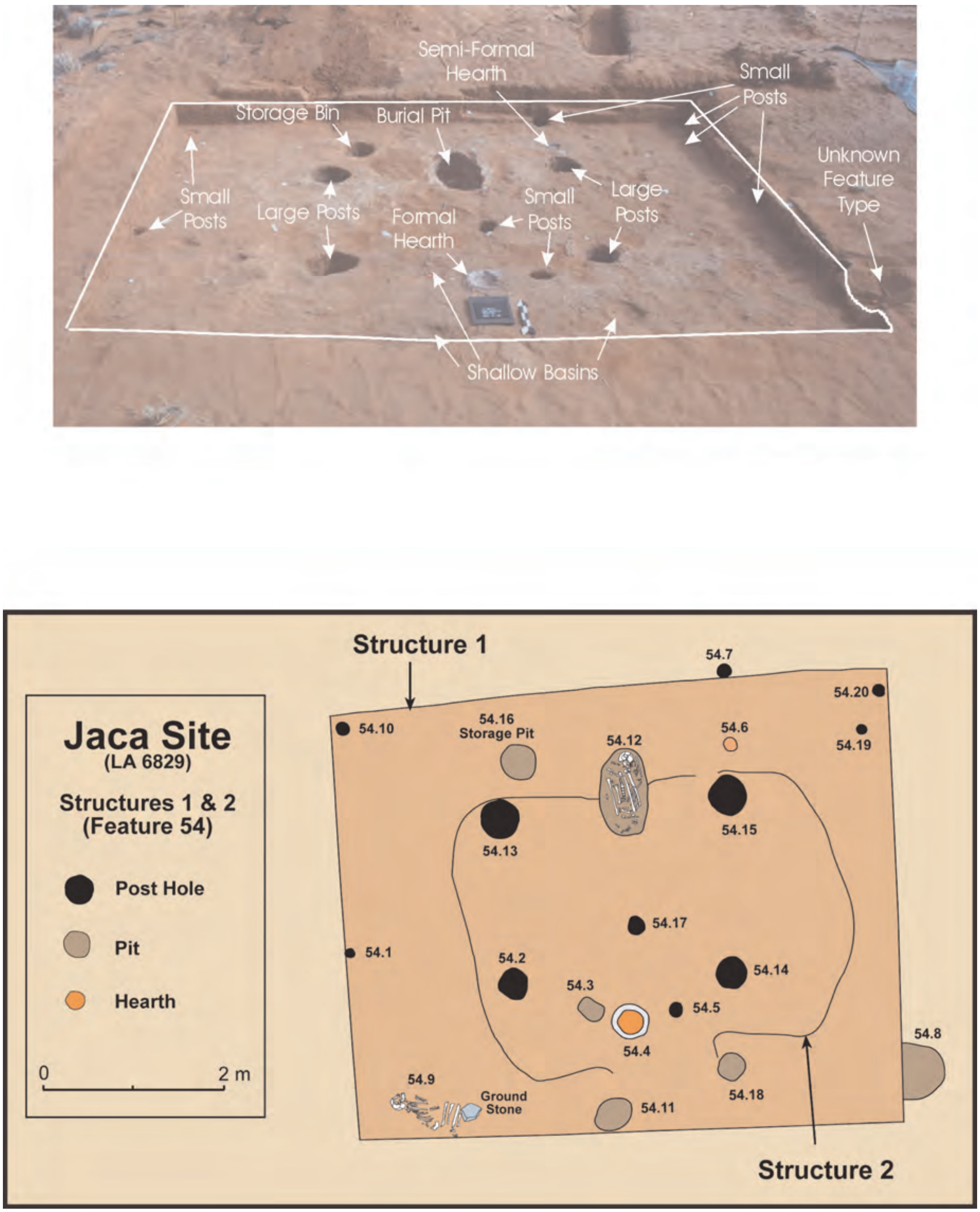

Figure 6.25 Feature 54 (Structures 1 and 2) at the Jaca site (LA 6829).

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upper fill of the structure itself was a strong brown (7.5YR5/6), eolian sand that ranges 8–28 cm in thickness. Underlying this was another stratum of eolian fill, consisting of a brown (7.5YR5/4), very compact sand loam with a high density of caliche. This deposit appears to represent wall slump and sediments eroded from adjacent to the structure. This stratum overlaid the fill of Structure 2 (see below) toward the center of Feature 54, and the culturally sterile subsoil elsewhere. In the southeast portion of the structure, the structure fill consisted of ash-stained midden. This stratum was partially exposed due to foot traffic on the surface, which led to the initial discovery of Feature 54. This midden represents occupation trash deposits, dumped into the portions of the structure that still formed a depression during prehistoric occupation of the site. These midden deposits consisted of a dark brown (10YR4/3) sand loam with charcoal, ash, and cultural artifacts. This fill extended to the floor of the structure, but pinched out and was absent in the northern and western portions of Structure 1.

Floor Features

The floor of this structure was predominately a reddish brown sandy loam with inclusions, and in some areas was capped by the aforementioned plaster, which consisted of a light gray, thin, clay/caliche. Fill outside the structure consisted of a strong brown (7.5YR5/6), sandy loam with caliche nodules increasing in density toward the base of the structure pit walls.

The floor features of this structure included four main, interior support postholes, eight smaller post holes, one post (i.e., the actual wood of the post remained in position), two clay-lined hearths, a burial pit, a floor burial, a storage pit, and five shallow basin pits of an unknown function. The four main postholes, the storage pit, and the burial pit were excavated below the floor into solid caliche, which must have required considerable effort given the rudimentary technology available. The interior floor features of Structure 1 encompass a total of 1.49 m^2, five percent of the total floor area.

The four main postholes (Features 54.2 and 54.13–15) formed a rectangle measuring 2.4 m east-west x 1.84–1.90 m north-south, and were aligned nearly equidistant from the exterior walls and from one another (as measured from the posthole center points). The southern postholes were positioned 1.62 m and 1.66 m from the south wall. The two northern postholes were 1.32 m and 1.34 m from the north wall. All four postholes were 1.8 m from either the west or east wall (i.e., whichever wall was closest). The southern postholes were 32 and 34 cm in diameter and 45 and 51 cm deep, whereas the northern postholes were slightly larger, at 40 and 42 cm in diameter and 51 and 75 cm deep. Each of the large postholes was cylindrical, but contracted to 10 to 24 cm in diameter at the base of each posthole (Figure 6.27). The large postholes penetrated the plastered floor of Structure 2, the formal pithouse directly underlying Structure 2 (Figure 6.28). It is possible that the main support postholes were part of the Structure 2 frame, and were simply integrated into the design and construction of Structure 1. Each of the main support posts was braced with large rocks wedged into the postholes, with the larger posts on the northern side braced with more rocks than were the two posts on the south side of the configuration.

The eight smaller postholes (Features 54.1, .5 .7, .10, .17, .19, .20, and .21) were set along the structure walls, and within the interior floor. Two of these smaller postholes were located in the northwest (Feature 54.10) and northeast (Feature 54.20) corners of the structure, and there were two more, one each along the middle portions of the west (Feature 54.1) and east walls (Feature 54.21). Another posthole (Feature 54.17) was positioned near the center of the structure. The three remaining small postholes were all randomly positioned. The eight smaller postholes were nearly all circular with the exception of the one against the east wall, which was semi-elliptical. These postholes ranged 8–20 cm in diameter, with an average of 16 cm. Four of the smaller postholes were cylindrical and three were conical in

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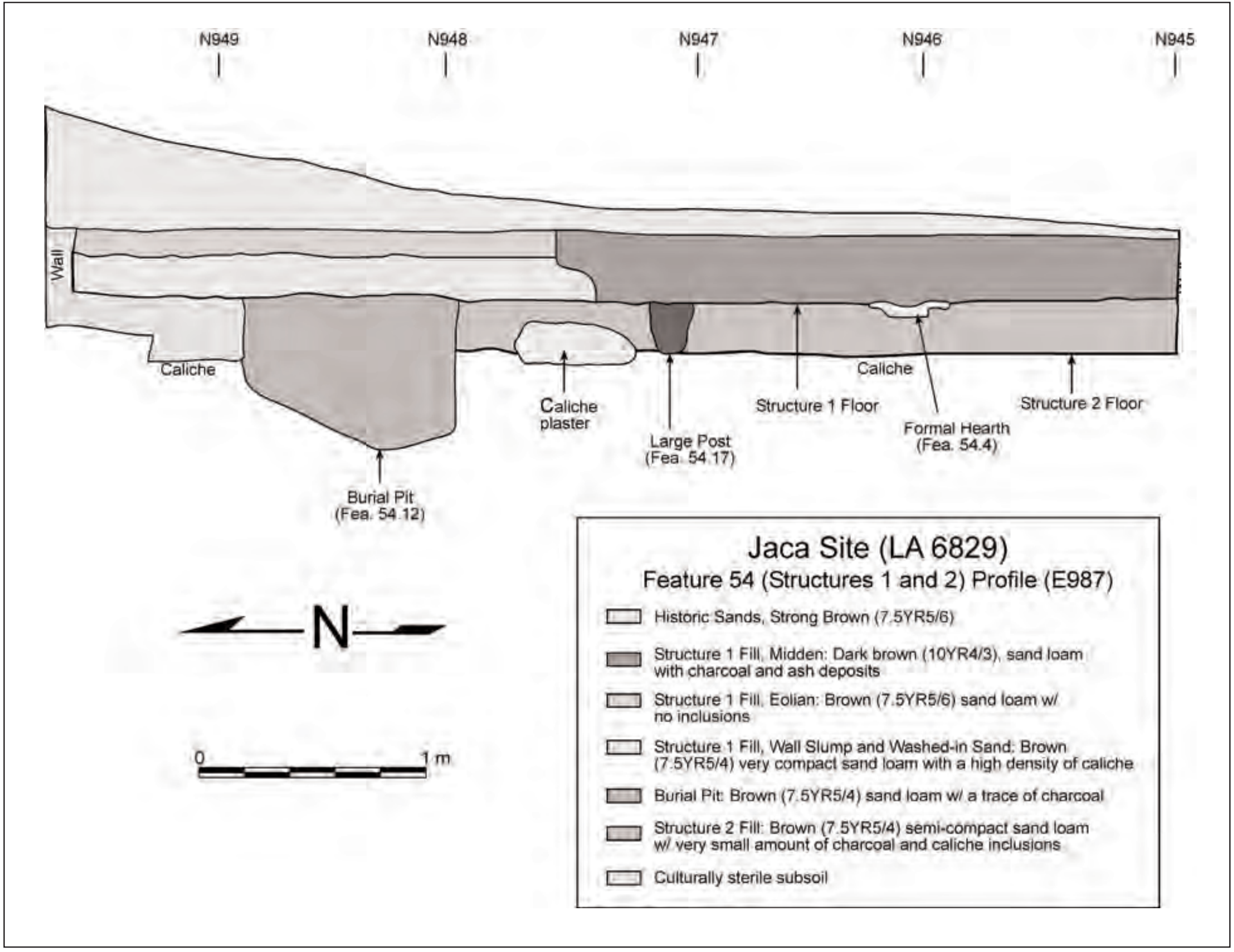

Figure 6.26 Stratigraphic profile through Structure 1 (Feature 54).

cross-section. Their depths ranged 3–21 cm, with an average of 16.6 cm. Four of the smaller postholes were 20–21 cm deep, with the remaining three ranging 3–14 cm deep. The small interior postholes may represent maintenance attempts designed to support weakened portions of the structure's roof.

Feature 54.1 contained a partially charred fragment of the original post; it was identified as juniper wood. Juniper wood was also recovered from Feature 54.7, suggesting that juniper posts of this wood may have been used to frame the walls. The closest present-day source for juniper is Otero Mesa, 20–30 km to the east, although it is possible that juniper was formerly present in the nearby Jarilla Mountains. No other wood from potential structural members was recovered from the other postholes, and it appears that the main support posts were salvaged upon abandonment of this shelter. Mesquite wood was identified from Features 54.2 and 54.13, although these remains were probably incorporated into the fill of these post holes, which also included charred *Atriplex canescens* and *Zea mays*. In any event, the four main postholes indicate a fairly substantial superstructure that required considerable support. It seems likely that the four main, interior support posts of Structure 1 were probably all juniper or some other tree from which substantial support posts could cut and trimmed. Unless juniper was formerly present in the nearby Jarilla Mountains, then these posts probably came from Otero Mesa. Cutting and transporting large posts

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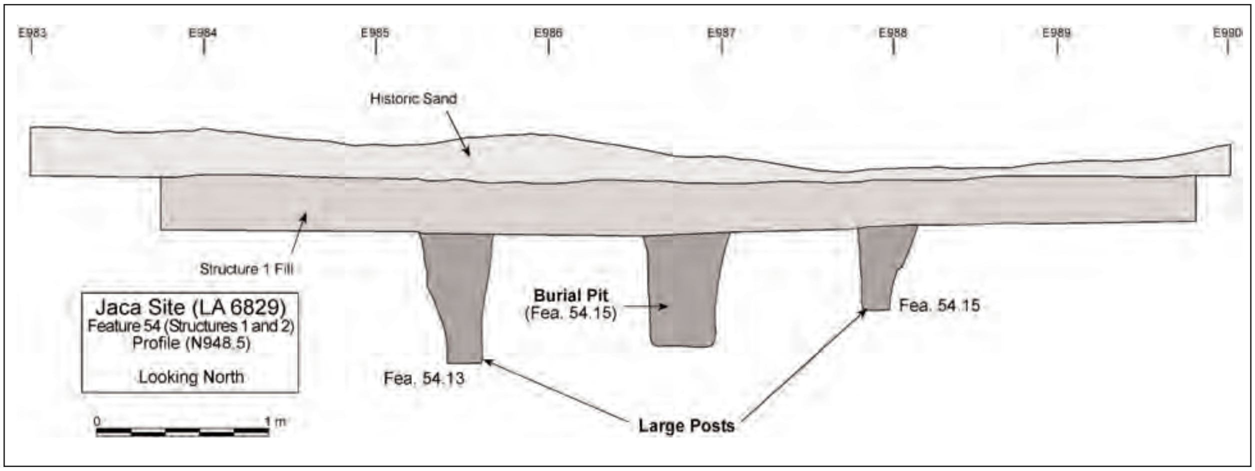

Figure 6.27 **Stratigraphic profile, showing cross-sections of two postholes and the burial pit within Structure 1 at the Jaca site (LA 6829).**

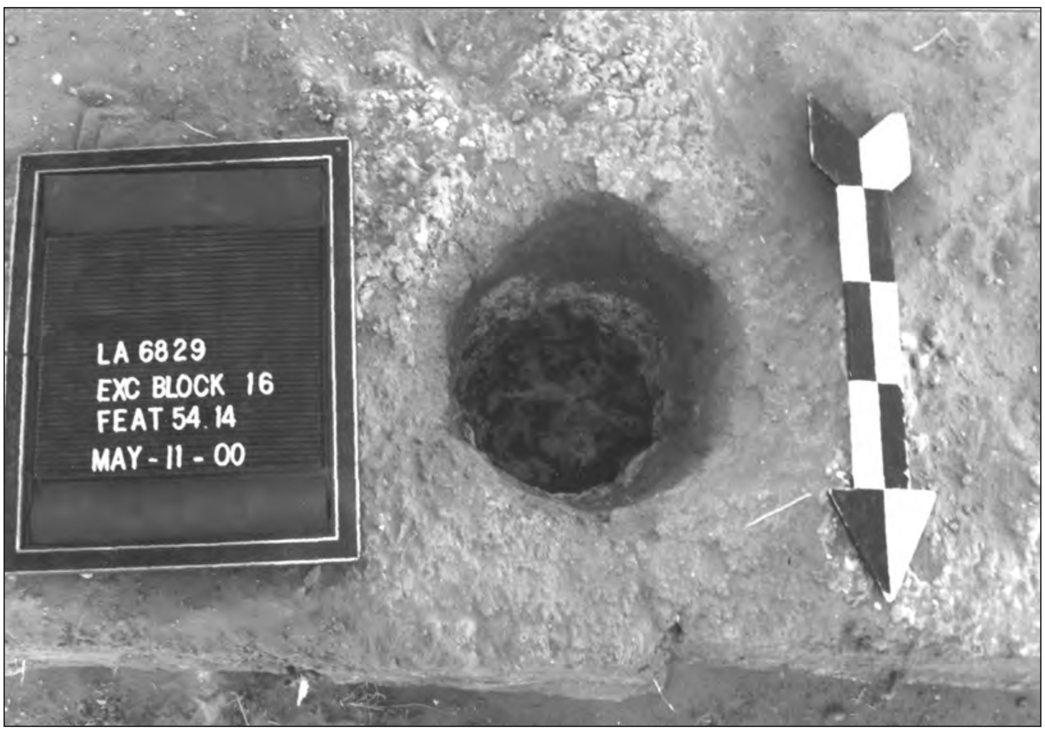

Figure 6.28 **Feature 54.14, which held one of the main interior posts for Structure 1 at the Jaca site (LA 6829). Note the white, caliche plaster marking the floors of Structure 1 and, inside the posthole, Structure 2.**

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over such a distance would represent a substantial labor investment, and such posts were probably considered valuable resources and recycled multiple times as substantial dwellings in the area were constructed, abandoned, and torn down.

The floor hearths included one formal hearth (Feature 54.4) in the south central portion of the structure floor and another smaller, semi-formal hearth (Feature 54.6) in the northeast portion of Structure 1. The formal hearth was adobe lined with a raised rim, and was nearly circular in plan with an outer diameter of 38–40 cm (Figure 6.29). The interior portion of Feature 54.4 was 25 cm in diameter and 7 cm deep. Archaeomagnetic samples were taken from the clay lining of this hearth, although no dates could be produced from these samples. The smaller hearth (Feature 54.6) was circular and measured 14 cm in diameter and 3 cm in depth. The bottom of this hearth was also clay lined, although it lacked a raised rim. The hearth was located just 24 cm north of the northeast main support post.

One storage pit (Feature 54.16) was located in the northwest quadrant of the structure, 24 cm north-northeast of the northwest main support post. This storage pit was roughly circular in plan, with horizontal dimensions of 39 cm x 35 cm. It is cylindrical in cross-section, extends 50 cm beneath the structure floor, and is basin shaped at its base. The pit was filled with cultural midden.

Among the remaining sub-floor features were three circular, shallow basin depressions (Features 54.3, 54.11, and 54.18). These features were all located in the south portion of the structure, with one adjacent to the formal hearth (Feature 54.4). The features ranged 27–34 cm in diameter and 2–7 cm in depth. These shallow basins may have served as pot rests. Interestingly, one contained a pallet fragment on the surface, although it is not clear whether or not this association is fortuitous.

The burial pit (Feature 54.12) was excavated into the floor of the structure, between the two north main support posts (see Figure 6.25). This pit was oval in plan, measuring 97 cm north-south x 50 cm east-west. Its straight-sided walls extended down to a basin-shaped floor, 66 cm below the floor of the structure. The burial pit fill was a brown (7.5YR5/4) sandy loam with a trace of charcoal and no other cultural inclusions. No burial goods were present. The burial itself was an adult male, age 34–42; he was buried in a flexed position, with the body oriented south to north and the head facing east (see Chapter 29). The burial had been disturbed partially by rodent activity. Bone preservation was best near the base of the pit, with overlying bone fragments more friable. The pit was covered with floor matrix, indicating that the burial event occurred during, or just prior to, occupation and use of Structure 1. Perhaps it was a dedicatory burial, and may thus help signify the symbolic importance of Structure 1.

The other burial (Feature 54.9) was not interred in a discernable pit, but rather appears to have been placed on the floor of the structure against the south wall. Alternatively, there may have been a burial pit, which terminated on the Structure 1 floor, dug into the post-abandonment midden deposit, with the pit outline itself not detectable. The burial was a child, approximately eight years in age (± 24 months; see Chapter 29). It was buried lying on its side in a flexed position, oriented west and facing north. The dimensions of this burial were 82 cm east-west x 44 cm north-south, and it was contained within 11 cm of the structure floor. The overlying sediments had compressed the remains. This skeleton was less complete than the one in Feature 54.12. It is not clear whether or not some of the missing elements were removed intentionally, carried off by vermin, or destroyed through some more inadvertent form of disturbance. A ground stone fragment was found abutting the two tibia at the east end, and a chert hammerstone was located just behind the skull to the southwest (see Figure 6.25). It is not clear if these were purposefully placed burial goods or fortuitous associations. The placement of this burial on the structure floor suggests an event associated with the abandonment of the structure.

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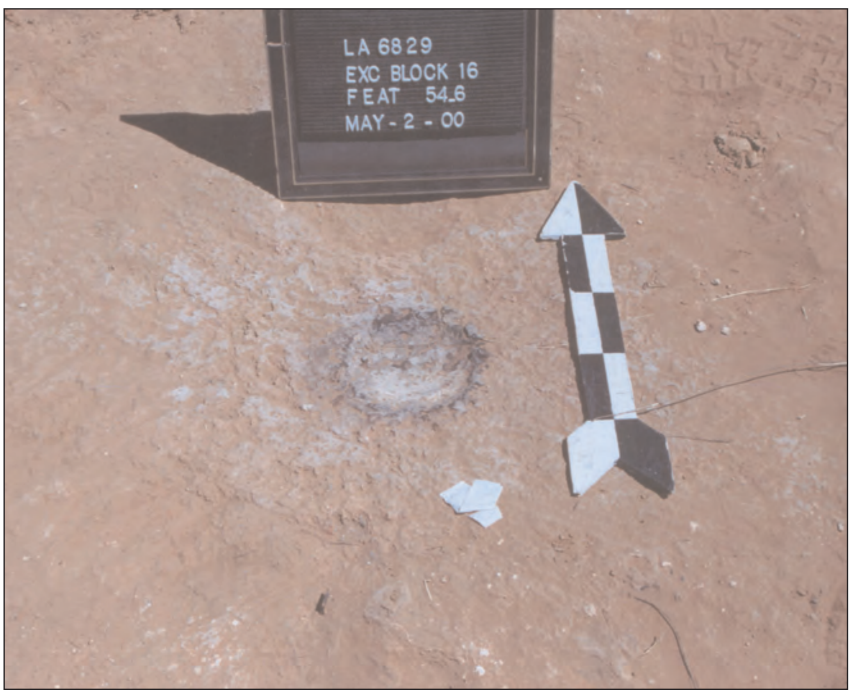

Figure 6.29 **Floor hearths within Structure 1 at the Jaca site (LA 6829). Top, Feature 54.4; Bottom, Feature 54.6.**

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Finally, there is Feature 54.8, which is actually located outside Structure 1, abutting the southern end of the structure's eastern wall. This feature measured 64 x 46 cm, with the long axis in line with the structure wall. The feature drops 19 cm down from the natural exterior surface, and stands 10 cm above the interior floor of the structure. The function of this feature is unclear, and its association with Structure 1 uncertain. One possibility is that this feature was an entry step, although if so this would be a very unusual location, as entrances into very similar Doña Ana- and El Paso-phase structures are typically in the middle of the south wall, directly facing the interior formal hearth. Another possibility is that this feature was created inadvertently when a portion of the structure wall slumped in, possibly from foot traffic following abandonment of the structure, at which time the southern half of the Structure 1 basin was used as a dump (see below). Finally, it is possible that Feature 54.8 is simply a pit that pre-dates Structure 1 and was cut into when the basin for Structure 1 was excavated.

Artifact Debris

The fill of Structure 1, including its sub-floor features, contained a total of 1,443 items including 1,360 ceramic sherds, 17 pieces of debitage, 20 faunal specimens, two manos, one metate, 42 pieces of FCR, and one marine shell bead. The FCR included pieces of granite and sandstone ranging in size from less than 5 cm to one piece larger than 10 cm. Only seven items were documented *in situ* on the floor of Structure 1. These included two Chupadero Black-on-white worked sherds, two round chert hammerstones, a metate fragment, one of the mano fragments, and an unburned bone fragment.

Construction and Remodeling Evidence

Structure 1 was excavated 32–35 cm into the substrate. The walls were earthen and do not appear to have been lined with daub or plaster, nor is there any evidence of an adobe superstructure. The floor of the structure was nearly level, with a slight slope dropping 5–8 cm to the south-central portion of the structure, where the main floor hearth was located. The superstructure was likely of jacal construction, with locally available brush (mesquite, narrow leaf yucca, and fourwing saltbush) mixed with earthen matrix. The main interior postholes appear to have been ponderosa pine, although no wood from the original posts was recovered. The smaller posts also appear to have been juniper, which was recovered from two of these features.

Dating

Three radiocarbon dates were obtained from among several samples collected from sub-floor features in Structure 1. The processed radiocarbon samples yielded two-sigma, calibrated dates of A.D. 960–1160 (Feature 54.2, one of the main support posts), and two identical dates of A.D. 1020–1270 from Features 54.13 (another of the large, interior support posts) and 54.16 (a storage pit). The latter two dates accord well with the late Doña Ana/early El Paso-phase ceramic assemblage from Structure 1. The earlier date may indicate old and/or redeposited wood in Feature 54.2.

Archaeomagnetic samples were also collected from Feature 54.4, the main floor hearth. These were submitted for analysis, but dates could not be obtained from these samples (see Appendix I).

Abandonment Evidence

Structure 1 does not appear to have been hastily abandoned. The absence of floor furniture (e.g., ceramic vessels and ground stone items) indicates a planned, orderly departure. As no eolian deposits were found on the floor (see Figure 6.26), it is likely that the structure did not stand vacant for long after abandonment. In the northern half of Structure 1, the first stratum found above the prepared floor is composed of slumped wall materials, which indicates either A) the walls collapsed naturally shortly after abandonment, or B) structure hardware, such as posts and beams, were removed for reuse shortly after the structure was abandoned. As no beam or post remains were found (other than the juniper wood recovered from wall posts Features 54.1 and 54.7), the latter scenario seems more likely. A thin layer of

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wind blown deposits lies above this wall slump. Midden deposits sit directly on the floor in the southern half of the structure. The strata configuration suggests that, after the collapse of the north wall, the south part of the structure was used as a trash dump. The ashy midden deposit suggests a continued occupation of the nearby vicinity following abandonment of this structure. The focus of this occupation appears to have been located southeast of Structure 1 as no trash was deposited over the wall slump in the northern portion of the structure. Burial Feature 54.9 was also found within 11 cm of the structure floor against the south wall. This burial may represent an immediate post-abandonment interment, in which case it could be related to the structure's abandonment. Just as likely, however, the burial could have been interred after the accumulation of the trash fill. Although no burial pit in the trash fill was found, a pit dug here may not have left a readily visible outline, especially if the pit fill was composed of the same matrix as the enclosing midden.

Discussion of Structure 1

The plan and dimensions of Structure 1, along with the apparently conjoined Structure 3 (see below), suggest that it represents a unit within linear room block. The floor plan of this structure is nearly identical to most previously excavated El Paso-phase rooms (Bentley 1993; Brook 1966, 1967a, 1967b, 1970, 1978; Brook and Green 1980; J. Davis 1968; L. Davis 1968; Foster et al, 1981; Gerald 1988; Green 1967, 1968; Kelley 1985a; Lehmer 1948; Moore 1947; O'Laughlin 1985b; 2001a; Scarborough 1985; Schaafsma 1990; Schultz 1967) and some late Doña Ana-phase pit structures (J.V. Davis 1973; Kegley 1982; Scarborough 1983, 1989; 1992; Schaafsma 1990). Specifically, these rooms frequently have 2–4 primary support posts situated along the east-west axis of the room. Larger rooms tend to have four primary posts, smaller rooms two. A well prepared, adobe-plastered, lipped, central hearth is typically situated 30–60 cm from center point of the south wall. Floors are also often well prepared and plastered. Entries are usually aligned with the main hearth, almost always face south, and often have a small step attached to access the interior of the structure. Thus, Feature 54.8, near the southeast corner of Structure 1, is probably not an entryway as the excavators originally suspected. Additional features, such as loom or bin postholes, burials, and storage pits tend to be aligned on a general north-south axis. Smaller support posts may be placed in the periphery near the walls, but also may be found scattered throughout the structure. In the latter case, these posts likely represent secondary supports, placed in an ad hoc manner, to shore up sagging roof areas in older structures.

The large floor area (29.59 m^2) places Structure 1 at the larger end of a continuum of Jornada pueblo room sizes. An informal survey of multi-functional pueblo rooms from the Jornada Mogollon region (e.g., Brook 1967, 1980; Foster *et al.* 1981; Gerald 1988; Moore 1947; O'Laughlin 1985b, 1998, 2001a; Scarborough 1985) indicated that interior, non-storage pueblo room sizes varied substantially, from a low of 5.78 m^2 (Brook 1967) to a high of 37.90 m^2 (Brook and Green 1980). Rooms with floor areas greater than 25 m^2, however, do tend to stand apart as communal areas. In a given Jornada pueblo, such rooms tend to occur at a frequency of one large room to every 6–10 smaller rooms (O'Laughlin 2001a). Larger rooms also tend to have special, more formal attributes, such as well prepared, clay-lined hearths and floors and more floor features, such as loom or bin postholes.

These larger rooms are also more likely to have two formal hearths, which are often aligned on a north-south axis (O'Laughlin 2001a). The north-south axis of feature alignments, particularly of hearths, associated with an east-west axis of major posts, tends to lend these larger rooms a certain bilateral symmetry. This symmetry is particularly well defined in the southern Jornada pueblos that have room blocks organized around plazas, such as the Well Site in Chihuahua, Mexico, which contains large communal rooms with aligned southern and northern entries

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(O'Laughlin 1985b). Each entry is associated with a hearth and an east-west cordon of posts divides the room into northern and southern halves. The bilateral symmetry may indicate the division of the structures into distinct northern and southern components. This dual division of communal space more than likely replicates a ritual dichotomy in Jornada religion. In many indigenous new world cultures, a dual division of ritual space reflects the belief in a dual division of the cosmos in upper (alive) and lower (dead) worlds (Coe 1986; Moseley 1992; Plog 1997). Thus, the bilateral symmetry, along with the frequency of occurrence of these larger rooms, suggest that they served some ceremonial function. Like kivas in the Anasazi region, these large rooms may have served to solidify ritual ties between communal lineages.

Pithouses (Completely Excavated)
Eleven pit structures were completely excavated at the Jaca site. Following Graves *et al.* (1996) and Railey (2001), Jornada Mogollon pithouses can be divided into three types: formalized, simple pit, and simple basin (see Chapter 3). In this region, these categories generally represent a succession from the most to the least complex in terms of the house pit excavation and investment in construction, with the simple basin types commonly referred to as "huts." However, all three types can occur together, as at the Jaca site, where they were found in the Doña Ana/ El Paso-phase component. For this site analysis, simple basin and simple pit-type structures are not differentiated; some pithouses at Jaca clearly fell into one form or the other, but others varied morphologically between the two forms (e.g., in some profiles, there is a sharp break between the pithouse floor and wall on one side, but no such break on the opposite side). Furthermore, with wall slumping, deflation, and obliteration of upper feature portions having wreaked havoc on the pithouse remains at Jaca, key morphological attributes of some structures were lost. For this site discussion, then, all but the single formalized pithouse are grouped together as *simple pithouses.*

Formalized Pit Structure (Structure 2, Feature 54.22)
Located in the northwest portion of the core area, Structure 2 was directly overlain by Structure 1 (see Figure 6.25). Structure 2 was a rectangular-shaped pithouse with rounded corners. This pit structure measured 6.1 m long, 4.92 m wide, and extends 20 cm below the floor of Structure 1. The floor area was 11.57 m^2, making it the largest pithouse uncovered at the Jaca site. Structure 2 is further distinguished by remnants of a plastering applied to its floor.

Internal Stratigraphy
The fill of Structure 2 consisted of a semi-compact, brown (7.5YR5/4), sandy loam with a very small amount of charcoal and some caliche inclusions. The floor was either a pinkish-white (5YR8/2) caliche or a reddish-yellow (7.5YR6/6), sandy loam with a high density of caliche. Some remnant patches of gray (10YR5/1) plaster remained on the floor of this structure.

Floor Features
The four main support post holes of Structure 1 (Features 54.2 and 54.13–15) also penetrate below the floor of Structure 2.

Construction and Remodeling Evidence
Structure 2 was excavated into the caliche substrate, and the floor was plastered. The superstructure was probably of jacal construction, involving locally available brush (mesquite, narrow leaf yucca, and fourwing saltbush) mixed with an earthen matrix. The comparatively large size of Structure 2, the presence of floor plaster, and the fact that Structure 1 was built directly over it, suggests that Structure 2 served a special function relative to the other pithouses.

Dating
Two of the radiocarbon dates from Feature 54 came from large posts. These yielded two-sigma calibrations of A.D. 960–1160 (Feature 54.2) and A.D. 1020–1270 (Feature 54.13). These large posts may originally have been supports for Structure 2 and reutilized for Structure 1. Insofar as this is true, the radiocarbon dates may relate to

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either structure occupation. At any rate, these two, sequential structures were very close in time, as reflected by both construction evidence and associated ceramics. Based on an amalgam of evidence, Structure 2 appears to be a late Doña Ana-phase facility.

Abandonment Evidence

Assuming that Structure 2 was related to Structure 1, and that the latter immediately succeeded the earlier pithouse, then it follows that Structure 2 was probably intentionally razed and filled in as part of the preparation for the building of Structure 1. If the four large support posts were originally part of Structure 2, then they were probably left in place and incorporated into the frame of Structure 1.

Discussion

Structure 2 lies directly below Structure 1. The orientation of the two structures is also identical as the ramp entry of the pithouse faces south and Structure 1, presumably, also had a southward facing entry. Direct superimposition of surface rooms over pithouse structures is also documented at Firecracker Pueblo, a Late El Paso-phase site (O'Laughlin 2001a). At Firecracker, post and hearth locations of the lower structure were duplicated in the upper structure. In Structures 1 and 2 at the Jaca Site (LA 6829), the four primary post holes of the upper structure intrude directly into the floor of the lower structure. This, considered along with the similar spatial orientations, suggests that both structures shared the same main support posts (or at least the same postholes). Reuse of the same posts in the same positions indicates that little time passed between the dismantling of the lower structure and the construction of the upper structure and the occupants of the two structures were members of the same social group. O'Laughlin (2001) derived the same conclusions from similar patterns of structure superposition at Firecracker pueblo.

Simple Pithouses

Ten simple pithouses were completely excavated at Jaca (Structures 5–10, 13, 14, 16, and 17), and were clustered either in the northeastern or southwestern portions of the core area (see Figure 6.24). Seven of these structures were ovoid, while three were roughly rectangular with rounded corners (Figures 6.30–6.32). Four of the ten simple pithouses (Structures 5, 7, 9, and 10) contained floor features. Exterior thermal features and storage pits were present outside all of the pithouses in the southwest portion of the core area, and at least some of these were probably associated with the occupations of these structures. These structures exhibit an appreciable range in size and depth (Table 6.7). In terms of floor area, these structures can be roughly sorted into three size classes, small (Structures 9, 10, 13, 14, 16, and 17), medium (Structures 6–8), and large (Structure 5). Most of these structures do not indicate any substantial investment in their construction or maintenance.

Dating

Radiocarbon dates and ceramics from the simple pit structures indicate late Doña Ana- and early El Paso-phase occupations. A radiocarbon date of A.D. 900–1260 (two-sigma, calibrated) was obtained for charcoal from Structure 6, and this determination is consistent with the Doña Ana-phase ceramic assemblage. Similarly, the Structure 17 ceramics indicate a late Doña Ana occupation, which accords well with an associated radiocarbon date of A.D. 1160–1300 (two-sigma, calibrated). Interestingly, the ceramics from Structure 13 suggested a solely Doña Ana-phase occupation (see section on ceramics below), although the associated radiocarbon date of A.D. 1200–1400 (two-sigma, calibrated) overlaps this phase only slightly at best. Charcoal recovered from a pit within Structure 5 yielded a two-sigma, calibrated date of A.D. 1030–1280, which generally agrees with the El Paso-phase-like ceramic assemblage from this pithouse. None of the other simple pithouses were radiocarbon dated, but clearly date from the Doña Ana or El Paso phases based on recovered ceramics. It is important to note, however, that the ceramics from these structures were all recovered from pithouse fill, and there were no vessels *in situ* on the structure floors, with the exception of a

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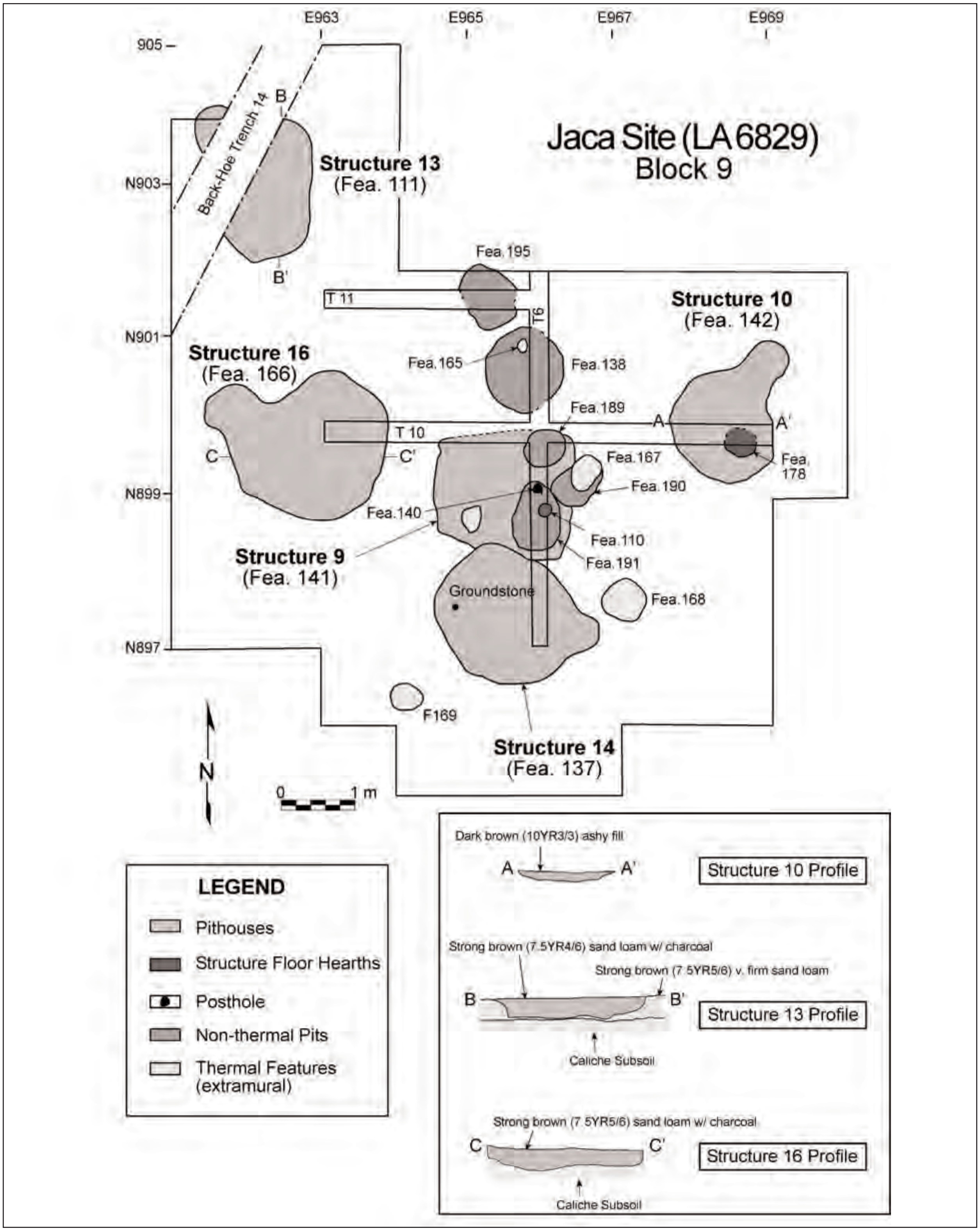

Figure 6.30 Block 9 at the Jaca site (LA 6829), showing simple pithouses and other features.

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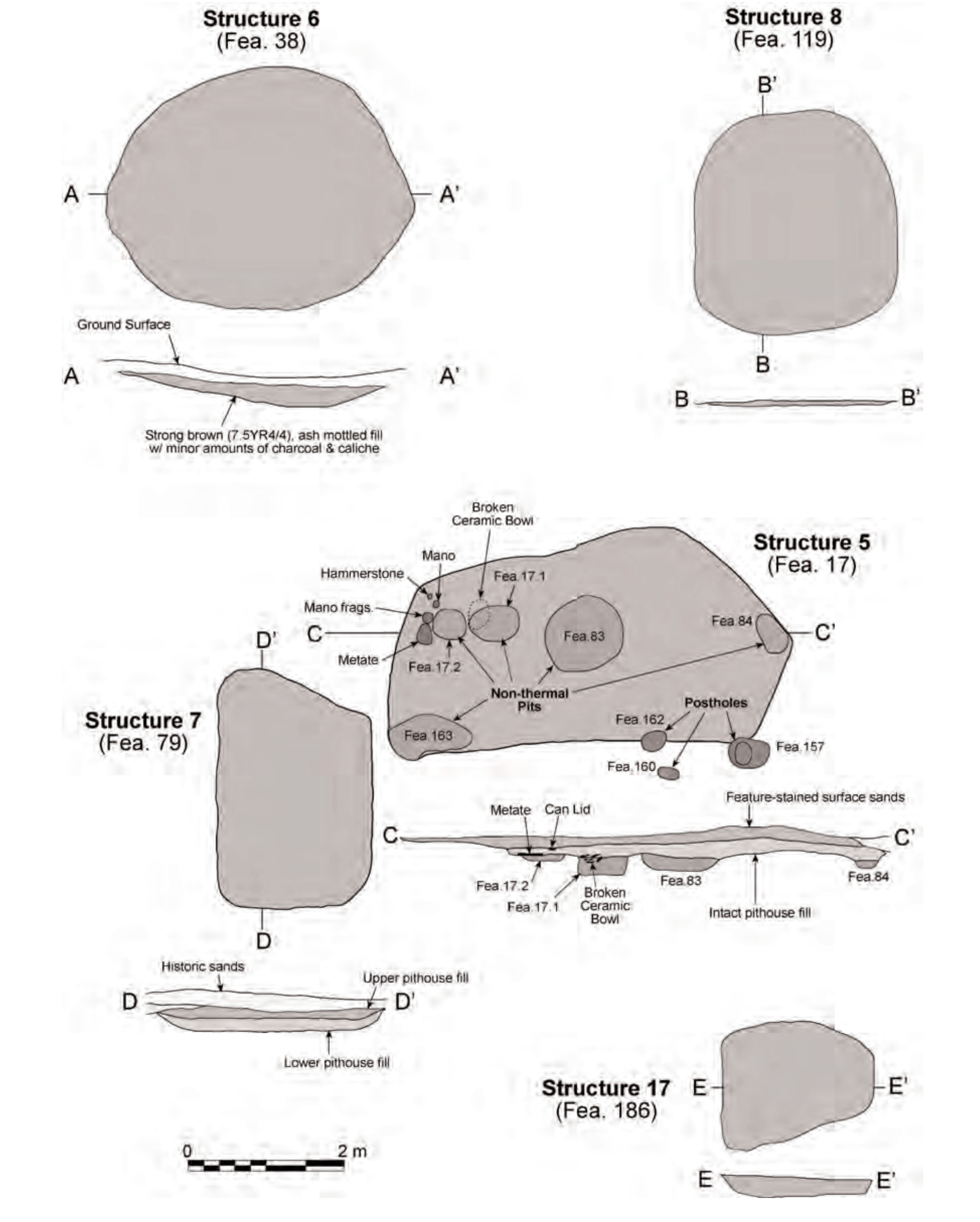

Figure 6.31 Plans and profiles of simple pithouses at the Jaca site (LA 6829).

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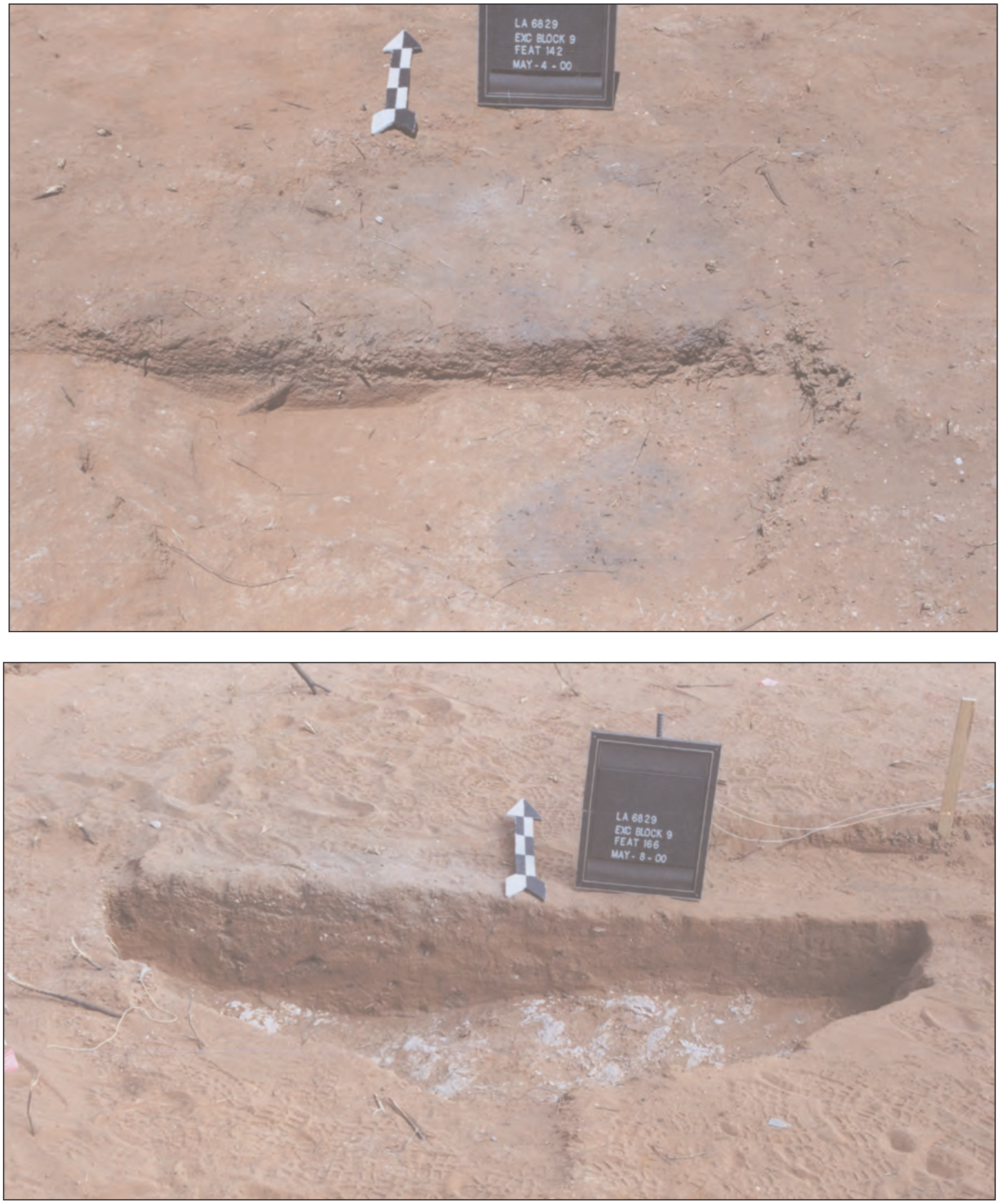

Figure 6.32 Simple pithouses at the Jaca site (LA 6829). Top: Structure 10 (Feature 142), a simple basin pithouse. Bottom: Structure 16 (Feature 166), which exhibits a clean break between floor and pit walls. Besides profile morphology, note the differences in fill matrix between the two structures, with Structure 10 filled with more ashy matrix that may derive from burning of the superstructure. Note also the differences in the structure floors; whereas Structure 10 was dug into a brown, sand stratum, the Structure 16 pit terminates in the caliche of the La Mesa calcrete.

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Table 6.7 Size Data for Simple Pit Structures at the Jaca Site (LA 6829)

Dimension	Range	Mean
Floor Area	2.5–10.35 m^2	4.4 m^2
Depth	6–40 cm	27 cm

Three Rivers Red-on-terracotta bowl recovered from the floor of Structure 5 (see below).

Internal Stratigraphy

The fill within the simple basin-type pit structures appears to have derived from two main sources: 1) dumping of trash into the abandoned structure basins, and 2) intentional burning of the superstructure. Within Structures 5, 7, 13, 14, and 16, the fill consisted of ashy midden deposits that appeared to derive from trash dumping episodes. Typically, this fill was dark gray (10YR3/1 and 4/2), brown (7.5YR4/4), and/or strong brown, (7.5YR5/6) sand loam, with scattered charcoal, artifacts, and concentrations of ash. Within Structures 5 and 7, there was a positive correlation noted between the darkness of fill soil color and density of cultural debris. All of these pithouses appear to have been filled incidentally with secondary deposits following abandonment (see Figure 6.32, bottom).

In Structures 6, 8, 9, 10, and 17 the fill consisted of ash-stained deposits that appeared to derive from intentional torching of their superstructures upon abandonment. This is inferred from the more uniform, ash mottled, dark brown (7.5YR4/4), sand loam fill with scattered charcoal. In Structure 10, the fill in one portion of the basin was a gray, ashy matrix (10YR3/3), and may represent a trash dumping episode after abandonment and burning of the structure (see Figure 6.32, top).

The floors of Structures 13, 14, 16, and 17 were all in the natural caliche substrate. The floors were not perfectly level in any of the five pithouses. Structures 5–10 were all excavated into a strong brown (7.5YR5/6), sand loam subsoil. Structures 5 and 7 cut into the upper portions of several pits, including some of the possible water retention features (or *huecos*, see below).

Artifacts were uncovered *in situ* on the floors of Structures 5 and 10. In Structure 5, these included a pile of ground stone artifacts and a hammerstone in the northwest portion of the structure, and a Three Rivers Red-on-terracotta large bowl (of which 30 percent was recovered) immediately to the east. Although these materials were encountered on the structure floor, it is possible they were deposited here after abandonment. Materials on the floor of Structure 10 included some fire-cracked rock near the floor hearth, an Archaic period projectile point, some lithic flakes, a hammerstone, and some ceramic sherds. No *in situ* artifacts were encountered on the floors of the other simple pithouses. The only artifacts recovered from these structures came from the secondary fill, and so the association of these materials with the respective pit structures is potentially fortuitous.

Floor Features

Floor features were present in four of the ten completely excavated, simple pithouses. These included floor hearths, postholes, and non-thermal pits.

Floor hearths were identified in Structures 9 and 10. The one in Structure 9 was located slightly east of center on the pithouse floor. This hearth was a circular, ash-filled basin measuring 20 cm in diameter and eight cm deep. The floor hearth within Structure 10 was located in the southeast portion of the structure, and was a circular, ash-filled basin measuring 43 cm in diameter and 17 cm deep (see Figure 6.32, top).

Postholes were uncovered in Structures 5 and 9. Structure 5 contained three postholes, all in the southeastern portion of the structure. Structure 9 contained a single posthole just north of the floor hearth; it was oval in plan, cylindrical in cross-section, 12 cm in diameter, and 6-cm deep.

Structure 5 contained five non-thermal pits, including both oval (n=4) and circular (n=1). The oval

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pits ranged 39 cm–1.14 m in length and 18–58 cm in width. The circular pit was 95 cm in diameter. Three of the pits were basin-shaped, including the one circular pit. All but one (Feature 82) was filled with the same ash-stained midden deposits that comprised the fill of the structure. One pit (Feature 17.1) was cylindrical and 22 cm deep, and the other two floor features (Feature 163 and 184) had irregular profiles and depths of 40 and 44 cm. The pit appears to have been filled as a result of trash dumping into Structure 7. The function of these various sub-floor pits is not entirely clear, although at least some were probably used as storage bins.

Structure 10 was the only structure that appeared to have an entry or side chamber, which was located along the northeast portion of the structure wall. This feature was 45 cm wide and extended nearly 80 cm in diameter beyond the main structure floor area. Although this feature is tentatively identified as an entryway, it could also have been a storage area. A portion of the eastern wall of Structure 9 could not be clearly defined, and this may also represent an entryway into this structure.

Construction and Remodeling Evidence

The simple pithouses were excavated 6–40 cm into the substrate. The walls were not lined with daub or caliche. As noted above, some of the pithouses conformed to the simple basin type. Within 10–30 cm of these structures' basin edges, the sloping sides of these basins graded onto nearly level floors. Other house pits were excavated with sharp breaks between the walls and floors. The floors of all the simple pit structures were earthen or caliche, and none were formally prepared. Some pithouse floors were markedly undulating, further reflecting the expedient nature of these structures. As noted above, Structures 5 and 7 cut into a dense concentration of artificial pit features; it is possible that at least some of these were still open (or partially so), and that the construction of the overlying pithouses made use of the already excavated space from these pits (perhaps even filling in the lower portions of some pits up the floor level of the structures). The pithouse superstructures were likely of jacal construction, incorporating locally available brush (mesquite, narrow leaf yucca, and fourwing saltbush) within an earthen matrix. Postholes were apparent in only two of these structures, although it is likely that other postholes simply did not survive; some may have been destroyed as a result of deflation.

Abandonment Evidence

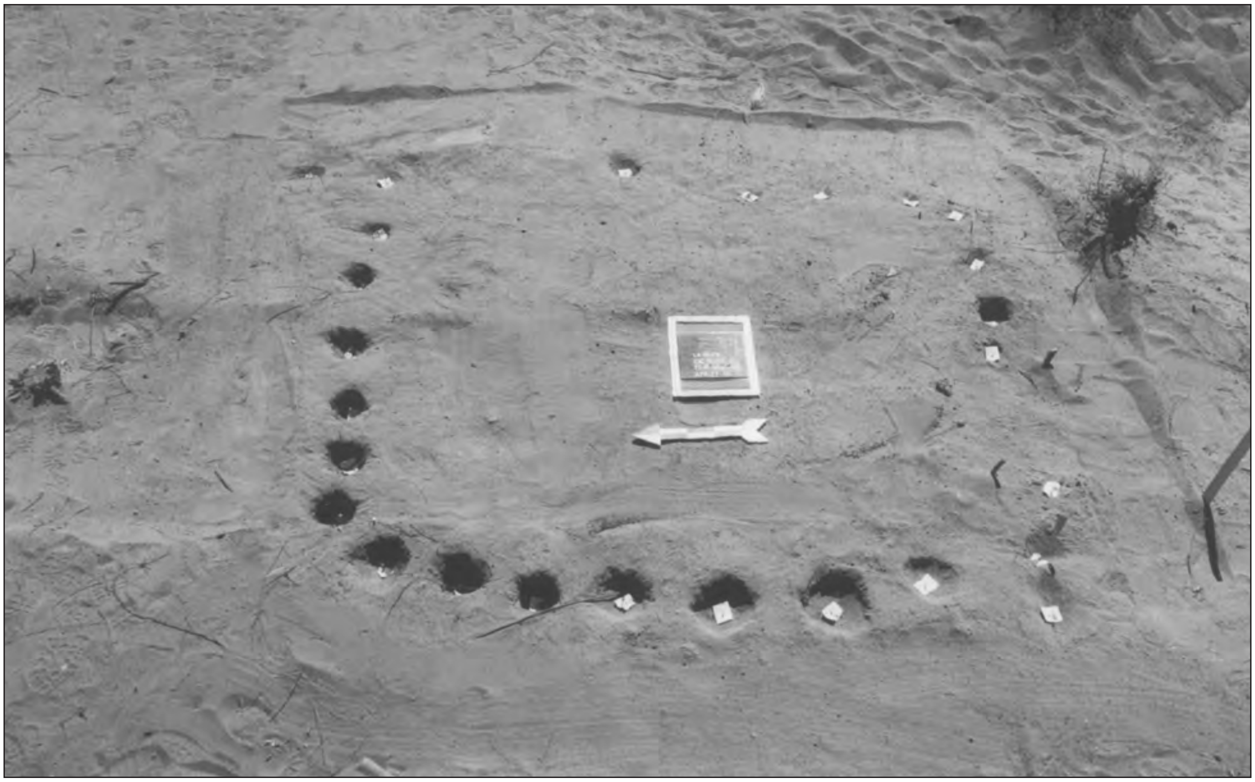
None of these structures appear to have been hastily abandoned. The lack of cultural materials on the floor indicates a planned, orderly departure. The only possible exception here were the artifacts on the floors of Structures 5 and 10, although these may well have been deposited here after this pithouse was abandoned. Fill characteristics indicate several of these pit basins were utilized for trash dumping and this, in turn, suggests continued occupation of the site following abandonment of at least some of these structures.

Surface Post Structure (Structure 4: Feature 91)

Structure 4 was defined by a series of 25 postholes that form a rectangular pattern with rounded corners (Figure 6.33). It was located several meters southeast of the main communal structure (Structure 1) and south of Structure 7, a simple pithouse. Structure 4 measures 2.35 m north-south x 2.1 m east-west, enclosing approximately 4.9 m^2. There was no discernable pit or any anomalous soil staining marking this structure, and interior floor features were absent. The function of this structure is not clear; similar examples of domestic architecture are unknown for the southern Jornada region. One intriguing possibility is that Structure 4 was a turkey pen; the close spacing of the posts would have provided a framework for the construction of a brush enclosure. Another remote possibility is that the Structure 4 posts mark the peripheries of a pit structure, with the walls having been obliterated by deflation, leaving only the lower portions of the posts.

Internal Stratigraphy and Contents

No internal stratigraphy was observed in Structure 4; the posts were sunk into the subsoil, consisting



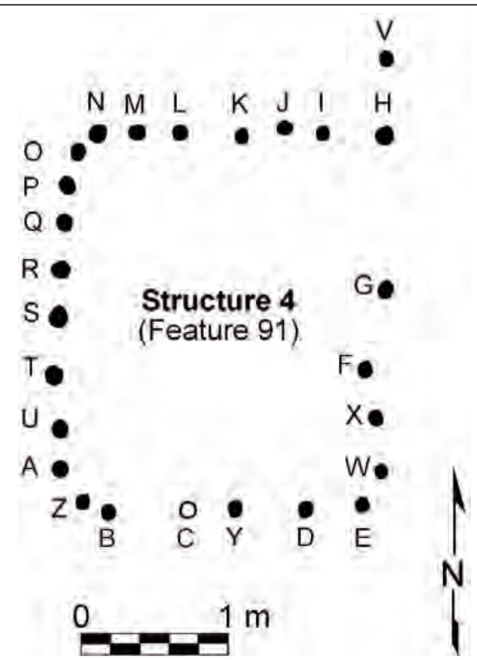


Figure 6.33 Structure 4 (Feature 91), a post structure at the Jaca site (LA 6829).

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of a strong brown, sandy loam (7.5YR5/6), with a few caliche nodule and gravel inclusions. Materials recovered from the Structure 4 area include several pieces of lithic debris and ceramics, although these are not necessarily associated with the use of this structure.

Floor and Internal Features
No house floor nor internal features were present.

Construction Evidence
Structure 4 consisted of 25 postholes in a rectangular alignment; only one was off line, placed just north of the northeast corner. The latter may mark an entryway into this enclosure, an inference supported by a wide (40 cm) gap between the postholes here. Otherwise, the 25 postholes were spaced 10–35 cm apart, with the majority spaced 25 cm from one another. Relatively few postholes mark the eastern wall of this enclosure, which may be due to deflation of the surface here, which approaches the borrow pit and is generally 10 cm lower than the surface along the other walls. The postholes ranged 7–23 cm in diameter and 2–18 cm in depth. All but three were circular in plan; the exceptions were all oval-shaped. Almost all were cylindrical in profile, the only exceptions including one basin-shaped and another conical posthole. The basin one was shallow and is probably only the bottommost portion of the post hole. Most of the postholes appeared to have been truncated by erosion near their bases, with the exception of the postholes toward the northwest corner, which is farthest from the borrow pit. The superstructure was likely locally available brush (mesquite, narrow leaf yucca, and fourwing saltbush), woven into the frame of upright posts.

Abandonment Evidence
There is no clear evidence either way to suggest that Structure 4 was hastily abandoned, or if its use life ended in a more planned manner.

Structures Partially Excavated or Avoided

Five structures identified within the highway right-of-way were either not investigated further or only partially excavated (Structures 3, 11, 12, 15, and 18). Three of these (Structures 3, 15, and 18) extend outside of the right-of-way and will be protected by the BLM. The right-of-way fence will be moved in 7 m from the existing fence to protect these remains. Two of the structures (Structures 11 and 12) within the right-of-way were only partially excavated, because their form, fill, and contents indicated similarities to other, already-excavated structures, and it was thus determined that they would likely yield redundant information. Both appeared to be simple basin-type pit structures.

Structure 3 (Surface Pueblo Room)
Structure 3 was identified in the west profile wall of Excavation Block 16, 84 cm west of the west wall of Structure 1 (Figure 6.34). The profile revealed basal remnants of the straight, vertical walls of a structure, spaced 3.2 m apart (north-south) from one another. The remnant earthen walls were 7 cm or more in height, but were not observed or documented during the excavation of Block 16. No distinct floor area was encountered in the area excavated immediately west of Structure 1, and the wall remnants only became apparent in the profile wall of Excavation Block 16. The walls likely abutted up against the west wall of Structure 1, indicating that Structures 1 and 3 formed at least part of a room block that may still include remains of additional rooms outside the right-of-way to the west. The walls of Structure 3 had likely suffered more severe deflation relative to those of adjoining Structure 1. Assuming that the observed walls of Structure 3 indeed joined Structure 1, then 2.62 m^2 of Structure 3 was “exposed” within Block 16. The fill of Structure 3 is a semi-compact, yellowish-brown (5YR5/6), sandy loam underlying eolian sands. The surrounding matrix consists of a light reddish-brown (5YR6/3), sandy loam. A basin-shaped, non-thermal pit (Feature 159) intrudes into the upper fill of Structure 3. Cultural materials recovered from the fill of Structure 3 included both ceramics and lithic artifacts. Given its apparent relationship to Structure 1, Structure 3 probably dates to the very early portion of the El Paso phase.

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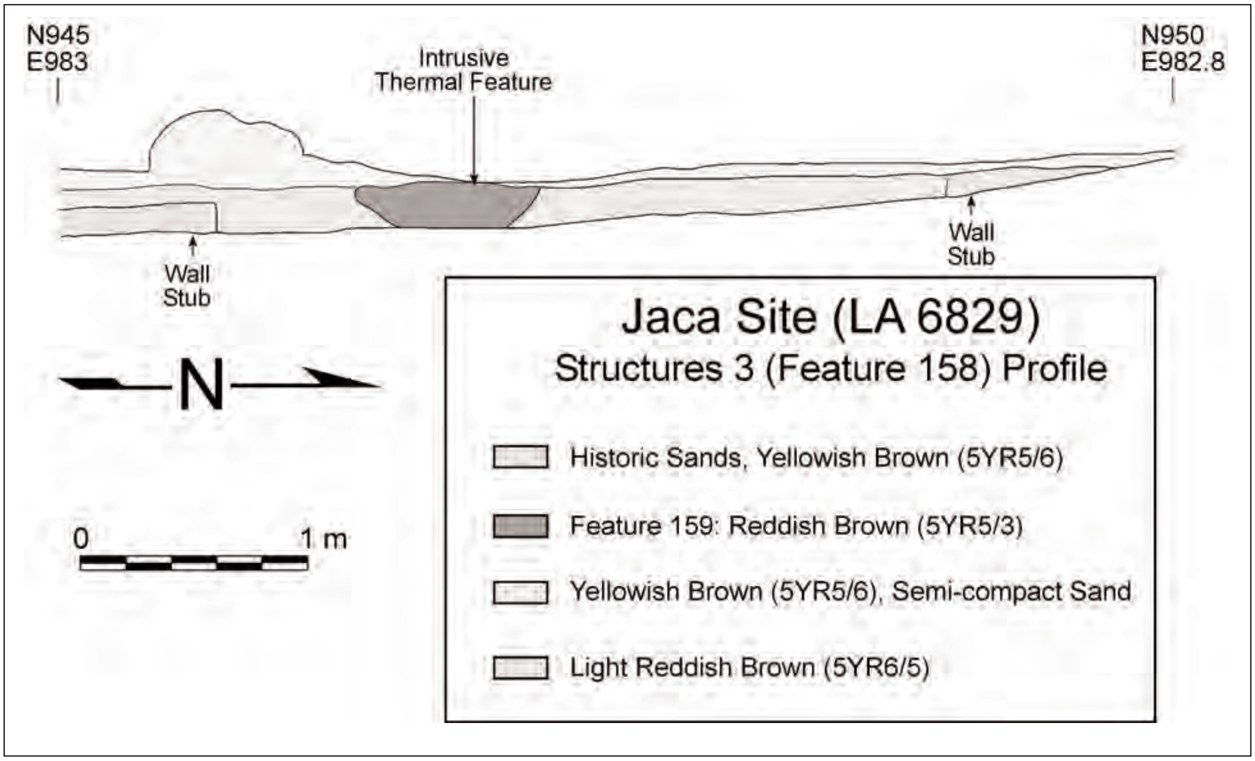

Figure 6.34 Profile of Structure 3 (Feature 158), a surface pueblo room at the Jaca site (LA 6829).

Partially Investigated Simple Pithouses

Four simple pithouses were only partially excavated or exposed, including Structures 11 (Feature 179), 12 (Feature 57), 15 (Feature 146), and 18 (Feature 68). Structure 11 was partially uncovered and investigated within Excavation Block 18. The structure was encountered beneath the Organ III, more than 40 cm below the ground surface at the base of the block excavation. Although apparently all of the structure was uncovered within the excavation block, only two 1.0 x 1.0-m units were excavated to the floor of the structure. The remainder of the structure was not excavated due to time constraints, and given that its characteristics were similar to many other hut structures excavated on the site. A radiocarbon date of A.D. 1180–1420 (two-sigma, calibrated) was obtained for this structure. This date, along with the associated artifact debris, indicated a late Doña Ana- or El Paso-phase affiliation for Structure 11. The structure was apparently a simple basin pithouse; it was constructed in a shallow basin depression extending 19-cm deep, and appeared to be oval or irregular in plan. The floor lies on the caliche substrate and the perimeter walls of the house basin exposed the Organ I. The exposed portion of the structure covered 2.21 m^2, and given that roughly half the structure was excavated, it likely covered approximately 4.4 m^2 . Two strata were recognized within the structure fill. The upper stratum was a strong brown (7.5YR4/6), sandy loam with ash staining and charcoal, overlying a yellowish-red (7.5YR5/6), sandy loam with some ash staining, caliche, and charcoal. Both ceramics and lithics were recovered from the structure's fill.

Structure 12 was partially uncovered within the south-central portion of Excavation Block 13. It was covered by 10–30 cm of eolian deposits and 10 cm of Organ III sediments. An estimated 30 percent of the structure, covering 1.72 m^2, was exposed within Block 13, and this entire portion of the structure was excavated. The structure appears to have been a simple basin pithouse, with a total recorded depth of 20 cm. The remainder of the structure was not excavated

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because of time constraints, and given its similarity to other hut structures excavated on the site. The structure is estimated to encompass a total area of 5.16 m^2. The structure fill consisted of a dark brown (7.5YR3/4), sandy loam with ash staining and charcoal. The surrounding matrix consisted of a strong brown (7.5YR4/6), sandy loam (Organ III age sediment) above a similar fill with a moderate density of caliche nodules (Organ I age sediment). Cultural materials recovered from the structure fill included ceramics and lithics. The ceramics suggest an El Paso-phase affiliation.

Structure 15 straddled the right-of-way boundary. The entire portion of Structure 15 within the right-of-way was excavated, which included 4.3 m^2 of the structure's floor area. These excavations revealed a shallow, simple basin-type pithouse that is roughly oval, with a curious constriction in the middle that gives it a slightly bilobed shape (Figure 6.35). The maximum observed width of this structure was 1.95 m, and it is 1.5-m wide at its constricted middle portion. The total length and floor area of the structure remain unknown, although it estimated that 80 percent of the structure was excavated, which would yield an approximate total floor area of 5.4 m^2. A floor hearth (Feature 146.1) was present in the central portion of Structure 15, between the wall constrictions. The fill of the structure ranged from a dark yellow-brown (10YR4/4), sandy loam with ash and charcoal flecks, to a dark brown (7.5YR4/4), sandy loam with some charcoal and ash staining. The structure basin intruded into the Organ I, characterized by a strong brown (7.5YR5/6), sandy loam with a few inclusive caliche nodules. The fill of the floor hearth was a grayish-brown (10YR5/2), ashy, sand loam with charcoal and no other inclusions. Cultural materials were not recovered *in situ* from the floor, although the structure fill contained ceramics, lithics, and burned bone fragments. The ceramics suggest a Doña Ana-phase affiliation for Structure 15.

Structure 18 also extends outside the right-of-way

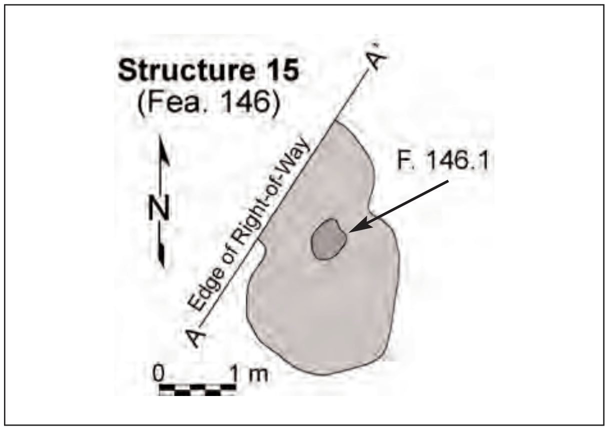

Figure 6.35 Structure 15 (Feature 146), a partially investigated, simple pit house at the Jaca site (LA 6829).

and will be protected by the NMSHTD. This structure was first observed as an ash stain, which was partially exposed by mechanical scraping down to 50 cm below the ground surface. The exposed portion of this stain measured 6.5 m east-west x 3.5 m north-south. A 50 x 50-cm shovel test pit (ST 28) was placed against the far eastern edge of this stain, exposing what appeared to be the edge of a large basin-shaped depression, which within the shovel test reached a maximum depth of 10 cm below the scraped surface. The fill consisted of the ashy matrix observed on the scraped surface. Both ceramics and lithic artifacts were recovered from the basin fill within the test pit. The four sherds from this structure did not provide any clues as to its temporal placement, although it probably dates from the same Doña Ana–El Paso-phase occupation that includes the rest of the investigated structures at the site.

Non-Thermal Features

A total of 42 non-thermal features was exposed in 10 excavation blocks and two backhoe trenches (Figure 6.36). These include 40 pits and two caliche caps. The pits were divided into the following, arbitrary size categories based on maximum pit diameter: small (< 50 cm); medium (> 0.5–1.0 m); and large (> 1.0 m). The frequencies were more or less equally distributed; there were 12 small, 13 medium, and 14 large pits. The one pit not included here was only partially

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exposed (Feature 201), but appeared to fall within the large category. All of the non-thermal pits were filled with secondary deposits.

Small Non-Thermal Pit Features

Of the 12 small non-thermal pits, six were found inside structures and six were extramural. Plan shapes included five oval, five circular, one amorphous, and one of unknown shape.[3] Summary data for these pits are presented in Table 6.8. In terms of cross-section morphology, nine were basin-shaped, one was cylindrical, another was cylindrical and partially bell-shaped, and one was amorphous in shape. The basin pits averaged 11.6 cm in depth, with a range of 2–30 cm.

Three of the nine shallow basin pits were uncovered within Structure 1 (Features 54.03, 54.11, and 54.18). The single small, cylindrical pit was found within Structure 1, and extended 50 cm below the floor (Feature 54.16). It was obviously a storage pit. The single bell-shaped pit (Feature 184) was oval plan and intruded into a larger, non-thermal pit (Feature 86). Feature 184 likely represented a storage facility associated with Structure 5. This pit contained straight-sided walls to 10 cm above the base, where the walls flared out. The final interior small non-thermal pit (Feature 84) was encountered on the floor of Structure 5, and was an oval, basin-shaped pit. This feature was probably a storage facility.

The six extramural, small non-thermal features include three in the north portion of the core area (Features 153, 154, and 188), all located east of Structure 1 within a cluster of large features that may represent *huecos* or water catchment facilities (see below). The remaining three include one just southeast of Structure 17 (Feature 195), another north of southern cluster of pithouses, and one isolated pit located some 30 m to the south of the main core area of the site (Feature 53).

The function of most of the 12 small non-thermal features remains unknown, although the deeper pits (Features 54.16, 84, 112, 153, 154, and 184), especially the cylindrical and bell-shaped ones, were most likely storage facilities. Three of these presumed storage pits are located inside of structures (one in Structure 1 and two in Structure 5), another two are just outside of structures, and one is in an isolated location. The function(s) of the shallow basin pits remains unknown; it is suggested that the ones within Structure 1 were pot rests, and this may hold true for other small, shallow basin pits as well. It is also possible that some of the small, shallow basin pits are remnants of deeper pits that had been deflated.

All 12 of the small, non-thermal pits were filled with secondary deposits that ranged from sterile eolian sand to ash-stained midden. The fill within each of the small, non-thermal pits contained secondarily deposited Organ III sandy loam, derived from both the dark brown (7.5YR4/4) Ab horizon and the strong brown (7.5YR5/6) Organ III sediments without humates, along with scattered charcoal chunks, some ash stained soils, and scattered artifacts including ceramics and lithics. At least most of these pits date from the Doña Ana/El Paso phase occupation at the site.

Medium-Sized Non-Thermal Pit Features

The 13 medium-sized, non-thermal pits include seven extramural and five inside of structures. The extra- and intramural pits in this category were very similar in most attributes. The average diameter of intramural pits was 66.3 cm and that of extramural pits, 65.6 cm. The average depth was 23.8 cm and 19.4 cm, respectively. Six of the extramural pits were basin-shaped and one was cylindrical. The intramural pits included three basins, one cylindrical pit, and one irregular form. The main difference between internal pits versus external pits was in horizontal shape, although there was considerable overlap here; intramural pits included four oval-shaped and one circular

[3] The feature of unknown shape (Feature 112) was largely removed during the excavation of Backhoe Trench 14. The pit had been filled with secondarily deposited matrix containing cultural materials (identical to the surrounding matrix). It measured 50 cm in length by more than 10 cm in width.

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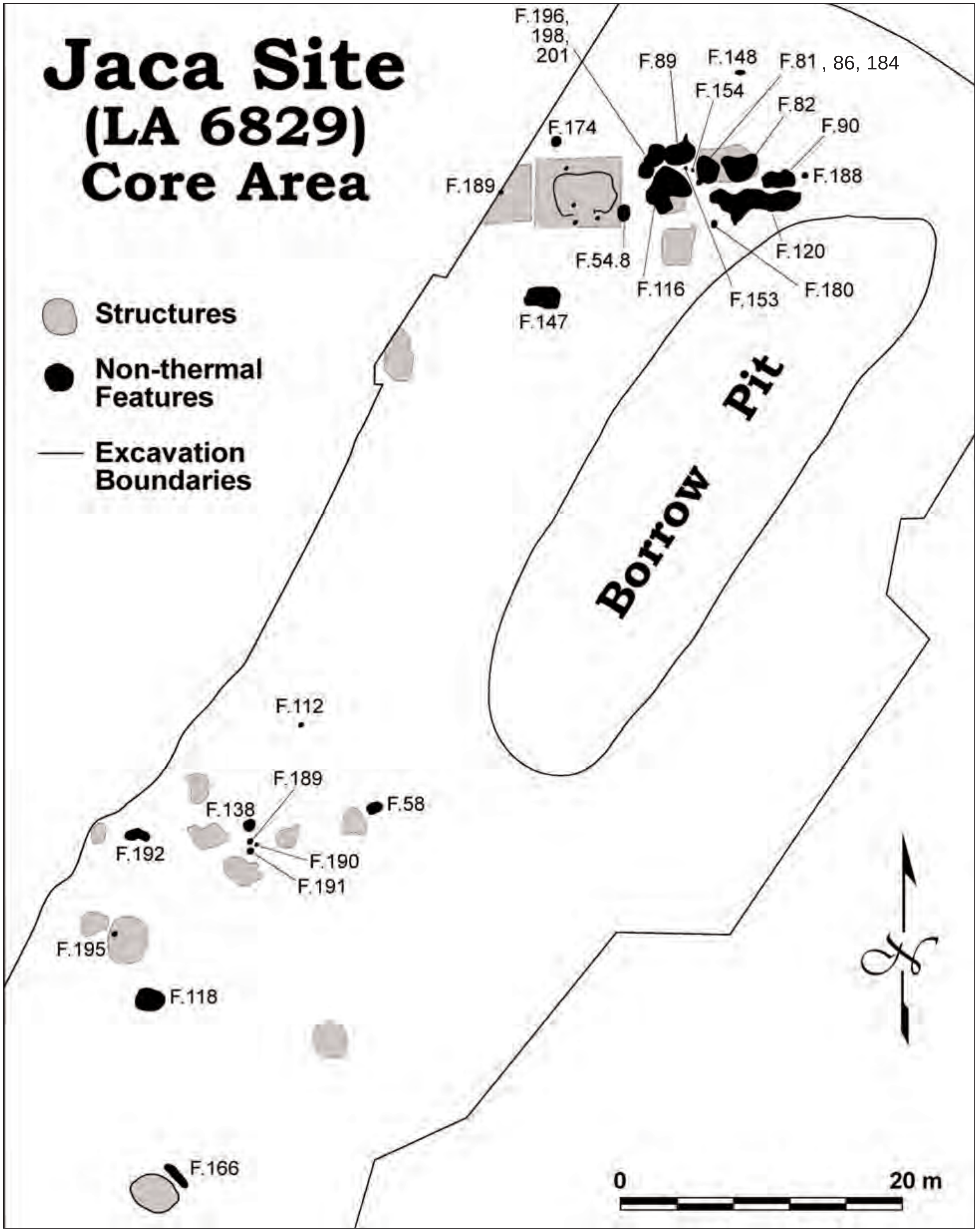

Figure 6.36 Distribution of non-thermal pit features at the Jaca site (LA 6829).

Table 6.8 Summary Data for Small, Non-thermal Pit Features at the Jaca Site (LA 6829)

Feature	Length x Width (cm)	Depth (cm)	Plan	Profile	Within w/in Structure
53	20 x 20	8	Aamorphous	Aamorphous	--
54.3	27 x 27	2	Circular	Basin	1
54.11	34 x 34	5	Circular	Basin	1
54.16	39 x 35	50	Circular	Cylindrical	1
54.18	31 x 30	7	Circular	Basin	1
84	54 x 38	18	Oval	Basin	5
112	50 x 10+	30	Unknown	Basin	--
153	50 x 40	16	Oval	Basin	--
154	38 x 30	12	Oval	Basin	--
184	39 x 34	40	Oval	Cylindrical/Irregular	5
188	40 x 40	8	Circular	Basin	--
195	30 x 23	6	Oval	Basin	--

pit, and external pits included three circular, two oval, and one irregular form. The single irregular medium-sized pit was located within Structure 5. Depth of the medium-sized pits were generally > 15 cm, with only three less than 10 cm. The pits deeper than 15 cm are identified as storage facilities (Figure 6.37). All external medium-sized pits were located close to structures.

The five intramural, medium-sized, non-thermal pits included four within Structure 5 (Features 17.1, 17.2, 83, and 163), and one within Structure 7 (Feature 155). The extramural medium-sized, non-thermal pits include three in the north and four in the southern portion of the core area. The three in the north portion included one just north of Structure 1 (Feature 174), one north of the large non-thermal pits to the east of Structure 1 (Feature 148), and one adjacent to the south edge of the overlapping, large non-thermal pits east of Structure 1 (Feature 180). The medium-sized non-thermal pits in the southern portion of the core area were all concentrated in Block 9, and are likely associated with structures in this area. These include Features 189–191 and 196.

All of the medium-sized, non-thermal pits were filled with secondary deposits. These ranged from sterile eolian sand to ash-stained midden. The fill within each of the small, non-thermal pits contained secondarily deposited Organ III sandy loam, derived from both the dark brown (7.5YR4/4) Ab horizon and the strong brown (7.5YR5/6) Organ III sandy subsoil, along with scattered charcoal chunks, some ash-stained soils, and scattered artifacts including ceramics and lithics.

Of the pits in this category, only Feature 83 was radiocarbon dated, yielding a two-sigma, calibrated date of A.D. 1030–1290. This is consistent with the Doña Ana/El Paso-phase component and probably all of these pits date from this occupation. See Table 6.9 for summary data for medium, non-thermal pit features at the Jaca site.

Large Non-Thermal Pit Features

The 14 large non-thermal pits were all located outside of structures, and included four basins. Those that were not basin included seven irregular, one bell, and two cylindrical (Table 6.10).

Among the basin-shaped, non-thermal pits all but one were relatively small in surface area and shallow. The single exception (Feature 58) has characteristics similar to the larger pits in this category. All of the large non-thermal pits that contained irregular, bell, or cylindrical morphology generally exceed 48 cm in depth, with the exception of one at 37 cm deep. The shallow basin pits ranged 12–24 cm deep with the exception of

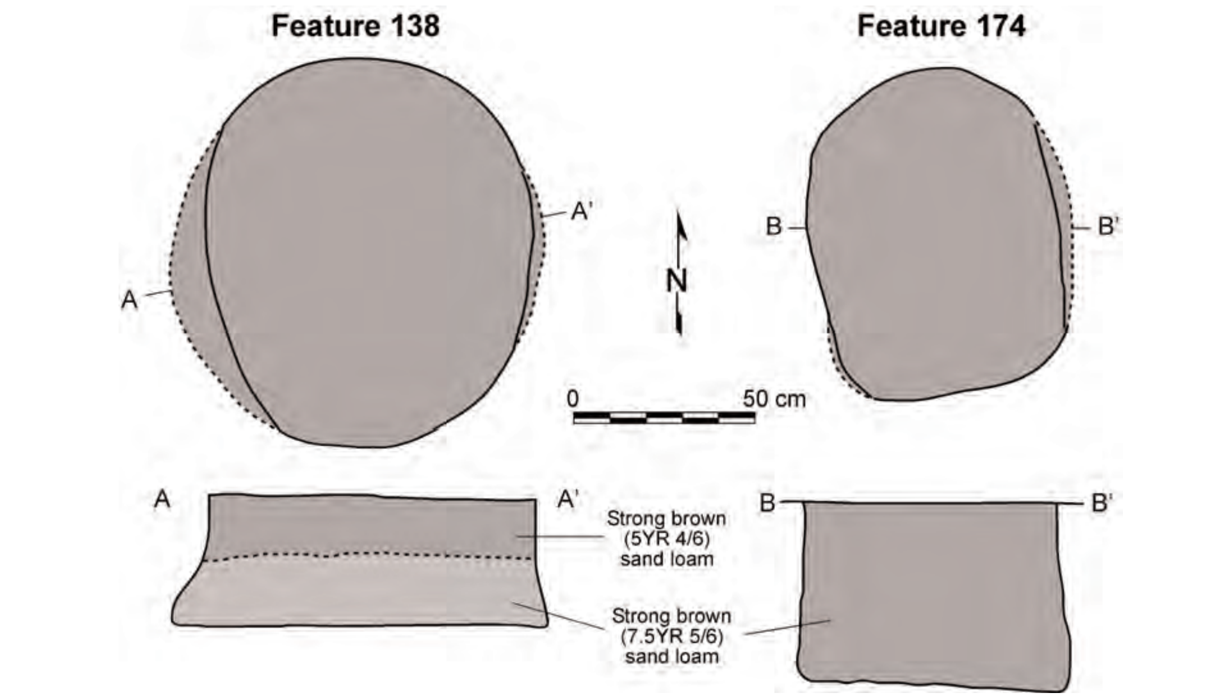

Figure 6.37 Probable storage pits at the Jaca site (LA 6829).

Table 6.9 Summary Data for Medium, Non-thermal Pit Features at the Jaca Site (LA 6829)

Feature	Length x Width (cm)	Depth (cm)	Plan	Profile	Within Structure
17.1	70 x 46	22	Oval	Cylindrical	5
17.2	65 x 56	19	Oval	Basin	5
54.8	64 x 46+	19	? (cut by Structure 1)	Basin	--
83	96 x 95	19	Circular	Basin	5
148	90 x 20+	20	Unknown	Basin	--
155	92 x 42	21	Oval	Basin	--
159	82 x 41	18	Oval	Basin	3*
163	114 x 58	44	Oval	Irregular	5
174	90 x 74	51	Oval	Cylindrical	--
180	52 x 50	8	Circular	Basin	--
189	52 x 50	9	Circular	Basin	--
190	63 x 62	15	Circular	Basin	--
191	85 x 65	8	Irregular	Basin	--

* intrusive; not a structure floor feature

Feature 58 that was 70 cm deep. Feature 58 was also excavated into caliche substrate and contained a floor pit similar to the other large deep pits (Figure 6.38).

Feature 58 was one of seven large non-thermal pits that contained from one to 14 smaller floor pits (Features 58, 82, 86, 89, 90, 116, and 120). The largest of these pits (Feature 120) also contained the highest number of floor pits. The floor pits ranged from circular, oval, to irregular in plan and from basin, cylindrical, and irregular in cross-section. The large pits with the smaller, sub-floor pits were all prehistorically excavated 10–50 cm into caliche substrate. The unusual shape of these pits, along with their large surface areas, suggests

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Table 6.10 Summary Data for Large, Non-thermal pits

Feature Number	Plan	Profile	Length x Width (m)	Surface area (m^2)	Depth (m)	Number of Floor Pits	% excav
58	Oval	Basin	2.25 x 1.85	3.29	0.7	> 1	50?
66	Irregular	Basin	2.52 x 0.97	1.53	0.23	0	100
82	Irregular	Irregular	2.62 x 2.16	3.55	0.7	2	100
86	Oval	Irregular	2.18 x 1.82	2.68	1.04	3	100
89	Oval	Irregular	2.34 x 2.16	2.85	1	2	100
90	Irregular	Irregular	2.6 x 1.56	2.94	0.61	2	100
116	Irregular	Irregular	> 3.58 x 2.86	> 5.16	0.77	> 3	70?
118	Oval	Basin	1.4 5 x 1.3	1.48	0.24	0	100
120	Irregular	Irregular	6.5 x 2.67	9.42	0.87	14	100
138	Circular	Bell	1.05 x 1.03	0.81	0.37	0	100
147	Oval	Irregular	2.20 x 1.35	2.78	0.58	0	100
192	Oval	Basin	2.75 x 1.0	1.93	0.12	0	100
196	Oval	Cylindrical	1.20 x 1.08	0.95	0.48	0	90
198	Oval	Cylindrical	1.78 x 1.35	1.26	0.76	0	100

they were not utilized for storage of perishables. Instead these pits may be surface water catchment facilities or *huecos* (Figures 6.38–6.43). The sub-floor pits may have served as settling traps for silts washed into the large pits by rainwater. The eastern base and a portion of the eastern wall of Feature 89 contained a thin lens of daub or clay lining, suggesting at least this pit was lined. One other large, non-thermal feature, Feature 147, did not contain sub-floor pits, but may also be a *hueco*. The average area of all eight of the large potential *huecos* was determined to be >4.08 m^2, with a range of 2.68–9.42 m^2.

Assuming that these large features indeed represent *huecos*, it seems likely that they were not designed to hold water over a long period of time, but rather only long enough (perhaps only a few days at most) for the site's inhabitants to fill pots with water for easier storage. It is worth considering the water retention capacity of these features. Table 6.11 indicates the quantities of water that could have accumulated in each of the potential *hueco* features, under variable rainfall amounts. Some of the captured rainfall may have been lost through seepage into the substrate, although clay lining of the pit bottoms would have mitigated this problem (although it is worth noting that during the data recovery project, Feature 90 filled with rainwater after a heavy downpour and held this water for a period of time). Calculating the volume of these pits reveals that each one could have easily held water from even a two-inch downpour. For example, Feature 58 could have held 608 gallons of water, more than enough to hold water captured directly from a 2-inch downpour.

These data prompt the question as to why so much energy was expended to dig such large pits, whose volumes were greater than the amount of rainwater that could be captured even during an exceptionally heavy downpour. It seems likely that artificial means were employed to increase the area of runoff captured by the individual pits, and there is indeed potential evidence to suggest this was at least attempted. Postholes (Features 157, 160, 162, 172, 181, and 182) recorded in and around the concentration of potential *hueco* Features in Excavation Block 3 (Features 82, 86, 89, 90, 116, and 120; see Figure 6.40) may represent one or more superstructures that were constructed to increase runoff catchment for at least some of these earthen tanks (similar to the way in which house roofs increase the water catchment of rainwater cisterns).

An alternative scenario might also explain the presence of these large, non-thermal pits. Specifically, they may have been adobe pits from which clay and caliche were mined to make adobe

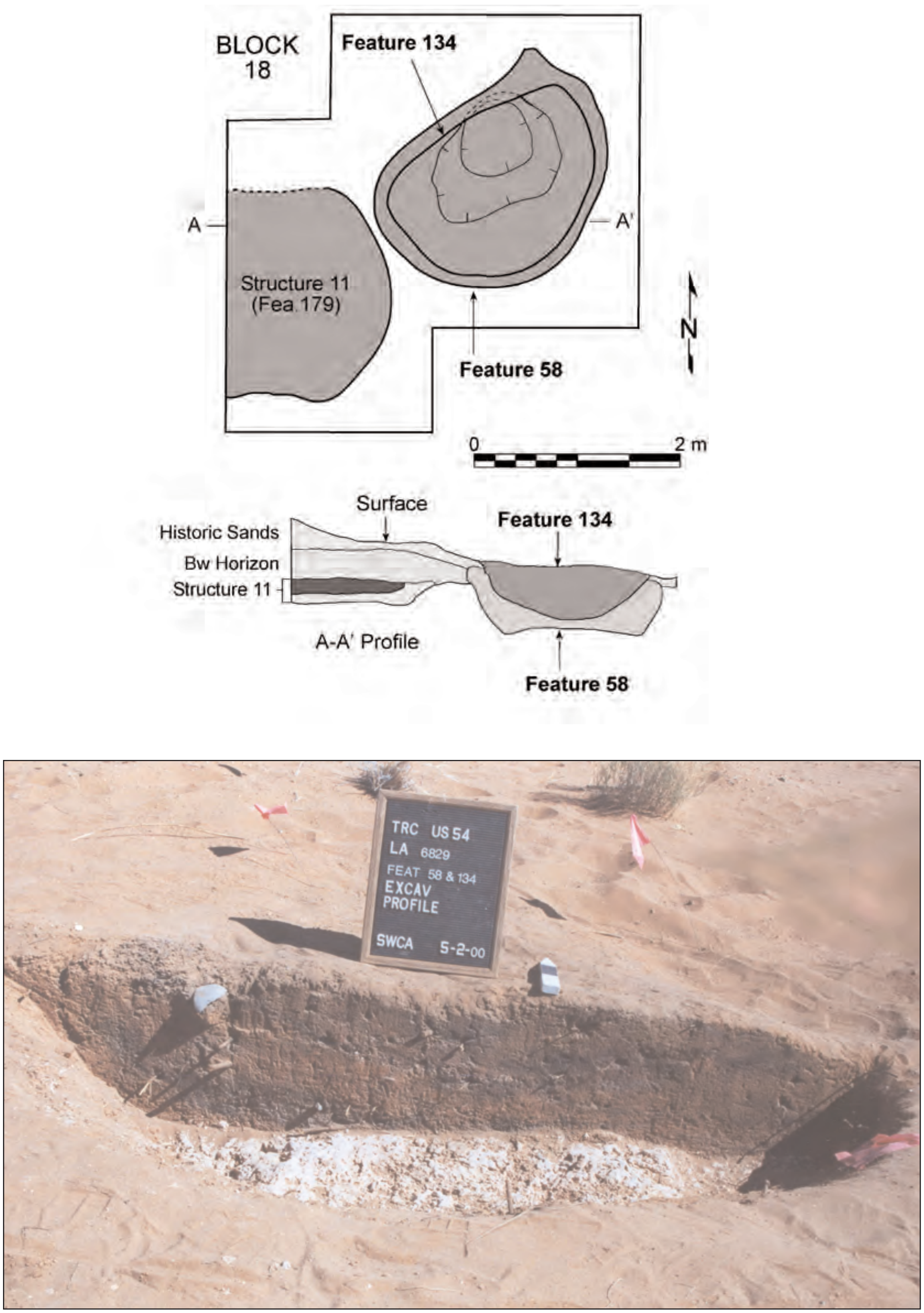

Figure 6.38 Block 18 at the Jaca site (LA 6829). Top: Plan and profile. Bottom: Profile of Features 58 and 134.

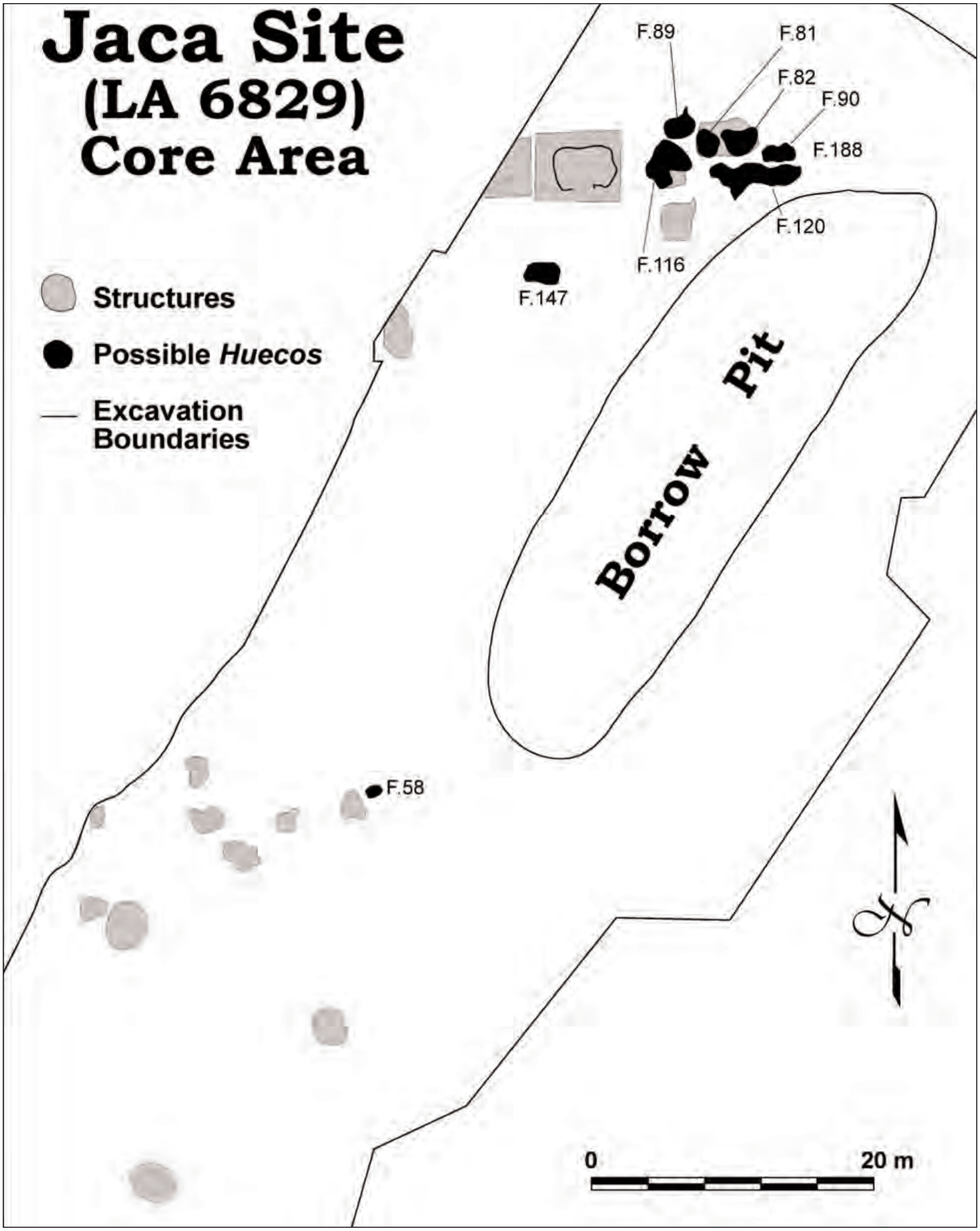

Figure 6.39 Distribution of possible *huecos* at the Jaca site (LA 6829).

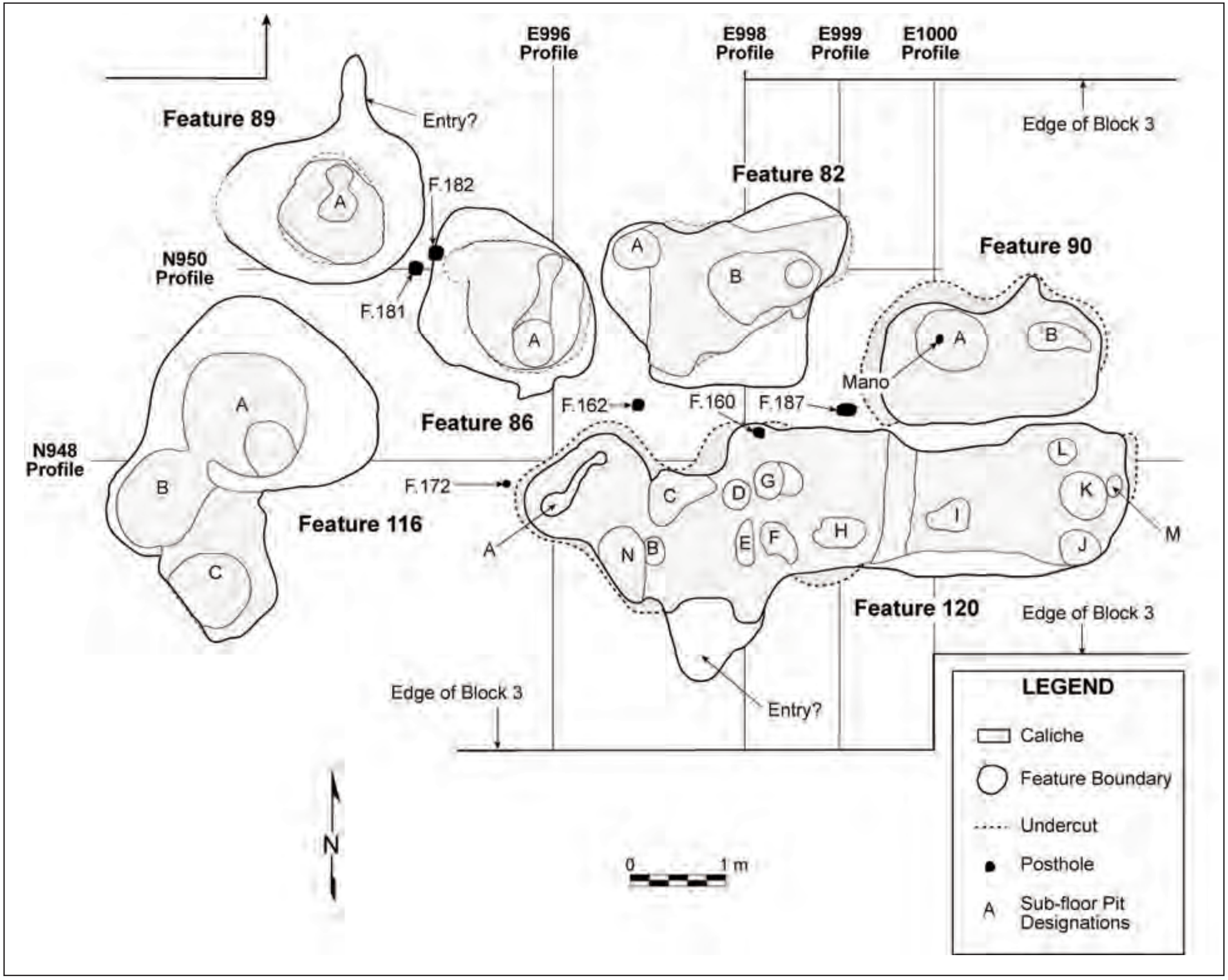

Figure 6.40 Possible *huecos* in Blocks 3 and 16 at the Jaca site (LA 6829). See Figures 6.41 and 6.42 for profiles.

and plastering for construction and finishing of buildings, the obvious candidate here being the possible room block represented by Structures 1 and 3. This possibility is not mutually exclusive with the interpretation that these were *huecos*; indeed, these pits initially may have been dug to obtain clay and caliche for construction, after which they could easily have been converted to water catchment facilities.

The surface areas of the six remaining large non-thermal pits averaged 1.33 m^2 with a range of 0.81–1.93 m^2. Only three of the six were excavated into the caliche substrate. These large non-thermal pits are distinguished from the possible *huecos* in that they are much smaller, and are not irregularly shaped. Given their smaller size and volume these smaller of the large pits were likely utilized for storage (see Figure 6.37).

All of the large non-thermal pits were filled with secondary deposits. Most of these pits were filled with cultural deposits characterized by a brown to strong brown (7.5YR4/4 and 5/6), sandy loam with scattered charcoal chunks and artifacts, with the surrounding matrix typically consisting of a sterile strong brown (7.5YR5/6), sandy loam, with caliche associated with Organ I age sediments. Features 58, 89, 147, 196, and 198 all contained ash-stained midden deposits in the very upper fill of each, overlying fill that was otherwise similar to

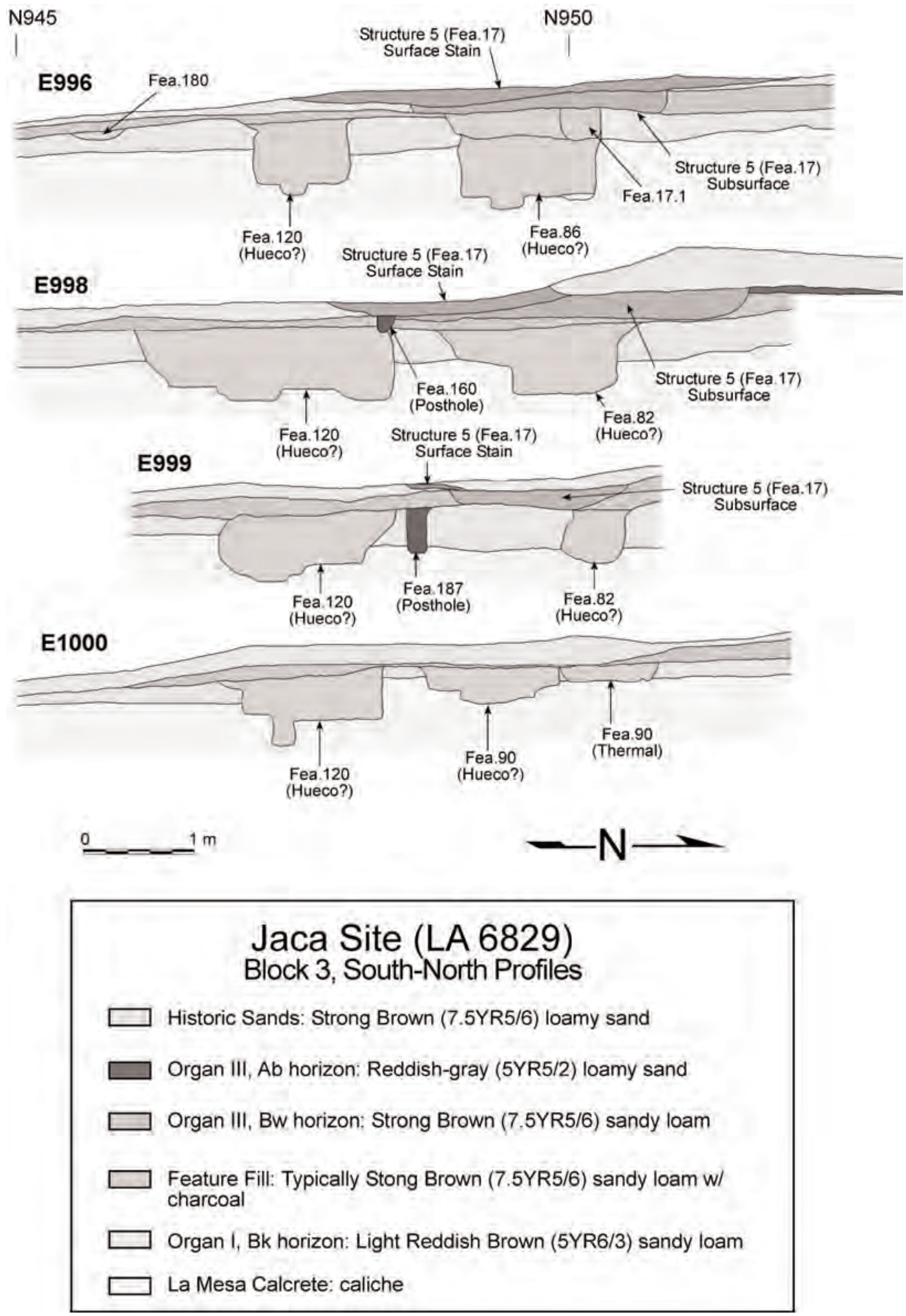

Figure 6.41 **North-south profiles through Block 3 at the Jaca site (LA 6829), showing cross-sections of possible huecos and other features. See Figure 6.40 for profile locations.**

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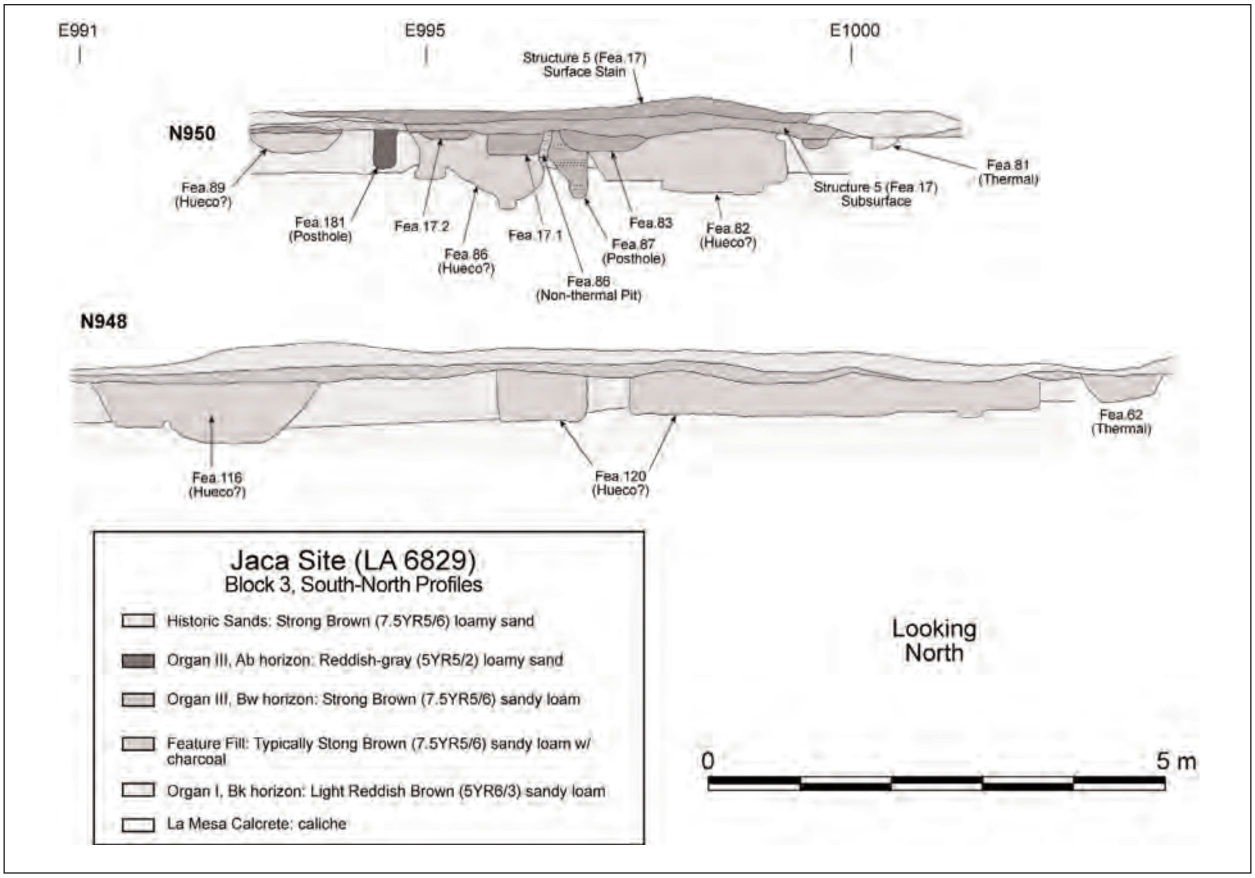

Figure 6.42 East-west profiles through Blocks 3 and 16 at the Jaca site (LA 6829), showing cross-sections of possible *huecos* and other features. See Figure 6.40 for profile locations.

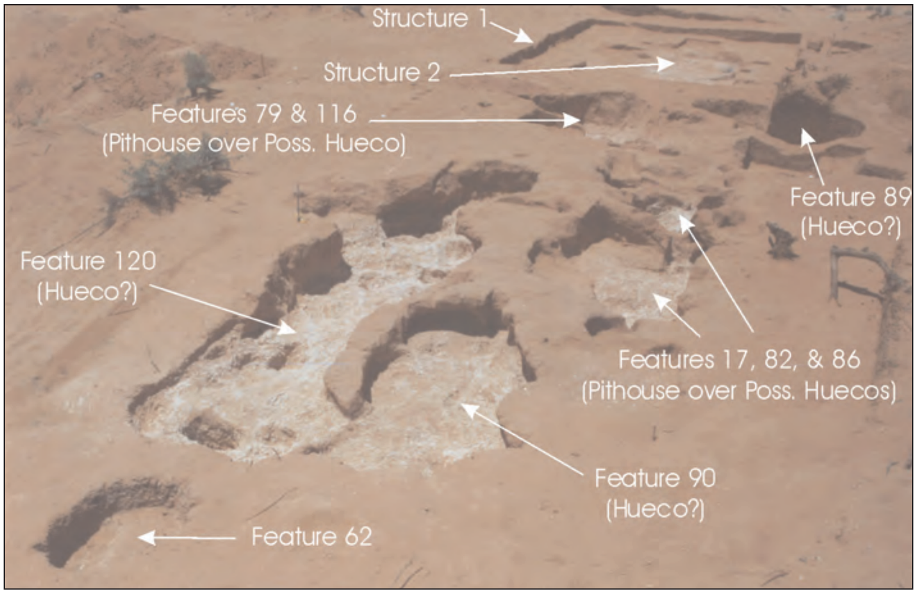

Figure 6.43 Overview of possible *huecos* and other features in Blocks 3 and 16 at the Jaca site (LA 6829).

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Table 6.11 Potential Water Retention of Possible *Hueco* Features on LA 6829

Feature #	Surface Area m^2	¼ inch rain = __ gallons	½ inch rain = __ gallons	¾ inch rain = __ gallons	1 inch rain = __ gallons	2 inch rain = __ gallons
58	>3.29	>5.51	>11.03	>16.55	>22.06	>44.12
82	3.55	5.95	11.9	17.85	23.8	47.61
86	2.68	4.49	8.99	13.48	17.97	35.94
89	2.85	4.78	9.56	14.33	19.11	38.22
90	2.94	4.93	9.86	14.79	19.71	39.43
116	>5.16	>8.65	>17.30	>25.95	>34.60	>69.20
120	9.42	15.79	31.58	47.38	63.17	126.33
147	2.78	4.66	9.32	13.98	18.64	37.28
Total	**>32.67**	**>54.76**	**>109.54**	**>164.31**	**>219.06**	**>438.13**

those in that observed in most of the other large, non-thermal pits. Feature 118 contained pockets of ash-stained fill with charcoal from the top to the base of the feature, although this was determined to be secondary fill and not the result of *in situ* burning. Cultural materials recovered from the large non-thermal pits included ceramics, lithic artifacts, perishable burned materials, and a few thermal materials.

Caliche Caps

Two artificial caliche caps, Features 121 and 171, were excavated on this site. These features were well above the natural caliche strata, which lay 30–70 cm deeper in the substrate. Both features were oval lenses measuring 62 cm and 1.11 m in diameter, and each was roughly 10-cm thick. Each covers a portion of a possible *hueco* (Features 116 and 120), and was apparently deposited intentionally as part of the filling of these features following their disuse. No cultural materials were present within the fill of either of these two caliche caps, although materials were present both above and below these features.

Thermal Features

Seventy-six features were characterized by concentrations of thermal by-products (Figure 6.44). These include features classified as small and large thermal features, and FCR concentrations. Small and large thermal features were distinguished based a maximum diameter smaller or larger than 70 cm. The basis for this distinction is somewhat arbitrary, but most of the small thermal features were probably hearths, whereas their large counterparts include mostly roasting pits. This distinction, as well as the forms and possible functions of thermal features investigated in the U.S. 54 project, are discussed further in Chapter 30.

Four of the thermal features were outside of the right-of-way and were not excavated. Feature 176 was only partially exposed along the edge of right-of-way; this feature will be protected from disturbance by highway construction, and thus was not excavated.

Small Thermal Features

A total of 58 small thermal features was excavated, five of which were hearths within structures, and 53 were extramural (Figures 6.45 and 6.46). The five structure floor hearths were all circular, basin depressions and included two in Structure 1 and one each in Structures 9, 10, and 15. The two in Structure 1 were clay- or adobe-lined (see Figure 6.26). Features in the other structures were simple, informal hearths, and they did not exhibit oxidation. Each of these features was marked by soils stained with ash and charcoal. The five floor hearths averaged 31.2 cm in diameter (range 14–43 cm), with an average depth of 8.4 cm (range 3–17 cm). The two lined hearths within Structure 1 lacked ash-stained fill and charcoal, indicating they had been carefully cleaned out, a practice in keeping with the apparent special function of this structure. In contrast, the earthen hearths on the pithouse floors were all filled with ash and charcoal.

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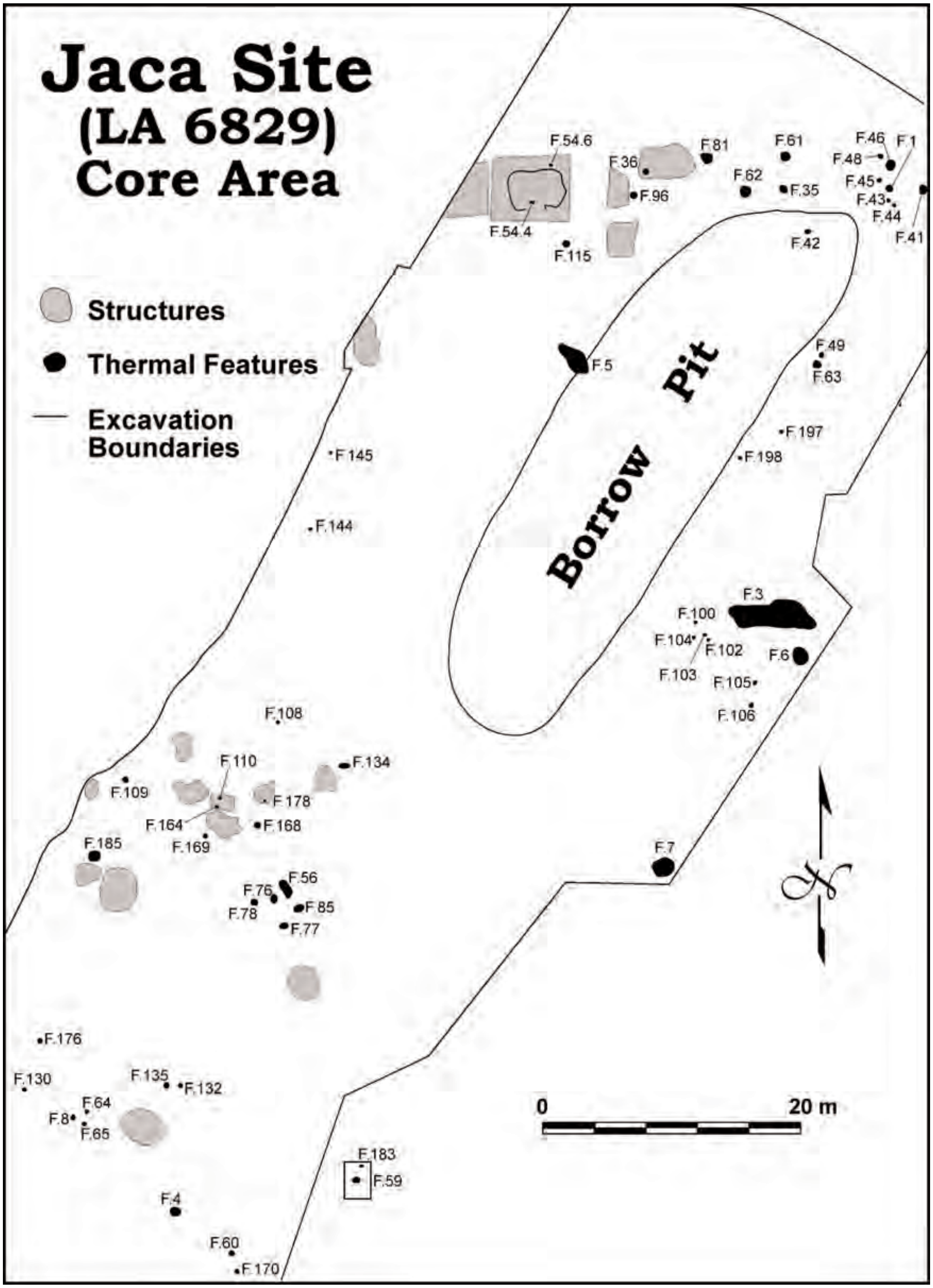

Figure 6.44 Distribution of thermal features in the Core Area at the Jaca site (LA 6829).

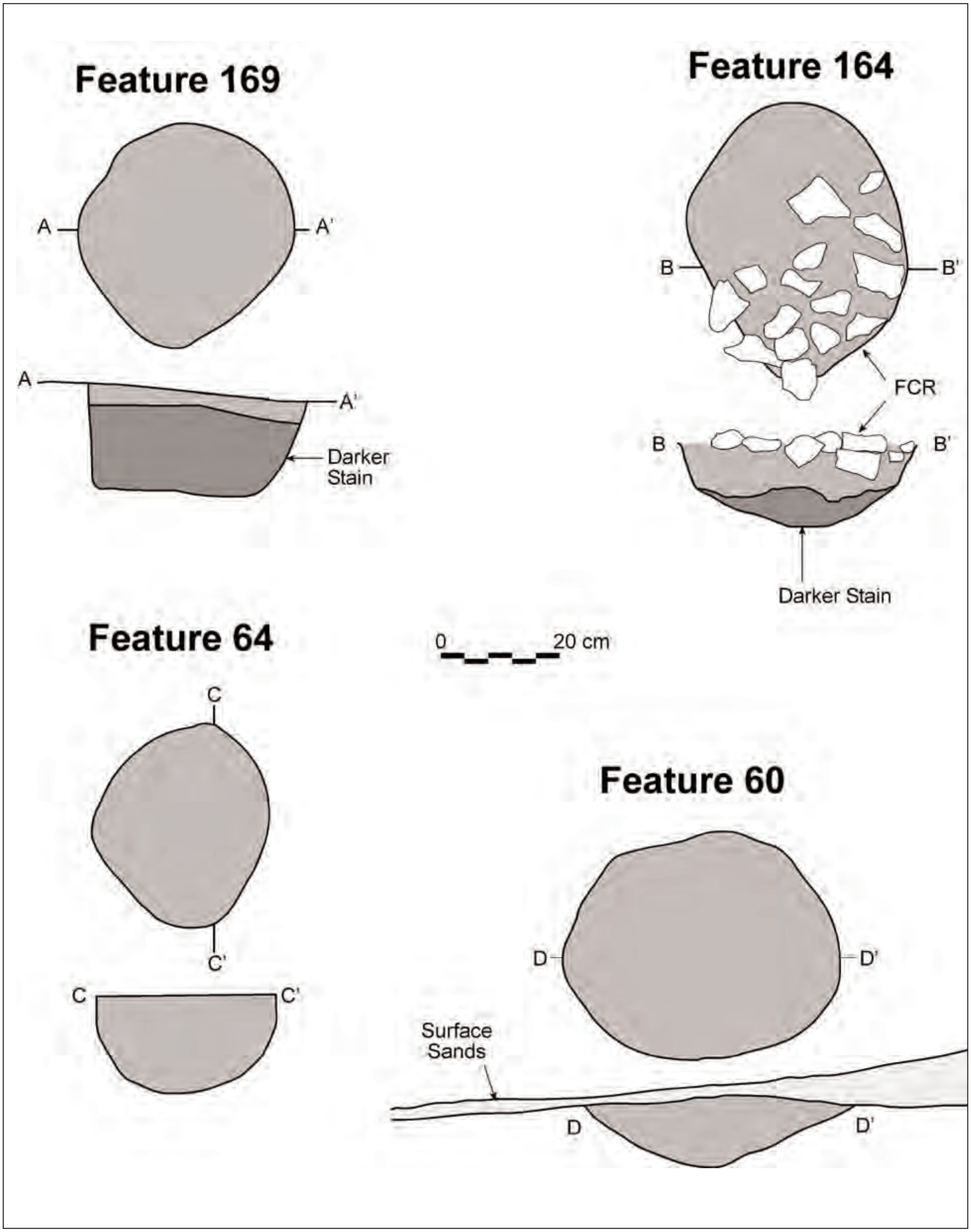

Figure 6.45 Selected small thermal features from the Jaca site (LA 6829).

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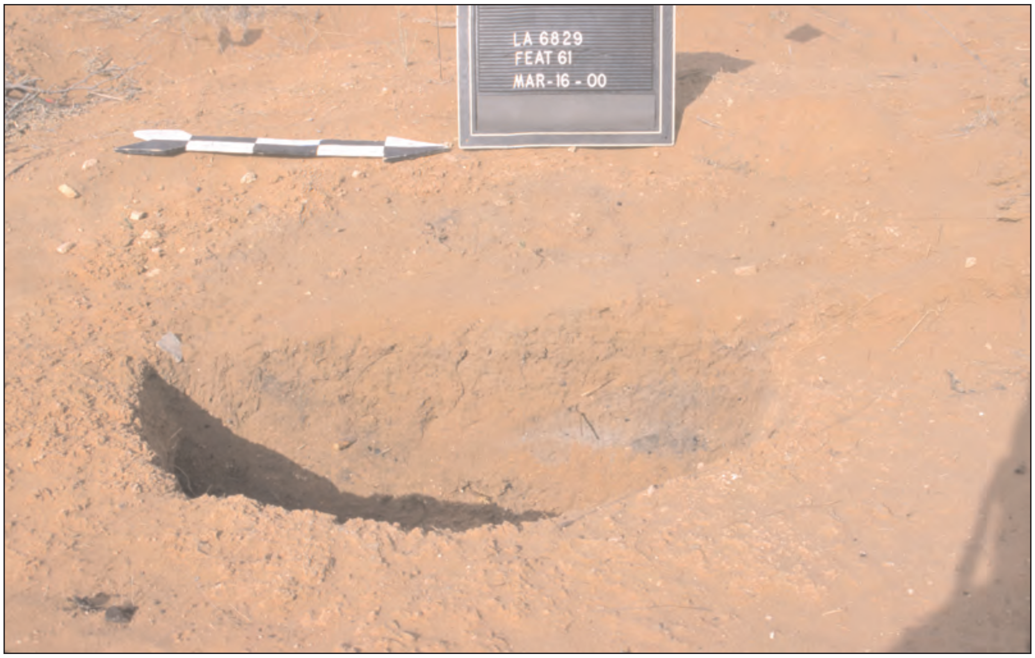

Figure 6.46 Small thermal features at the Jaca site (LA 6829). Note the dark ash staining.

The vast majority of small thermal features were found outside of structures, and all were encountered in various states of erosion; in many instances these features were severely deflated. For 90 percent of the extramural, small thermal features, only the basal portion was encountered, and their original size and shape often could not be determined with confidence. Most of them (or at least their preserved remnants) were circular (n=28), with the remainder primarily oval (n=20). Five were either amorphous or irregular in plan morphology. In cross section, most were basin-shaped (n=41). The others exhibited the following profile shapes: conical (n=4), thin lens (n=3), cylindrical (n=2), irregular (n=1), and amorphous or nondescript (n=2). Summary data for these morphological classes are presented in Table 6.12.

Only three of the small thermal features (two oval and one circular) contained an oxidation rind. The majority (62 percent) of the small thermal features lacked FCR/BC, but these were marked by ash and/or charcoal stains. A trace of FCR/BC debris was present in the immediate vicinity of 25 percent of the small thermal features that lacked FCR/BC, and these materials were perhaps associated with these features. Of the 38 percent of those that did contain FCR/BC, only Feature 164 yielded more than a trace; this feature contained 4.25 kg, while the total FCR/BC from all other small thermal features totaled less than 0.25 kg. Almost all of the internal hearth features lacked FCR/BC; the only exception was Feature 178, within Structure 10, where a trace was present. The vast majority of FCR/BC derived from either locally available caliche or granite that can be obtained in the nearby Jarilla Mountains. Only a small percentage of the small thermal features yielded artifacts, and none yielded an abundance of cultural debris.

Large Thermal Features

Thirteen large thermal features ($\geq$ 70 cm in maximum diameter) were investigated, 12 of which were extramural. Two of the large thermal features (Features 36 and 134) were intrusive into larger, abandoned features including Structure 5 (Feature 17) and one of the *huecos* (Feature 58, see Figure 6.38, above). The thirteen large thermal features included four that were circular, four oval, three amorphous, and two irregular (Figure 6.47). Variation in profile morphology was as follows: basin (n=8), lens (n=2), irregular (n=2), and cylindrical (n=1). Those with irregular plan shapes contained both cylindrical and basin shaped walls. The large thermal features averaged 98.9 cm in diameter (range 0.7–1.58 m), and 17.2 cm in depth (range 5–37 cm). There was little variation in size between the different plan shape categories; amorphous, large thermal features were the smallest on average (mean 83.3 cm), while the irregular shaped ones were the largest (mean 91.3 cm). In contrast, depths by plan morphology showed notable variation: circular (mean depth 28.5 cm), oval (12.8 cm), irregular (13.5 cm), and amorphous (10.7 cm). As one would expect, depths also varied considerably

Table 6.12 Summary Data for Extramural, Small Thermal Features

Attribute		Circular	Oval	Amorphous / Irregular	Totals
Number		28	20	5	53
Diameter (Ra. & Mean, cm)		14.5-60 (36.1)	12-65 (40.5)*	20-67 (44.2)*	11-60 (35.7)*
Depth (Ra. & Mean, cm)		1-20 (7.0)	2-24 (10.6)	2-20 (7.6)	1-24 (8.4)
Cross-Section	Basin	22	16	3	41
	Conical	2	2	0	4
	Cylindrical	2	1	0	3
	Lens (1-cm thick)	1	0	1	2
	Amorphous	1	1	1	3

*Diameter figures for oval and amorphous pits are based on maximum diameter, whereas those in the totals column are based on diameter *averages* (length + width / 2) for each feature in these two morphological classes.

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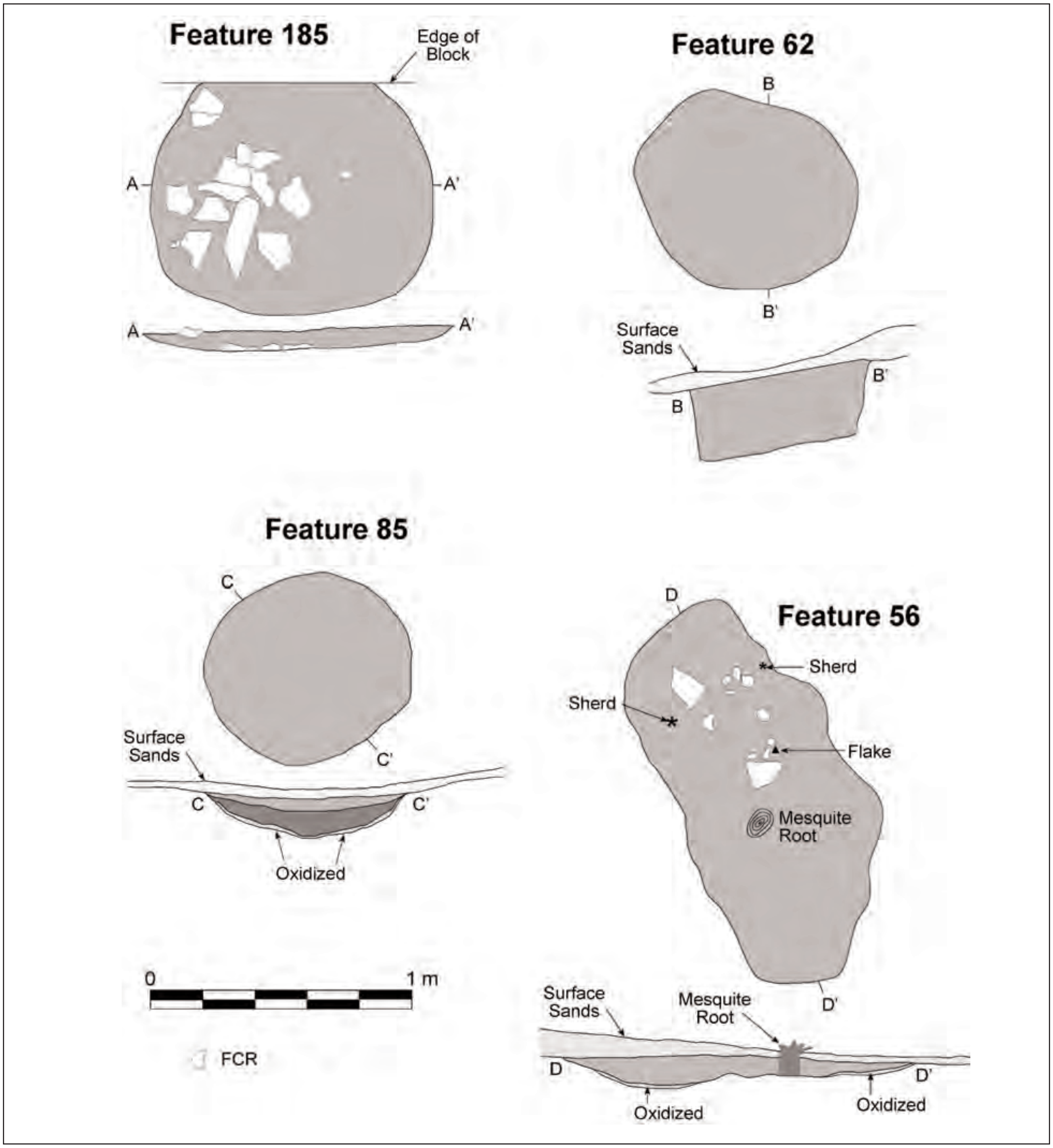

Figure 6.47 Selected large thermal features from the Jaca site.

according to cross section morphology: lens (mean depth 6.5 cm), basin (17 cm), irregular (23.5 cm), and cylindrical (28 cm).

The majority (n=8) of the large thermal features contained FCR/BC. Those without FCR/BC included the two intrusive features (Features 36 and 134), along with Features 8, 97, and 200. Feature 8 appears severely deflated, and FCR/BC was perhaps originally present, but became displaced outside this feature as a result of deflation;

scattered FCR/BC was present in the immediate vicinity of this feature, although in terms of weight it was only a trace amount. As for Feature 97, only the basal portion of this pit was present following mechanical scraping, which may have removed any FCR/BC originally associated with this feature. Feature 200 contained only a small fragment of granite ground stone, although this feature was also uncovered by mechanical scraping, which may have removed FCR/BC. Features 41, 46, 62, 63, and 81 contained only traces of FCR/BC (< 0.25 kg in each of these features), and the few pieces present within each of these features were small pieces of fire-cracked granite. The remaining three large thermal pits all contained appreciable amounts of FCR/BC. Feature 56 contained more than 3.5 kg of fire-cracked granite. Feature 85 contained four very large pieces of fire-cracked granite (< 1 kg). Feature 185 contained ten pieces of fire-cracked granite and limestone weighing 5.5 kg. In summary, most roasting pits on LA 6829 contained little or no FCR/BC, although such materials could have been routinely removed from these pits in course of their use, and discarded outside the features.

Only three of the large thermal features contained an oxidation rind or orange substrate, resulting from the intense heat during use. These included Features 56, 185, and 200. Few artifacts were recovered from the large thermal features. The exceptions here are the intrusive pits, Features 36 and 134, into which cultural trash may have been dumped. Summary data for these large thermal features are presented in Table 6.13

FCR/BC Concentrations and Scatters

The investigations documented 22 concentrations and scatters of FCR/BC. These were not directly associated with any pit boundaries or oxidized discoloration, and all but one of these features lacked associated ash staining. Twelve of these features were documented outside of the right-of-way, and were not excavated. The 10 FCR/BC features inside the right-of-way ranged in extent from 10 x 38 cm to 2.0 x 4.0 m. The surface configurations of these features ranged from amorphous (n=7), oval (n=2), to irregular (n=1). Most of the features also included a few scattered, subsurface pieces of FCR/BC, which extended into the friable eolian deposits to a maximum depth of nearly 12 cm. Six of the FCR/BC concentrations and scatters were identified on the original ground surface of the site. One (Feature 108) was uncovered following mechanical scraping. Virtually all of the FCR/BC concentration contained only a few, scattered pieces of FCR/BC. The single exception was Feature 5, which contained by far the most FCR/BC (133 pieces; > 27.25 kg) of all thermal features investigated at the site (Figure 6.48). The excavated portion of Feature 5 included 13.0 kg of burned caliche, 10.25 kg of granite, and 4.0 kg of limestone. This feature was discovered eroding out of a dune, along the west edge of the 1964 borrow pit. Feature 5 was obviously part of a large thermal pit once present at this locality, but which had been destroyed by erosion along the edge of the borrow pit, leaving only the FCR/BC concentration.

Only a few, scattered cultural materials were recovered in association with the FCR/BC con-

Table 6.13 Summary Data for Extramural, Large Thermal Features

	Attribute	Circular	Oval	Amorphous / Irregular	Totals
	Number	4	4	5	13
	Max. Diameter (Ra. & Mean, cm)	72-120(89.7)	70-117 (101.3)	80-158 (105.2)	70-158 (98.9)
	Depth (Ra. & Mean, cm)	16-37 (28.5)	8-18 (12.8)	5-19 (11.8)	5-37 (17.2)
Cross-section	Basin	2	4	2	8
	Conical	0	0	0	0
	Cylindrical	1	0	0	1
	Lens (1-cm thick)	0	0	2	2
	Irregular	1	0	1	2

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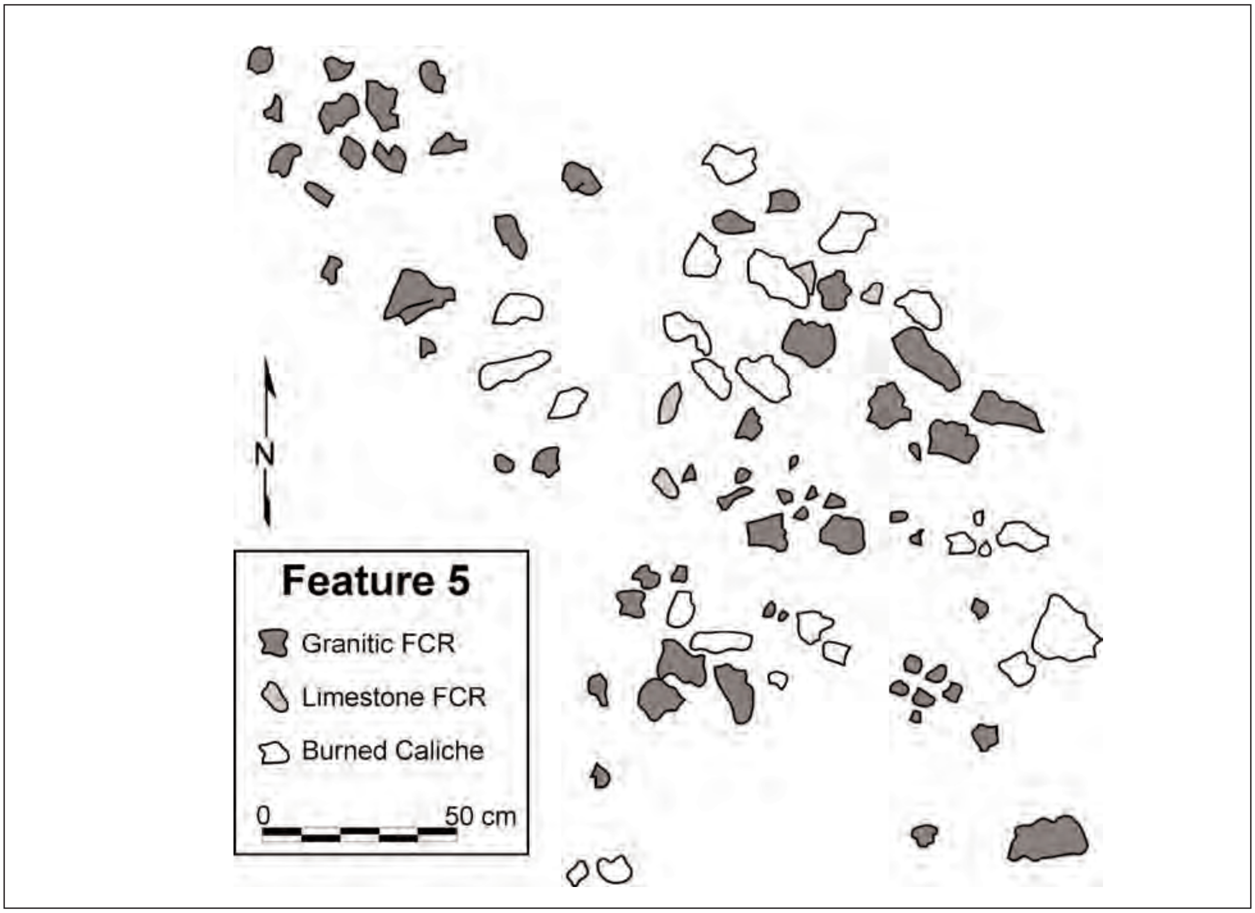

Figure 6.48 Feature 5 at the Jaca site (LA 6829), an FCR/BC concentration.

centrations and scatters, and most or all these materials may not be functionally associated with these features. All FCR/BC concentrations and scatters probably represent the deflated remains of roasting facilities.

Spatial Patterning of Features and Sequence of Occupational Remains

Features and other archaeological remains at the Jaca site were concentrated within the core area, and within the core area there were two main concentrations of structures and other features, with additional scatters and smaller feature clusters. Thermal features were concentrated in five clusters (Clusters 1–5). Four of these were located within the main site core area (Figure 6.49), and the other was situated to the north. Cluster 1 includes Excavation Blocks 1, 2, the eastern portion of 3, and the concentration of overlapping, large non-thermal pits just east of Structure 1. With 12 thermal features identified in an area extending 15 m east-west x 7 m north-south, Cluster 1 was the most extensive of these clusters and the one with the highest number of thermal features. Cluster 2, in the southern portion of the core area, included several thermal features within Blocks 9 and 14, where five of the excavated structures on this site were located (see Figure 6.30, above). In Block 14, these thermal features were closely spaced within a 16-m^2 area, and most were buried by sheet sands and in good condition. At the southern end of the core area is Cluster 3, which included nine thermal features to the west, northeast, and southeast of Structure 6 (Feature 38). These thermal features were widely scattered over a 14 m east-west x 15 m north-south area, and most were badly deflated. Cluster 4 was

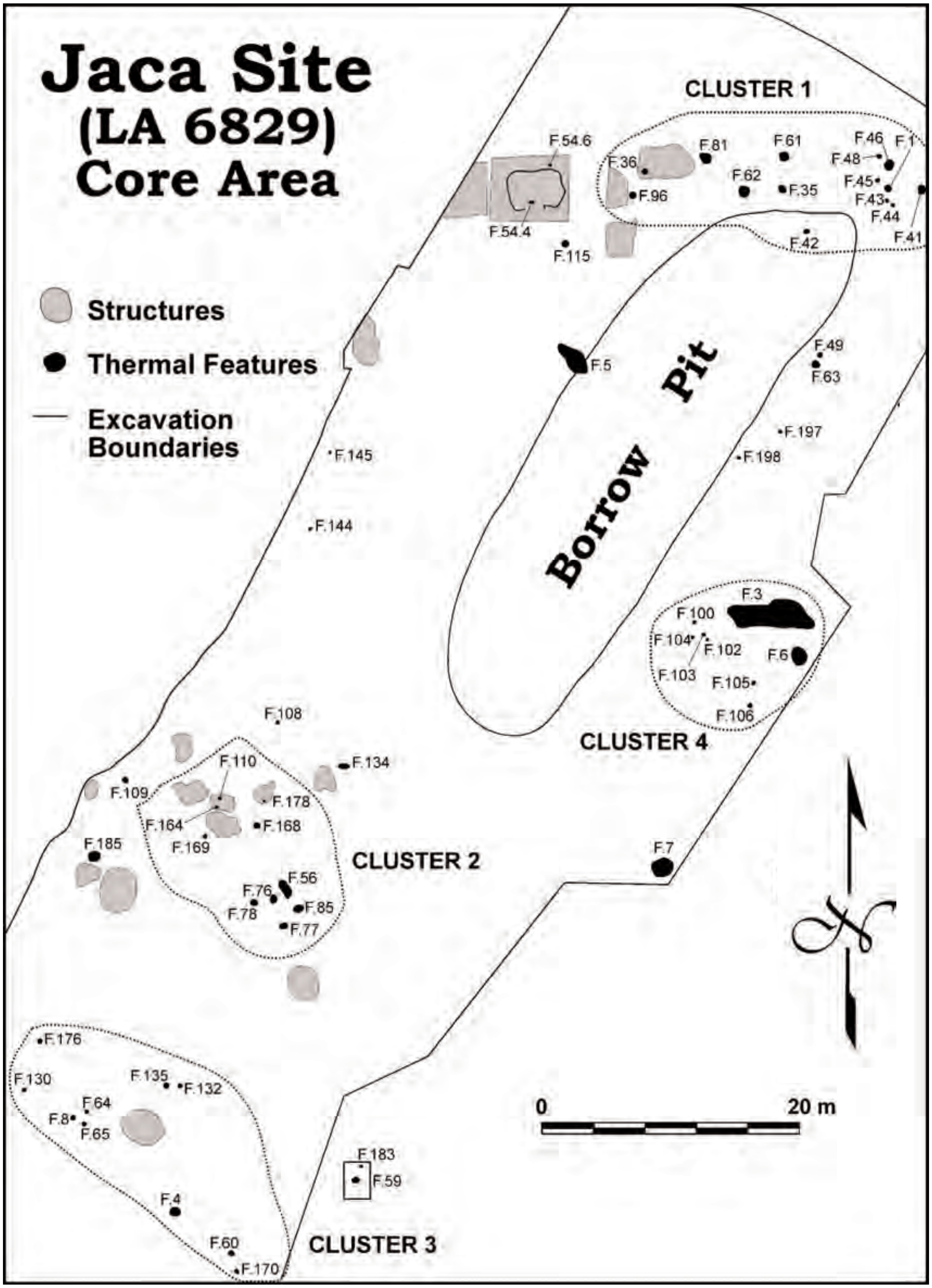

Figure 6.49 Thermal feature clusters in the core area at the Jaca site (LA 6829).

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uncovered only after mechanical scraping in the eastern portion of the site core area around Block 6, and covered a 12 m north-south x 7 m east-west area. Most of the thermal features in Cluster 4 were also badly deflated. Cluster 5 was situated around Block 17, well north of the main site core area, against the west edge of the right-of-way (see Figure 6.23). This cluster contained 10 ash-stained features within a 10 m east-west x 6 m north-south area. Five were uncovered through hand excavations and five via mechanical scraping. Trenches extending from Cluster 5 to the south and east did not reveal any indicators of structural remains; assuming this cluster, like the others, was associated with one or more households, then associated structure remains may be present below the surface to the west, outside of the right-of-way. The thermal features in Cluster 5 were all badly deflated. The majority of the remaining thermal features were widely scattered within the site core area, and were not within any recognizable clusters.

Three of these clusters, (Clusters 1, 2, and 3) contain structures that are spatially associated with several external thermal and non-thermal features. While these clusters may reflect domestic activity areas, the clusters, and many of the features within each cluster, are not all contemporaneous. The Organ III Bw horizon, underlying the Ab soil horizon, was found to be a useful temporal indicator for some of the structures and features. Near Cluster 1, for example, Structure 4 (Feature 91) and most of the non-structural pit features, are covered by the Bw horizon, while Structures 5 (Feature 17), 7 (Feature 79), and 3 (Feature 158) are excavated into the Bw horizon (see Figures 6.38, 6.41, and 6.42). Thus, there are minimally two temporal intervals here. In Cluster 1, Structures 3, 5, and 7 were constructed at approximately the same time. The east wall of Structure 3 was joined to the west wall of Structure 1, suggesting that both were components of a single room block. Thus, although no Bw stratum was documented within the Structure 1 excavations, architectural evidence indicates that it is also temporally associated with the Structures 3, 5, and 7. Very few external pit features are spatially associated with these structures. The Bw stratum cap indicates that most of the external pit features in Cluster 1 are associated with Structure 4 (Feature 91), a non-domestic, surface post structure. If these pit features do represent the remains of an external domestic activity area, then they may be associated with Structure 2, the formalized pit structure that was filled in, and possibly truncated, when Structure 1 was built directly on top of it. This is not entirely clear, however, and it is just as likely that Structure 2 is associated with the later features that intruded into the Bw horizon.

In Cluster 2, Structures 9 (Feature 141), 14 (Feature 137), and a several external thermal (Features 168 and 169) and non-thermal pits (Features 138 and 189) pits were excavated into the Bw stratum, while Structures 16 (Feature 166) and 13 (Feature 111) were buried by the same stratum. Nearby, Structure 11 appears to underlie the Bw horizon (although this is not entirely clear from the profile drawing), while Structure 12 was excavated into the Bw-horizon sediments. Thus, a two-phase sequence of occupations appears to have occurred here as well, although they are very close in time.

The spatial distribution of potential *hueco*, or water catchment, features is also of interest. All of these large pits are situated close to structures (see Figure 6.39, above). The *huecos* are mainly concentrated in the north portion of the site core area. A dense cluster of these large pits (Features 82, 86, 89, 90, 116, 120, 196, and 198) is located just east of Structures 1 and 2. The *huecos* are mostly covered by the Bw horizon, and the aforementioned stratigraphic evidence indicates that these features may be temporally associated with Structures 2 and 4. Another *hueco* (Feature 147) is located just southwest of Block 16, south of Structure 1 (and Structure 2) and northeast of Structure 15. Feature 38, in the south portion of the site core area, is situated just north of (and is stratigraphically associated with) Structure 9;

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Feature 58 is positioned just northeast of Structure 11; Feature 192 was placed just east of Structure 18; Feature 116 is situated a little southeast of Structures 12 and 17; and Feature 151 was found adjacent to Structure 6. The close spatial association of *huecos* and structures (and the lack of *huecos* in non-structural feature clusters) indicates that the construction and use of these seasonal water catchment pits was an important household-level activity at the Jaca Site.

The ceramic and radiocarbon data from these structures and external pits indicate a site occupation that began in the late Doña Ana phase and continued into the early El Paso phase of the Formative period. In Cluster 1, the data from ceramics found in structure fill indicates that the trash fill in Structures 5 and 7 accumulated during the El Paso phase, while the fill in Structure 1 accumulated during the late Doña Ana and the early El Paso phase. The few ceramics found in Structure 2 also indicate a late Doña Ana- to El Paso-phase fill episode. In Cluster 2, Structures 9 and 14 accumulated fill during the late Doña Ana/El Paso phases, while Structure 13 was filled during the Doña Ana phase and Structure 16 during the El Paso phase.

These data indicate that, although some features could be separated stratigraphically according to their vertical relationship with the Bw horizon, we are clearly dealing with a temporally confined site occupation interval. It is possible that the vertical and horizontal distributions of features reflect more or less continuous occupation of the site during the late Doña Ana phase through the early portion of the El Paso phase. The structures and other features covered by the Bw horizon probably date from the Doña Ana phase (although some may been filled with later, El Paso-phase debris, as in Structure 16). The later features—those excavated into the Bw stratum—likely date from a transitional, late Doña Ana/El Paso-phase interval and into the El Paso phase proper. With the exception of Structure 16, the Structures below the Bw stratum are either Doña Ana or late Doña Ana/El Paso phase features. These data suggests that the earliest recorded domestic occupations at the Jaca Site (LA 6829), represented by Structure 13 (and possibly Structure 2, the formalized pithouse), occurred during the late Doña Ana phase. During this period the Bw horizon sediments were just beginning to accumulate, probably through a combination of eolian and anthropogenic deposition. Sometime during the late Doña Ana/El Paso phase transition, the occupants razed Structure 2 and constructed Structure 1 on top of it. Architectural data suggest that Structure 3 was also erected at this time or slightly later. Structure 9 and Structure 14 (which partially intrudes into Structure 9) were also built during this transitional time. By the Doña Ana/El Paso phase transition, the Bw horizon sediments had accumulated and covered several of previously abandoned site features. Structures 5 and 7 appear to have been constructed last, having accumulated only El Paso-phase fill. Structures 5 and 7 pithouse occupations may have at least partially post-dated the abandonment of Structure 1 (the communal pueblo room), and these occupations may be responsible, in part, for the midden accumulation in the southern portion of Structure. This, in turn, suggests that construction of a room block at the Jaca site, of which the Structure 1 communal room would have been the centerpiece, may have proved a short-lived, aborted effort. Occupation at the site continued, though it may have involved only pithouses.

Although the specifics of this occupational sequence are somewhat hypothetical, the basic sequence, as defined by the ceramic, radiocarbon, and stratigraphic information, is sound. It is also important to keep in mind that investigations within the right-of-way uncovered only a narrow strip of the Jaca site, and remains still buried beyond the impact area (or remains that have been obliterated by deflation) may hold secrets that could alter some of the specifics of the occupational scenario outlined here.

Materials Recovered

Data recovery investigations at the Jaca site yielded a large, diverse assemblage of artifacts. These artifacts 16,634 ceramic sherds, 4,334 chipped

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stone items, 188 ground and battered stone artifacts, two beads, 15 mineral specimens, and large quantities of biological remains.

Ceramic Artifacts

Investigations at the Jaca site (LA 6829) yielded the largest ceramic assemblage from the US 54 project, and by far the greatest variety of ceramic types. Judging from the range of ceramic types (Table 6.14), the assemblage dates largely from the late Doña Ana phase, but also includes some El Paso phase materials. The dominance of El Paso Polychrome, the small number of El Paso Brown rims, the small number of sherds from the Mimbres area, and the relative abundance of Playas Red Incised and White Mountain Red Ware support a transitional assemblage. The total sherd count from the site is 16,634, for which 10,847 fragments are undecorated brownware less than 2 x 2 cm in size. To maximize the research potential of the collection without analyzing thousands of brownware body fragments, a sampling strategy was undertaken. Brownware body sherds smaller than 2 x 2 cm were classified as too small for analysis and eliminated from the full analysis phase. By sherd count, the too-small fragments comprise 65 percent of the assemblage, but by

Table 6.14 Summary of Ceramic Types from the LA 6829 Assemblage (excluding too small)

Series/Ware	Ceramic Type	Count		Weight	
		n	%	g	%
Jornada Mogollon					
Brown	El Paso Bichrome	406	7	2442.7	6.75
	El Paso Brown	96	1.66	709.2	1.96
	El Paso Polychrome	1,134	19.6	7,443.40	20.62
	Jornada Brown	2	0.03	9	0.02
	Jornada Red	5	0.09	28.2	0.08
	Playas Incised (Sierra Blanca Var.)	6	0.1	28.4	0.08
Red	Indeterminate red	1	0.02	5.3	0.01
Terracotta	Three Rivers Broad-lined Red-on-terracotta	2	0.03	8.6	0.02
	Three Rivers Red-on-terracotta	74	1.3	1,337.50	3.72
	San Andres Plain	2	0.03	4	0.01
Casas Grandes					
Red	Playas Red	4	0.07	48	0.13
	Playas Red Incised	40	0.69	136.2	0.38
Mimbres Mogollon					
Brown	Alma Plain	3	0.05	18.9	0.05
White-slipped Brown	Indeterminate Mimbres Black-on-white	1	0.02	4.7	0.01
Middle Rio Grande					
Brown	Corona Corrugated	7	0.12	27.8	0.08
White	Chupadero Black-on-white	780	13.48	4,048.90	11.22
Cibola					
Gray	Banded gray	1	0.02	3.9	0.01
Red	Indeterminate White Mountain b/r	5	0.09	10.4	0.03
	Indeterminate White Mountain Red Ware	1	0.02	6.3	0.02
	St. Johns Black-on-red	4	0.07	23.2	0.06
Indeterminate					
Gray	Plain gray	5	0.09	17.7	0.05
	Indeterminate gray	1	0.02	2	0.01
White	Painted black-on-white	2	0.03	3.4	0.01
Not analyzed	Unspecified brown	3,205	55.38	19,730.20	54.66
Total		5,787	100	36,097.90	100

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weight comprise only 26 percent of the total assemblage. Thus, data loss as a result of sampling was considered negligible (cf. Rocek 2002).

Within the analyzed assemblage of 5,787 sherds, all decorated brownware, whiteware, redware, corrugated sherds, grayware, brownware rims, and terracotta sherds were fully examined. Large brownware body sherds were scanned for use-wear, appendages, postfiring modifications, and any indications that they were something other than El Paso Brown. Large body sherds exhibiting these characteristics were segregated for full analysis. The remaining brownware body fragments were counted, weighed, and identified as unspecified brown. The distributions shown in Table 6.15 are the results of full analysis on the sampled assemblage and rough classification of large brownware body sherds.

The distribution of ceramic traditions indicates a substantial El Paso Brownware component with potential for local production, consisting primarily of El Paso Polychrome. Based on the ceramics identified as Jornada Mogollon and unspecified brown, locally produced (Tularosa Basin area) ceramics comprise approximately 85 percent of the LA 6829 assemblage. As discussed in more detail in Chapter 20, classification of ceramics as "local" subsumes several definitions, including production at the site or community level and production within the larger Tularosa Basin. Ceramics considered nonlocal (i.e., produced outside of the Tularosa Basin) include decorated and utility ware from the Middle Rio Grande, Mimbres Mogollon, southern Cibola, and northern Mexico regions. As a combined ceramic group, the nonlocal (tradeware) types comprise 15 percent of the analyzed assemblage, with Chupadero Black-on-white as the largest single ceramic type.

A description of the ceramic assemblage by series and type is presented below, including functional, technological, chronological, and stylistic data. The distribution of ceramic types, vessel forms, reconstructible vessels, ceramic tools, and absolute chronometric dates are examined in the context of structural features.

Ceramic Series and Types

To provide spatial and temporal context for the ceramic assemblage, sherds and vessels were identified as representing a ceramic type within a larger tradition of pottery production (see Colton 1955; Colton and Hargrave 1937). Based on differences in raw material use (e.g., temper and clay), firing technology (paste color, carbon streaks, relative hardness), decoration (e.g., slip, paint type, design style), and surface texture (plain, polished, incised, or corrugated), sherds were placed within a type. Because not all sherds could confidently be placed within a standard ceramic type or tradition, other categories such as indeterminate tradition, indeterminate painted black-on-white, indeterminate White Mountain Red Ware, indeterminate red, or indeterminate Mimbres Black-on-white were used to segregate nondiagnostic fragments. Fortunately, the majority of decorated ceramics from LA 6829 were easily assigned ceramic types as shown in Table 6.14.

Jornada Mogollon Tradition

The Jornada Mogollon tradition is a broad archaeological term for describing ceramics from the Chihuahuan Desert area of southeast New Mexico and southwest Texas. Geographically the cultural area also extends into northern Mexico, from which there is significant evidence of exchange, interaction, and cultural continuity. Included within the Jornada tradition are brown ware ceramics identified as El Paso Brownware and Jornada Brownware. As shown in Table 6.15, the assemblage from LA 6829 includes predominantly El Paso Brown Ware. In the section below, Jornada tradition types identified in the LA 6829 assemblage are described.

El Paso Brown

Ninety-seven rim sherds and special items (e.g., having use-wear, appendages, or postfiring modifications) were identified as El Paso Brown. From the sample of El Paso Brown sherds examined in the full analysis, vessel forms include jars

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and bowls (Table 6.15). The small size of most El Paso Brown rims, however, precluded assignment of more specific jar forms, such as olla, wide-mouthed jar, or seed jar. In addition to all rim sherds, all specimens having use wear, appendages, or postfiring modification were added to the full analysis sample.

Table 6.15 Vessel Form Data for El Paso Brown.

Vessel Form	Vessel Part	Count	
		n	%
Bowl	Body	7	7.22
	Rim	19	19.59
Indeterminate	Handle	1	1.03
Jar	Base	1	1.03
	Body	43	44.79
	Neck	2	2.06
	Rim	23	23.71
Total		96	100.00 00

The small number of plain brown rim sherds is noteworthy, further supporting a late Doña Ana- and El Paso-phase assemblage; truly plain brownwares diminish markedly in frequency in the Doña Ana phase and are essentially gone by the El Paso phase. As a comparison, the late Mesilla/early Doña Ana-phase assemblages from the North Hills Subdivision Project (Miller 1990) consist of 5,436 sherds of which a sample of 225 plain rim sherds was analyzed. Given that all rim sherds were analyzed from LA 6829, a total of 97 plain rims from an assemblage of over 16,000 ceramics is unusual. An explanation based on small sample size would be appropriate for a relatively small assemblage, but this caveat is not considered an issue for an assemblage as large as LA 6829. If the number of rim fragments is an accurate projection of the number of El Paso Brown vessels, the LA 6829 assemblage does not appear to be dominated by El Paso Brown utility jars. Rather, the larger number of decorated El Paso Brownware rims (n=254), would suggest that decorated vessels dominate the assemblage. As a result, many if not a majority of the unspecified brownware sherds originated from decorated vessels. As Hard *et al.* (1994) indicate, El Paso Polychrome became the dominant El Paso Brownware type during the El Paso phase at which time El Paso Brown all but disappears from assemblages. A temporal explanation for the small number of El Paso Brown rims probably is the best interpretation of the brown ware data.

Miller (1990) discusses the issues of distinguishing bowls and jars within an assemblage of plain ware ceramics. For El Paso Brown in particular, bowls rarely have polished interior surfaces providing a clear indication of vessel form. As a result, plain ware bowls are probably underrepresented in Jornada assemblages. The El Paso Brown bowl fragments were identified primarily by curvature of the rim fragments. Because significant portions of decorated bowls lack painted designs, many plain brown decorated bowl fragments probably remain misidentified as plain brown jar fragments. Interior polish and distinctive rim curvature comprise the primary attributes for distinguishing El Paso Brown bowls, but these attributes do not fully encompass the complete classification of plain ware bowls. All of the bowl body fragments from LA 6829 were identified based on interior polish, whereas the rims were identified based on curvature or interior polish. Of the 19 brownware bowl rims, 13 have plain, 1 has plain with incised designs, and 5 have polished interior surfaces.

One multiple coil handle was identified in the El Paso Brown assemblage, suggesting that at least one pitcher is represented. Very little evidence (4 percent) of sooting was present on sherds selected for full analysis. Because of the large number of sherds from the site, soot was not recorded on ceramics not selected for full analysis. As a result, additional data concerning soot deposits is not available for the assemblage. In many cases, it is difficult to discern and interpret the origin of soot on sherd fragments. Soot deposits are frequently indicative of cooking pot use, but soot also is deposited on vessels and sherds in post-depositional contexts. The best circumstance for interpreting cooking pot wear is

examining soot and oxidation patterns on whole or partial plain ware pots (see Skibo 1992).

Thirty-six sherds evidenced postfiring modifications, consisting of alterations made to a ceramic fragment after vessel breakage. As listed in Table 6.16, modifications include scraper/smoother use, sherd edge shaping, and drill holes. Because the worked sherds from this and other US 54 sites form an interesting data set, the artifacts listed in Table 6.16 are discussed and interpreted in more detail in Chapter 20.

Table 6.16 Postfiring Modifications Identified on El Paso Brownware

Postfiring modification	Count	
	n	%
Disc	5	13.89
Edge shaping	21	58.33
Gaming piece	2	5.56
Indeterminate drill hole	3	8.33
Pendant blank	3	8.33
Sherd tool (scraper/smoother?)	2	5.56
Total	36	100

Temper and paste characteristics for the El Paso Brown sherds are notably consistent throughout the sample. Pastes are consistently dark brown to reddish brown with an abundance of silt content, suggesting an alluvial origin. Of the 95 sherds from the sample examined for temper classification, 96 percent have coarse granite temper. As indicated by the petrographic analysis for the site (Carpenter 2002), the granite materials are available in the nearby Jarilla Mountains, as well as the Pajarita Mountain area northeast of Tularosa and the Palomas Gravel that fills portions of the Tularosa Basin. Only four of the El Paso Brown sherds have finer, more rounded sand grains of the same granitic material.

Because of the ongoing dialogue concerning chronological sensitivity of El Paso Brown rim forms (see Whalen 1993; 1996), it is standard practice to illustrate rim profiles. Figure 6.50 illustrates the variation in El Paso Brown rim forms from LA 6829. The bowl and jar rims illustrated in Figure 6.50 are representative of the variability present in the small El Paso Brown assemblage. All of the jar rims with the exception of the one on the far left in the figure are relatively thickened with the rim lip either rounded or slanted to the interior of the jar. All of the bowl rims are thickened and either round or square at the lip. Thickened and rounded rims are the most common form for El Paso Brown from LA 6829.

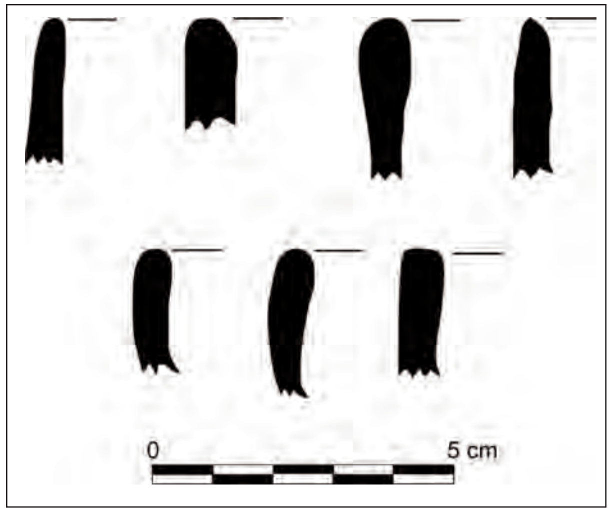

Figure 6.50 Rim profiles of El Paso Brown ceramics from LA 6829; top row are jar rims and bottom row are bowl rims.

El Paso Polychrome and Bichrome

Decorated brown ware from LA 6829 totals 1,540 sherds, including 1,134 El Paso Polychrome and 406 El Paso Bichrome. Because fragments of El Paso Polychrome vessels frequently include only the slip or a small portion of a black-painted design, sherds from polychrome vessels may also be inadvertently typed as bichrome. As a result, many if not most of the bichrome sherds are from El Paso Polychrome vessels. By definition, El Paso Polychrome designs (Figure 6.51) are achieved by application of a red slip and black paint over a brownware surface, with the brown surface forming an integral part of the design (see Hawley 1936; Runyan and Hedrick 1987; Stallings 1931).

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Figure 6.51 Examples of El Paso Polychrome from LA 6829.

As shown in Table 6.17, vessel forms for the decorated brownware include bowls and jars with 76 percent (n=1,173) classified as jars. Although the difficulties associated with distinguishing plain ware bowls apply to decorated brownware, the number (n=267) of decorated neck fragments indicates that a large number of the decorated vessels were necked jars (e.g., ollas). Decorated sherds from jars were identified primarily by the presence of exterior decoration and lack of decoration on the interior surface. Exceptions to this rule include rims and everted neck or rim/neck fragments having painted designs extending into the interior of the jar. Sixty-two percent (n=58)

Table 6.17 Vessel Form Data for Decorated El Paso Brownware from LA 6829

Ceramic Type	Vessel Form	Vessel Part	Count	
			n	%
El Paso Bichrome	Bowl	Body	74	4.81
		Rim	37	2.4
	Indeterminate	Body	1	0.06
	Jar	Base	1	0.06
		Body	239	15.52
		Neck	40	2.6
		Rim	14	0.91
Subtotal			*406*	*26.36*
El Paso Polychrome	Bowl	Body	118	7.66
		Rim	123	7.99
	Indeterminate	Body	14	0.91
	Jar	Base	5	0.32
		Body	566	36.75
		Neck	227	14.74
		Partial	1	0.06
		Rim	80	5.19
Subtotal			*1134*	*73.64*
Total			1540	100

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of the decorated jar rims have painted designs extending into the interior.

Bowl fragments comprise 23 percent of the decorated brownware assemblage. The occurrence of painted designs or slip on the interior surface of rim or body fragments prompted classification as a bowl. Curvature of rims, however, for sherds lacking interior decoration provided further indication of bowl derivation. Thirty-two bowl fragments have plain or polished interior surfaces with painted designs on the exterior. Regardless of interior decoration, 36 percent (n=127) have painted designs on the exterior and 4 percent (n=13) have exterior slips.

During analysis, differentiation between red clay pigment applied as a paint or slip was undertaken. With regard to vessel production, differences between slip and paint application has implications for production steps and mental design templates (e.g., Feinman *et al.* 1981). From the LA 6829 assemblage, it appears that red clay pigment was applied in some instances as paint and frequently as a slip over which mineral-painted designs were applied. To distinguish these application techniques, the interface between black and red pigments was examined. Sherds having mineral designs applied over red clay pigment were identified as slipped and painted. In contrast, sherds having a noticeable gap between the edges of black and red pigments were identified as plain and painted or polished and painted for which both the black and red pigments were considered paints. Red clay pigment was not applied over all or a portion of the vessel as slip, rather it was applied as a paint to produce a specific design. Of the El Paso Polychrome sherds, 63 percent (n=715) have black-and-red paint designs for which the red pigment was applied as paint. When the distribution of red paint versus red slip is examined by vessel form, 86 percent of bowl sherds have red clay applied as paint and 69 percent of jars have red-painted designs, indicating that jars surfaces are more commonly slipped than bowl surfaces.

Two strap handles, one typed as bichrome and the other as polychrome, were identified in the assemblage. Because the handles were not attached to vessel fragments, the original vessel form could not be identified. Evidence of use-wear was sparse, but includes one bichrome bowl rim and one bichrome jar rim with noticeable abrasion along the lip surface. One polychrome sherd has a white pigment deposit on the interior surface, possibly an indication of bowl contents.

Postfiring modifications on the decorated brownware are more common, with drill holes, scraper/smoother wear, discs, and unspecified edge shaping represented (Table 6.18). Indeterminate drill holes are the most common modification identified on the decorated sherds. With the exception of one drill hole specifically identified as having a suspension or closure function, all of the remaining drill holes were assigned indeterminate function. As discussed in more

Table 6.18 Postfiring Modifications on Decorated El Paso Brownware from LA 6829

Ceramic Type	Postfiring modification	Count	
		n	%
El Paso Bichrome	Disc	1	1.85
	Edge shaping	4	7.41
	Indeterminate drill hole	1	1.85
	Sherd tool (scraper/smoother?)	2	3.7
El Paso Polychrome	Drill hole (suspension or closure)	1	1.85
	Edge shaping	3	5.56
	Indeterminate drill hole	39	72.22
	Sherd tool (scraper/smoother?)	1	1.85
	Drill hole and shaped edge	2	3.7
Total		54	100

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detail in the ceramic synthesis, drill holes are applied to vessels for a variety of functions, including suspension, closure, or vessel repair.

Paste characteristics and temper for the decorated El Paso Polychrome & Bichrome are identical to that identified for the El Paso Brown sherds. This continuity is not unexpected, given that El Paso Polychrome and Bichrome are painted varieties of El Paso Brown. As shown in Table 6.19, of the decorated brownwares examined for temper identification, the majority of sherds have coarse granite temper indicating their probable local production.

Rim radius and arc measurements suggest that orifice diameters are roughly identical regardless of vessel form. Rim sherds with an arc greater than 25 degrees were selected for rim radius measurements, as a means of estimating vessel orifice size. The average rim orifice radius for bowls is 12.75 cm (25.5 cm in diameter) and for jars is 12.33 cm (24.7 cm in diameter). These averages are based on rim arc measurements ranging 25–160 cm or 7–44 degrees of orifice circumference.

Similar to the El Paso Brown rims, the polychrome rims are predominantly thickened, having either a rounded or squared lip (Figure 6.52). The jar rims are slightly everted, and the bowl rims are direct or inverted. The most diagnostic feature of the polychrome rims is the thickened and squared profiles common to later assemblages dating into the El Paso phase.

Jornada Brown and Red

Two body sherds were classified as Jornada Brown based on their highly polished surfaces and fine, quartz sand temper. Both have highly polished exterior surfaces, but one having a plain interior was identified as a jar fragment and the other having a polished interior was identified as a bowl sherd. Neither evidenced vessel appendages, use-wear, or postfiring modification.

Jornada Red, a slipped variety of Jornada Brown, is represented in the assemblage by five sherds. One is a bowl body fragment having a slipped exterior and polished interior surface. The three jar body fragments have slipped exterior and plain interior surfaces. The single jar rim has slipped interior and exterior surface, but the interior slip appears to have been applied just over the edge of the vessel. With the exception of abrasion on the rim lip, no evidence of postfiring modifications, use wear, or appendages was identified. Tempering material was identified as fine angular fragments of granite and mica.

Three Rivers Red-on-terracotta

Seventy-four sherds were identified as Three Rivers Red-on-terracotta, from which one bowl was reconstructed. The bowl, Vessel 1, is described in greater detail below, in the section on reconstructible pots. Most of the sherds are from bowls, including base, body, and rim fragments. Given that the reconstructed bowl included a minimum of eight fragments, the remaining 66 sherds represent at least one additional bowl and a jar. Fourteen percent of the Three Rivers Red-on-terracotta assemblage is jar sherds, including three neck and seven body fragments. Paint type was identified as mineral (iron) pigment fired to red in an oxidizing atmosphere. Surfaces are primarily polished, but several examples appear to have a light wash (thin slip).

Table 6.19 Tempering Material Identified in Decorated Brown Ware from LA 6829

Ceramic Type	Temper	Count	
		n	%
El Paso Bichrome	Coarse angular granite	343	27.07
	Sandstone w/ brown & white matrices	1	0.08
El Paso Polychrome	Coarse angular granite	921	72.69
	Fine angular granite	1	0.08
	Granitic sand	1	0.08
Total		1267	100

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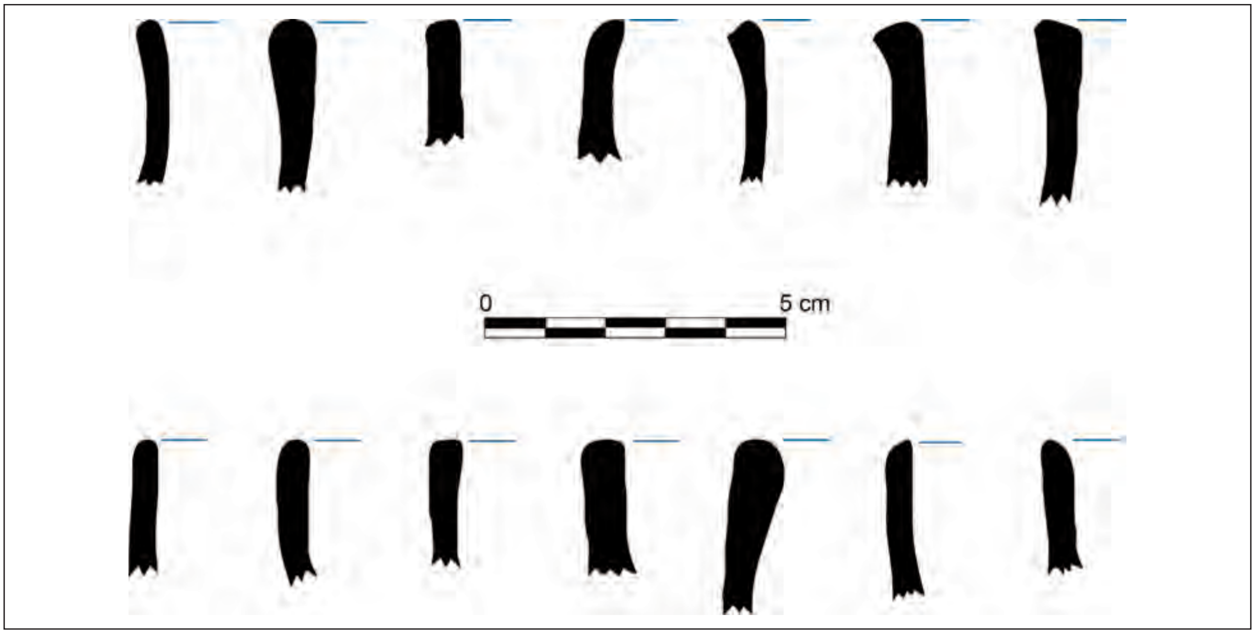

Figure 6.52 Rim Profiles for El Paso Polychrome from LA 6829.

Postfiring modifications were identified on two sherds in the form of edge shaping on one and use as a scraper or smoother on the other (probably not associated with ceramic production). Evidence of use-wear or appendages was not noted. Tempering material consists primarily of coarse angular granite (n=68), similar to that identified in the El Paso Brownware ceramics. Along with the occurrence of granitic sand (n=6), the red-on-terracotta temper is significantly smaller than the brownware temper. Paste characteristics, on the other hand, suggest use of an alternative clay source from that used for El Paso Brown or El Paso Polychrome. These differences are discussed in greater detail in Chapter 20, in conjunction with the petrographic and NAA analyses.

In contrast to the fine-lined designs on the Three Rivers Red-on-terracotta ceramics, two sherds from LA 6829 have significantly broader and bolder designs fitting the definition of Three Rivers Broad-lined Red-on-terracotta. Broad-lined designs are considered an earlier stylistic variety of Three Rivers Red-on-terracotta, but their occurrence chronologically and spatially are not fully defined (Regge Wiseman, personal communication March 2000). Both sherds are bowl fragments including one body and one rim. Tempering material for both sherds was identified as granitic sand, and the paste is similar to the Three Rivers Red-on-terracotta sherds. The broad-lined designs, however, were poorly executed. Use-wear, appendage, or postfiring modifications were not evident on these sherds.

San Andres Plain

Two sherds were identified as San Andres Plain, an unpainted terracotta type from the middle to southern Rio Grande area. Both are from the body portion of a bowl having a lightly polished interior surface. Tempering material consists of fine quartz sand within a yellowish-brown paste having a defined carbon streak. Although these two sherds could have originated from the unpainted portion of a Three Rivers Red-on-terracotta bowl, the darker paste and carbon streak set the sherds apart.

Playas Incised (Sierra Blanca Variety)

Wiseman (1981) defined a variety of Playas Incised produced outside of northern Mexico, which he interprets as a local Sierra Blanca variant. The incised lines and punctations on the exterior surfaces are similar to those on Playas Red

Figure 6.53 Playas Red Incised Sierra Blanca Variety sherds from LA 6829.

Incised, but the paste and temper characteristics suggest local manufacture (Figure 6.53). Wiseman (1981) and Warren's (1979) examination of the temper from the Sierra Blanca Variety sherds recovered from several sites in the Hueco Bolson, Tularosa Basin, Chupadero Mesa, Capitan Mountain-Sierra Blanca, and Guadalupe Mountains areas indicates tempering material from a variety of sources not found in Playas Red Incised. For example, Sierra Blanca Variety sherds may contain biotite hornblende syenite available in the Sierra Blanca, aplite from the Capitan Mountain, or rounded quartz grains from unknown origin. Sherds identified in the LA 6829 assemblage, however, suggest a local origin in the Tularosa Basin, contributing further to local production of Playas Incised variants north of Mexico. The paste (reddish brown) and temper (angular coarse granite) of the examples from LA 6829 are identical to the El Paso Brown and Polychrome sherds dominating the assemblage. As a result, it is suggested that Wiseman's identification of a Sierra Blanca Variety may be further expanded to include a Tularosa Basin Variety.

Seven sherds from LA 6829 were classified as Playas Incised, Sierra Blanca Variety originating from at least one and possibly two jars. All are body fragments with incised lines or punctations on the exterior surface. Given paste and temper constituents identical to those identified for El Paso Brown and Polychrome from the site, it is probable that the sherds originated from a plain ware jar having an isolated ring or cluster of texturing around the upper body. Without evidence of vessel association, further interpretation is merely speculative.

Middle Rio Grande Tradition

Beginning in the Doña Ana phase, ceramics from the area surrounding Gran Quivira and Chupadero Mesa appear on sites in the Jornada region. The most common type is Chupadero Black-on-white (Mera 1931), a distinctive Pueblo white ware, which stands out prominently within the largely brownware ceramic assemblages of the Jornada region. In significantly lesser amounts, corrugated ceramics occur in Tularosa Basin assemblages originating from the Gran Quivira area.

Chupadero Black-on-white

The distinctive type, Chupadero Black-on-white, is abundantly represented (n =780) in the LA 6829 assemblage (Figure 6.54). In contrast to the brownware assemblage, Chupadero Black-on-

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Figure 6.54 Examples of Chupadero Black-on-white from LA 6829.

white vessel forms are significantly more varied, including bowls, jars, ollas, seed jars, and ladles (Table 6.20). As expected, 76 percent of the sherds are from jars displaying the characteristic deeply striated interior surfaces; bowl exteriors also have the striations marks. Three bowl sherds have smoothed (unpainted) exterior surfaces and two jar fragments have smoothed (unpainted) interior surfaces. Although Mera (1935) proposed the type Casa Colorado Black-on-white as a smoothed version of Chupadero, it is probably best classified as a variety of Chupadero Black-on-white rather than as distinctive type (Regge Wiseman, personal communication March 2000).

Three Chupadero Black-on-white rims were large enough to obtain rim radius measurements. Rim arc ranged 25–55 cm, indicating that the fragments used to measure radius represented no more

Table 6.20 Vessel Form Data for Chupadero Black-on-white from LA 6829

Vessel Form	Vessel Part	Count	
		n	%
Bowl	Base	1	0.13
	Body	133	17.04
	Rim	40	5.13
Indeterminate	Body	1	0.13
	Handle	2	0.26
	Indeterminate	1	0.13
Jar	Base	6	0.76
	Body	543	69.62
	Handle	1	0.13
	Neck	41	5.25
	Rim	5	0.64
Ladle	Body	2	0.26
Olla	Rim	2	0.26
Seed jar	Rim	2	0.26
Total		780	100

than 15 percent of the original vessel orifice circumference. The resulting rim radius measurements were 2 cm and 6 cm for two olla rims and 13 cm for one bowl rim.

Eight vessel appendages were identified, including two indeterminate stubs and six multiple coil handles. Although the orientation of the handles on the original vessels is not known, the presence of linear coil handles generally suggests vessel construction in a pitcher form. It also is common to have paired coil handles aligned horizontally on an olla or necked jar for ease of carrying.

Evidence of use-wear includes five sherds with a red substance on one or both surfaces, five with abrasion on the exterior body, and one sherd with spalling on the exterior surface. Two sherds with an indeterminate red substance had been reshaped into scraper/smoother tools of unknown function. The abrasion patterns on the four exterior body fragments suggest that the original vessel was used in such a way that it may have been laid on its side. This type of wear is common on jars that were laid on their side for washing or scraping out contents (Skibo 1992). Without the reconstructed vessel, orientation and location of the abrasion is difficult to discern. Finally, spalled surfaces are frequently associated with heat application or from an accidental direct hit on the surface. Again, without the full context of a reconstructed vessel, the action or use resulting in a spall cannot be determined. It is also common to produce isolated spalling during the original firing of a pot.

The majority of worked sherds from the site are Chupadero Black-on-white; approximately 10 percent of the Chupadero sherds have some type of postfiring modification (Table 6.21). Shaping by grinding a broken sherd in a motion parallel to the paste edge is the most common modification in the assemblage. It is also through this motion that pendants, disks, and spindle whorls frequently are formed. Twenty-five scrapers of various forms were identified, including examples possibly used for processing some type of soft material (e.g., vegetal, meat, hides) (Figure 6.55). A more detailed study of the use wear patterns and functional interpretations is presented in the ceramic synthesis. Two blade-shaped scrapers, also known by the Tewa term *kajepe* (Oppelt 1984:3), were identified in the assemblage (see Figure 6.55). Although LA 6829 yielded the majority of sherd scraper tools, other project sites also contribute to the issue of form and function.

Table 6.21 Postfiring Modifications Identified on Chupadero Black-on-white Sherds from LA 6829.

Postfiring modification	Count	
	n	%
Disc	1	1.35
Edge shaping	32	43.24
Indeterminate drill hole	5	6.76
Blade-shaped scraper (*kajepe*)	3	4.05
Pendant blank	6	8.11
Rim reshaped (w/out form changed)	1	1.35
Sherd tool (scraper/smoother?)	24	32.43
Sherd tool and shaped edge	1	1.35
Spindle whorl	1	1.35
Total	74	100.00

Tempering material identified in the Chupadero Black-on-white sherds was consistently a combination of angular granite, sherd, or sand. Because the sherd temper was difficult to recognize in the original paste, all refired samples (16 percent of Chupadero sherds) were reexamined for evidence of sherd fragments in the paste. Sherds not sampled for oxidation analysis are classified as having granite/sherd/sand temper with no information on abundance of one material over the other. Although several of the temper categories in Table 6.22 are merely combinations of the same material, the first grain type listed in each combination is the most abundant material in the paste. Discussed in more detail in Chapter 20, the granite in these sherds as well as in the El Paso Brownware is more precisely alkali feldspar granite, abundantly available in many of the mountain ranges surrounding the Tularosa Basin and occurring as gravel material in the basin.

Based on the binocular microscope classification and the petrographic analyses, it appears that the Chupadero Black-on-white from LA 6829 was

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Figure 6.55 Examples of Chupadero Black-on-white sherd scraper tools from LA 6829.

Table 6.22 Detailed Temper Categories for Chupadero Black-on-white from LA 6829

Temper	Count	
	n	%
Granite	11	8.87
Granite and sand	3	2.42
Granite and sherd	31	25
Granite, sand, and sherd	3	2.42
Granite, sherd, and sand	1	0.81
Sand, sherd, and granite	3	2.42
Sherd and granite	44	35.48
Sherd and sand	15	12.1
Sherd, granite, and sand	5	4.03
Sherd, sand, and granite	8	6.45
Total	124	100

made in or near the Tularosa Basin. In contrast to the El Paso Brownware, however, these white ware vessels were produced with different clay and fired in a neutral/reducing atmosphere rather than an oxidizing atmosphere. Also based on the refire data, the sherd fragments used to temper the Chupadero pots were probably brownware. Roughly 99 percent of the refired sample had red sherd temper fragments within a buff paste.

Corona Corrugated

Seven sherds were identified as Corona Corrugated, based on paste, temper, and surface characteristics. Corona Corrugated is one of several varieties of utility ware common to the Gran Quivira area dating from the late 1100s to the early 1300s (Hayes *et al.* 1981). It commonly occurs in association with Chupadero Black-on-white within the Gran Quivira area and was probably traded out of the area with black-on-white vessels. Two vessels, one bowl and one jar, are represented by this small handful of sherds. The two bowl fragments have clapboard corrugated exteriors and polished/smudged interior surfaces. Five jar fragments include two rims (Figure 6.56) and three body fragments having obliterated indented corrugated exteriors and plain interior surfaces. None of the sherds evidenced use-wear, postfiring modifications, or appendages. Tempering material was identified as coarse angular granite most closely resembling the alkali

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Figure 6.56 Corona Corrugated jar rims from LA 6829.

feldspar granite of the Chupadero Black-on-white ceramics. Without further petrographic or neutron activation analysis of Corona Corrugated from the Orogrande area, an origin for these vessels cannot be accurately identified. Warren (1980), however, identified 25 percent of the Corona Corrugated sherds from Gran Quivira as having angular quartz grains and white feldspar (granitic), which she identified as a tradeware. Corona Corrugated produced in Gran Quivira has a distinctive local igneous rock temper. She further indicated that the source of the quartz/feldspar material was unknown in the Gran Quivira area, specifically within 15 miles of the pueblo. Because this material is abundant in the Tularosa Basin and many surrounding mountain ranges, the source for the LA 6829 Corona Corrugated and Chupadero Black-on-white sherds probably lies to the south of Gran Quivira.

Mimbres Mogollon Tradition

Only a handful of sherds were identified as originating from the Mimbres Mogollon region of southwestern New Mexico. These include three Alma Plain and one indeterminate Mimbres Black-on-white sherd. One of the hallmarks of the early Doña Ana phase is the occurrence of Mimbres Black-on-white pottery in Jornada assemblages. The relative paucity of Mimbres Classic Black-on-white further indicates an assemblage dating to the *late* Doña Ana phase at the earliest and into the El Paso phase.

Alma Plain

Three sherds were classified as Alma Plain based primarily on temper, paste, and surface characteristics (Figure 6.57). Two are from a single jar having plain interior and polished exterior surfaces. The third fragment appears to be from a second Alma Plain vessel, possibly a bowl as indicated by the light polish on the interior. The small size of these sherds, however, precludes any definitive statements of more specific vessel form or size. None of the sherds have evidence of use wear, postfiring modifications, or appendages.

Figure 6.57 Indeterminate Alma Plain (left and center) and Mimbres Black-on-white (right) sherds from LA 6829.

Tempering material was classified from binocular microscope identification as a volcanic ash and sand. Petrographic characterization of the temper, however, more specifically classified the material as a trachybasalt porphyry. NAA results also indicate a Mimbres region origin for one of the samples.

Mimbres Black-on-white

A single sherd of indeterminate Mimbres Black-on-white was recovered from LA 6829. With an eroded surface and lack of definitive design elements (Figure 6.57), the sherd could not be assigned a more specific Mimbres design type (see Anyon and LeBlanc 1984; Shafer and Brewington 1995). The sherd is a bowl rim fragment having a polished exterior and slipped and polished interior. No evidence of use-wear, post-firing modifications, or appendages were present. Temper was identified as volcanic (tuff?) and quartz sand. The small number of Mimbres Black-on-white sherds from LA 6829 contrasts with the North Hills sites to the south, which yielded more than 200 Mimbres Black-on-white ceramics (Miller 1990), reflecting temporal differences between the two sites.

Northern Mexico Tradition

During the El Paso phase, Playas Red Incised is a common northern Mexico ceramic type (Hard *et al.* 1994). The presence of these ceramics is an important indicator of exchange and interaction with people to the south of the Jornada region, providing support for models of interregional integration.

Playas Red Incised and Playas Red

Playas Red Incised (Figure 6.58) was the only ceramic type associated with northern Mexico and the Casas Grande region identified in the LA 6829 assemblage. Sherds having incised designs were classified as Playas Red Incised (n=40) and those lacking incised design but having the same paste and slip were typed as Playas Red (n=4). Bowls and jars are represented in the LA 6829 collections, but most of the sherds are jar fragments

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Figure 6.58 Playas Red Incised sherds from LA 6829.

(Table 6.23). The incised fragments have evenly spaced, linear incisions covered by a red slip. Two of the bowl fragments are slipped on the interior surface and the other 11 are polished. None of the sherds evidence use-wear or appendages, but one Playas Red fragment has edge shaping. Tempering material for all of the sherds consists of some form of granitic material, either coarse angular granite, medium quartz sand, or granitic sand.

Table 6.23 Northern Mexico Ceramics from LA 6829.

Ceramic Type	Vessel Form	Vessel Part	Count	
			n	%
Playas Red	Bowl	Body	1	2.27
	Jar	Body	3	6.82
Playas Red Incised	Bowl	Body	13	29.55
	Jar	Body	27	61.36
Total			44	100

Cibola Anasazi Tradition

Very few Cibola series sherds were identified in the LA 6829 assemblage, but the presence of 10 White Mountain Red Ware and St. John Black-on-red sherds (all from a single bowl) in particular supports an El Paso-phase component. Typical of White Mountain Red Ware, the remains of the St. Johns Black-on-red bowl (Figure 6.59) indicate that it had a thick red slip over a buff paste, black-painted designs on the interior, and sherd and sand temper. One of the pieces has a drill hole of indeterminate function and a second fragment has edge shaping. No evidence of use wear or appendages was identified. The other Cibola tradition sherd is a banded gray rim fragment from a jar having coarse quartz sand temper.

Indeterminate Tradition

A small group (n=8) of gray and black-on-white sherds were identified as indeterminate tradition. For the most part, all of these sherds were too

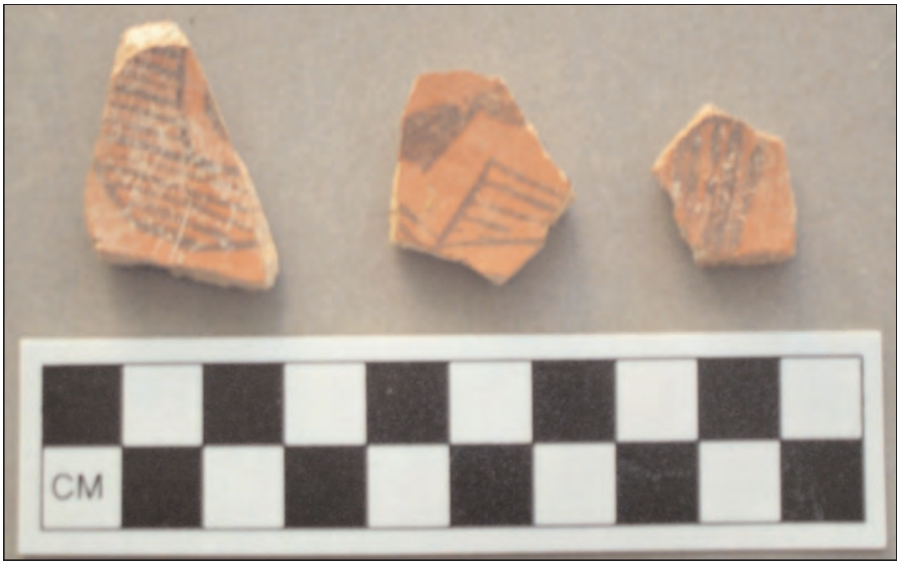

Figure 6.59 St. Johns Black-on-red sherds from LA 6829.

small to confidently assign a ceramic type or series. They do, however, represent vessels probably produced outside of the Tularosa Basin.

Reconstructible Vessels

One nearly complete vessel (Vessel 1), a Three Rivers Red-on-terracotta bowl was recovered from LA 6829. Another four partial vessels were recovered from two separate proveniences. Less than 30 percent of each vessel was identified; therefore, they were assigned a letter rather than a number designation, and were not reconstructed. These include an El Paso Polychrome bowl, and three El Paso Polychrome jars.

Vessel 1

Vessel 1 is a medium-sized Three Rivers Red-on-terracotta bowl (Figure 6.60) recovered from Feature 17, a structure; however, several sherds were also recovered from Feature 82. The bowl has a maximum diameter of 28.5 cm at the rim, height of 10 cm, average thickness of 5.6 mm, and a weight of 1025.1 grams. Vessel 1 has coarse angular granite temper, pinkish-orange paste, hard fracture, polished exterior, and polished and painted interior surface. Designs were executed in a mineral paint that turned red due to the oxidizing atmosphere used to fire the vessel. Designs were placed in a banded layout, with an open center. Six separate panels are present with two separate design combinations executed. One design combination occupies two panels, and the second combination occupies the remaining four panels. The two similar panels separated the other four panels placing them opposite one another. Each panel is separated by a series of rectilinear lines outlining the entire design. Each of the two panels consists of a solid equilateral triangle attached to one of the rectilinear lines. The triangle runs perpendicular to the rim. Inside each of the four other panels is a series of open stepped terraces.

A puki mark is present approximately a third of the way up from the bottom of the vessel. The mark consists of a thickened area where the top portion of the vessel formed inside a cast was joined with the first coil. Use-wear is minimal and consists of exterior and interior abrasion. The interior abrasion is minor and is located on the bottom of the bowl. Since so little of it is present, its origin is unknown. Exterior abrasion was noted on the lower two thirds of the vessel, with most of the use wear located on the lower third or the base. Temper pedestalling is also present on the base where the polish has worn away. This suggests that the vessel was placed on a hard or

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Figure 6.60 Vessel 1, a reconstructed Three Rivers Red-on-terracotta bowl from LA 6829.

abrasive surface repeatedly over the course of its use life. Abrasion located on the middle third of the vessel is less prominent and is accompanied by horizontal striations (parallel to the rim). This attrition may have occurred when the outside of the vessel was cleaned using a pliable tool. No post-firing modifications or residues were noted on the vessel. Fire clouds are present on the base and sides of the vessel, but occurred in the initial firing. Due to the limited amount of attrition noted on the vessel, the bowl appears to have been only moderately used before it was discarded.

Vessel A

Vessel A is an El Paso Polychrome bowl represented by 17 sherds recovered from Feature 66, a large, non-thermal pit (Figure 6.61). Because the vessel was not reconstructed, only minimal measurements could be taken. The vessel has a minimum height of 12.2 cm, an average thickness of 6.2 mm, and a minimum weight of 478.6 grams. Rim radius measurements suggest a rim diameter of 17 cm. The vessel has high straight walls nearly the same length as the rim diameter of the bowl creating a symmetrical vessel. The bowl has brown paste, semi-friable fracture, coarse angular granite temper, and painted and polished exterior and interior surfaces. A single black line (mineral) encircles the vessel just below the rim on the exterior and interior surfaces. The red clay pigment is present on the rim of the vessel. No other designs were noted. No use-wear or post-firing modifications were observed on the vessel.

Vessel B

Vessel B is an El Paso Polychrome necked jar represented by 11 sherds (Figure 6.62). The jar was recovered from Feature 66, a large, non-thermal pit. Since so few sherds could be associated

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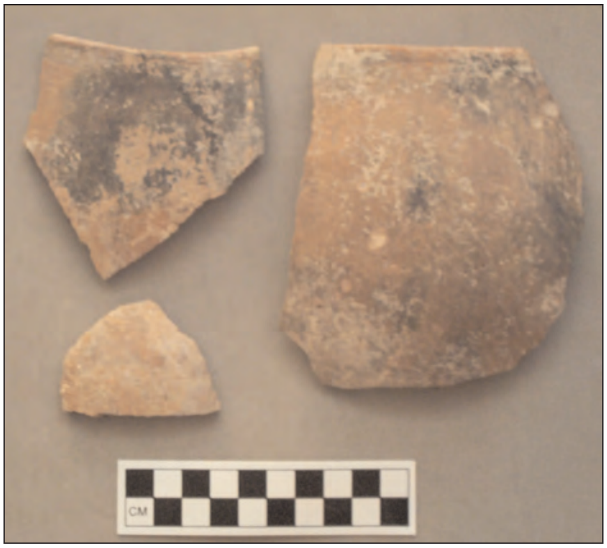

Figure 6.61 Vessel A, an El Paso Polychrome bowl from LA 6829.

Figure 6.62 Vessel B, a partially recon structible El Paso Polychrome jar from LA 6829.

with the vessel, it was not reconstructed; therefore, few measurements could be taken. The jar has a minimum weight of 722.0 grams, an average thickness of 6.8 mm, and a height of more than 15 cm. Rim radius measurements suggest a rim diameter of 23 cm. Vessel B has a brown paste, semi-friable fracture, coarse angular granite temper, plain and painted interior, and polished and painted exterior surface. Designs on the interior of the jar were located just below the rim on the neck. The interior design consists of a series of connected open equilateral triangles surrounding the rim of the vessel and executed in a mineral pigment. The exterior design consists of a series of rectilinear lines that extend at least to the shoulder of the vessel. Since no sherds representing the area between the base and the shoulder were recovered, it is unknown if the design continued to just above the base. Exterior designs were executed in red clay pigment. No use-wear or post-firing modifications were noted.

Vessel C

Vessel C is an El Paso Polychrome jar represented by one sherd recovered from Feature 78, a thermal feature (Figure 6.63). Because the vessel was not reconstructed, few measurements could be taken. The jar has a minimum height of 9.6 cm, an average thickness of 5.4 mm, and a minimum weight of 342.3 grams. Rim radius measurements suggest that the rim has a diameter of 26 cm. The vessel has a brown paste, semi friable fracture, coarse angular granite temper, plain and painted interior, and polished and painted exterior surface. The interior design consists of a wide solid line encircling the rim and executed in a mineral pigment. Exterior designs, executed in red clay pigment, consist of rectilinear lines extending to the shoulder. Fragments from below the shoulder lacked any design. No use-wear or post-firing modifications were noted.

Vessel D

Sherds associated with Vessel D were recovered from two features including Feature 147, a possible *hueco* and Structure 14 (Feature 137); however, most of the sherds were recovered from Feature 147. Vessel D is an El Paso Polychrome jar consisting of roughly 30 sherds (Figure 6.64). Since the vessel was not reconstructed, few measurements could be taken. The jar has a minimum height of 10.6 cm, average thickness of 6.0 mm,

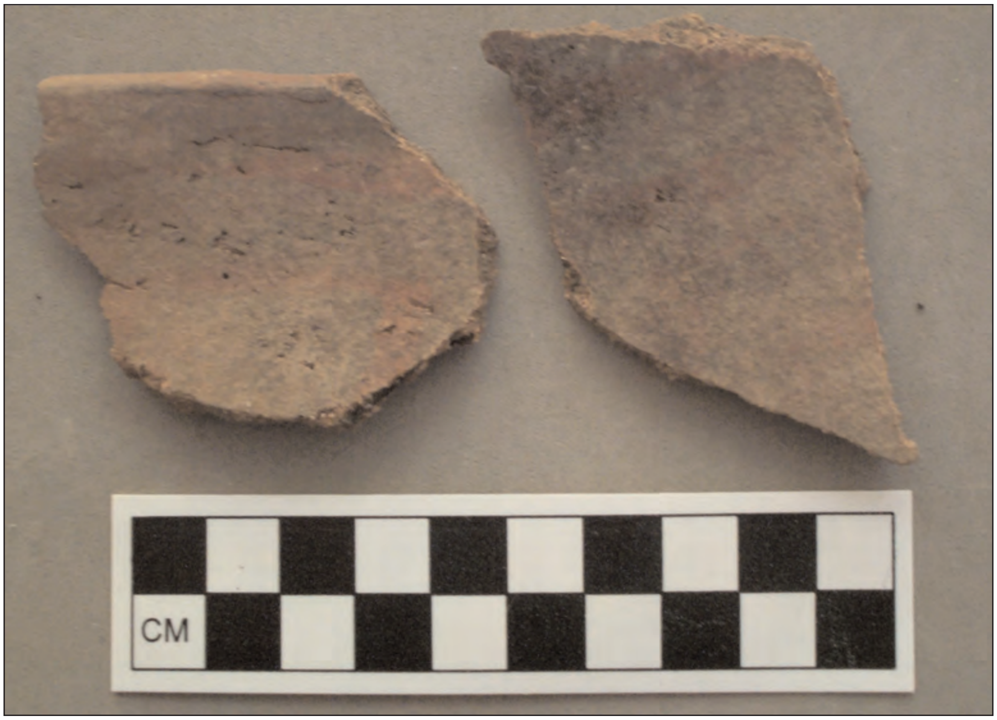

Figure 6.63 Vessel C, a partially reconstructible El Paso Polychrome jar from LA 6829.

Figure 6.64 Vessel D, a partially reconstructible El Paso Polychrome jar from LA 6829.

and minimum weight of 70.5 grams. Rim radius measurements suggest a rim diameter of 26 cm. Vessel D has a semi-friable fracture, brown paste, coarse angular granite temper, plain and painted interior, and polished and painted exterior surface. Interior designs consist of a single wide solid line encircling the rim executed in mineral paint. Exterior designs consist of wide rectilinear lines including elongated right triangles also executed in mineral paint. The area between the mineral-painted designs is filled in with a red clay pigment. No use-wear was observed, but a single drill hole was noted. Since only one drill hole was noted on the body of the vessel, its function cannot be determined.

Spatial Distributions and Ceramic Chronometry

Without describing the ceramic artifacts from each posthole, thermal feature, or activity area, the following intrasite spatial and chronometric discussion focuses on the structural contexts. The ceramic data from each structure are presented and discussed. In general terms, the ceramic types are distributed evenly across the site. There is no indication of any structures dating outside of the late Doña Ana phase or early El Paso phase. No ceramic artifacts were recovered from Structures 3 or 4.

Structure 1 (Feature 54)

One-thousand three-hundred-sixty sherds were recovered from Structure 1, including El Paso Brown, El Paso Bichrome, El Paso Polychrome, Chupadero Black-on-white, Three Rivers Red-on-terracotta, and an indeterminate White Mountain black-on-red sherd (Table 6.24). The variety of types from Structure 1 indicate a late Doña Ana and early El Paso-phase assemblage. This is generally consistent with the radiocarbon dates from this structure (see section on site chronology, below). Most of the sherds (n=254) were jar forms including both utility and decorated pottery. The remaining 57 sherds include 56 bowl fragments and one indeterminate vessel form. The indeterminate form is from a multi-coil handle. All but one of the bowl sherds was from decorated pottery. No reconstructible vessels were recovered from Structure 1. A variety of post-firing modifications were identified in the Structure 1 assemblage (n=28), including eight sherd tools used for scraping or smoothing (non-pottery production), one sherd with indeterminate drill holes and undifferentiated shaped edges, 10 undifferentiated shaped edges, two kajepes (blade-shaped scraper), and one spindle whorl.

Structure 2 (Feature 54.22)

Structure 2 is a large, formalized pithouse beneath the larger Structure 1. Only ten sherds were recovered from Structure 2 including El Paso Brown, El Paso Polychrome, unspecified brown, and too small (Table 6.25). Based on the presence of El Paso Polychrome, the structure dates to the late Doña Ana Phase or into the El Paso phase. Of the two sherds receiving full analysis, both are jar fragments. Although all of the sherds are likely from the same jar, there were not enough fragments to reconstruct. None of the sherds have use-wear, appendages, or postfiring modifications.

Structure 5 (Feature 17)

Two thousand two hundred sixty two sherds were recovered from Structure 5 (Feature 17), including El Paso Brown, El Paso Polychrome, El Paso Bichrome, Jornada Red, Chupadero Black-on-white, Playas Red, Playas Red Incised, Playas Incised Sierra Blanca Variety, Three Rivers Red-on-terracotta, indeterminate White Mountain Red Ware, indeterminate plain gray, and unspecified brown (Table 6.26). Based on the variety of decorated and red ware ceramics, this large pithouse probably dates to the El Paso Phase. Stratigraphic evidence suggests this is among the most recent structures at the site. Considered together with an associated two-sigma, calibrated radiocarbon date of A.D. 1030–1280 (from a subfloor feature in this pithouse), Structure 5 probably dates from the early El Paso phase.

Vessel forms represented in the structure include ollas, seed jars, unspecified jar forms, bowls, and ladles. Most of the Chupadero Black-on-white sherds are jar fragments from at least one olla and

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Table 6.24 Ceramics Types and Vessel Forms from Structure 1, LA 6829.

Feature #	Feature type	Ceramic Type	Vessel Form	Count	
				n	%
Structure 1 (F54)		Chupadero Black-on-white	Bowl	8	0.59
			Indeterminate	1	0.07
			Jar	72	5.29
		El Paso Bichrome	Bowl	11	0.81
			Jar	25	1.84
		El Paso Brown	Bowl	1	0.07
			Jar	5	0.37
		El Paso Polychrome	Bowl	28	2.06
			Jar	127	9.34
		Indeterminate White Mountain b/r	Bowl	1	0.07
		Three Rivers Red-on-terracotta	Bowl	2	0.15
			Jar	1	0.07
		Too small	Not analyzed	767	56.4
		Unspecified brown	Not analyzed	257	18.9
54.1	Posthole	Too small	Not analyzed	1	0.07
54.2	posthole	Chupadero Black-on-white	Jar	2	0.15
		El Paso Polychrome	Jar	4	0.29
		Too small	Not analyzed	11	0.81
		Unspecified brown	Not analyzed	2	0.15
54.3	Pit	Chupadero Black-on-white	Bowl	1	0.07
			Jar	4	0.29
		El Paso Polychrome	Jar	1	0.07
		Too small	Not analyzed	1	0.07
		Unspecified brown	Not analyzed	4	0.29
54.8	Structure ramp	Too small	Not analyzed	1	0.07
54.1	Pit	Chupadero Black-on-white	Jar	1	0.07
54.13	Posthole	El Paso Polychrome	Jar	3	0.22
		Too small	Not analyzed	6	0.44
		Unspecified brown	Not analyzed	1	0.07
54.14	Posthole	Chupadero Black-on-white	Jar	1	0.07
		El Paso Polychrome	Bowl	1	0.07
		Too small	Not analyzed	1	0.07
54.15	Posthole	El Paso Bichrome	Bowl	1	0.07
			Jar	1	0.07
		El Paso Polychrome	Jar	1	0.07
		Three Rivers Red-on-terracotta	Bowl	1	0.07
		Too small	Not analyzed	1	0.07
54.16	Pit	El Paso Polychrome	Bowl	1	0.07
			Jar	1	0.07
54.18	Pit	Too small	Not analyzed	1	0.07
Total				1360	100.00

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Table 6.25 Ceramic Types and Vessel Forms from Structure 2, LA 6829

Ceramic Type	Vessel Form	Count	
		n	%
El Paso Brown	Jar	1	10
El Paso Polychrome	Jar	1	10
Too small	Not analyzed	7	70
Unspecified brown	Not analyzed	1	10
Total		10	100

one seed jar. Two ladle fragments and a series of bowl sherds also were recovered. The El Paso Brownware sherds, decorated and undecorated, include a comparable number of jar and bowl fragments. Based on the distribution of brownware types and vessel shapes, a minimum of two El Paso Polychrome jars, two El Paso Polychrome bowls, and one El Paso Brown jar are represented. Vessel 1, a reconstructed Three Rivers Red-on-terracotta bowl, was recovered from Structure 5, most of which was in Stratum 1, Level 1. Most sherds from the bowl were concentrated in the upper levels of the structure, but some fragments were recovered from subfeatures, including a thermal feature (Feature 61) and two pits (Features 17.1 and 82). The remaining typeable sherds include a handful of fragments from White Mountain Red Ware, Playas Red and Incised, and Jornada Red vessels. The untyped plain gray sherd may be an unslipped and unpolished fragment from one of the Chupadero Black-on-white vessels. All of the too-small and unspecified brownware sherds probably originated from the El Paso Brownware vessels.

Worked sherds (Table 6.27) from Structure 5 include the greatest number and variety from any of the excavated structures. Five Chupadero Black-on-white sherd tools used for either scraping or smoothing were identified. Based on the direction of the wear patterns and hand motion to produce the wear, these scraper/smoothers were probably used to process some type of soft material (e.g., vegetal, meat, or hide). The remaining sherds with postfiring modifications are not as easily interpreted, but the high number of El Paso Polychrome fragments with indeterminate drill holes suggests that several vessels had been

Table 6.26 Ceramic Types and Vessel Forms from Structure 5, LA 6829

Ceramic Type	Vessel Form	Count	
		n	%
Chupadero Black-on-white	Bowl	25	1.11
	Jar	100	4.42
	Ladle	2	0.09
	Olla	1	0.04
	Seed jar	1	0.04
El Paso Bichrome	Bowl	17	0.75
	Jar	36	1.59
El Paso Brown	Bowl	8	0.35
	Jar	6	0.27
El Paso Polychrome	Bowl	53	2.34
	Indeterminate	12	0.53
	Jar	71	3.14
Indeterminate White Mountain b/r	Bowl	1	0.04
Jornada Red	Jar	1	0.04
Plain gray	Jar	1	0.04
Playas Incised (Sierra Blanca Var.)	Jar	1	0.04
Playas Red	Jar	1	0.04
Playas Red Incised	Jar	6	0.27
Three Rivers Red-on-terracotta	Bowl	14	0.62
Too small	Not analyzed	1559	68.92
Unspecified brown	Not analyzed	346	15.3
Total		2262	100.00

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Table 6.27 Worked Sherds from Structure 5, LA 6829

Ceramic Type	Postfiring modification	Count	
		n	%
Chupadero Black-on-white	Edge shaping	2	3.77
	Rim reshaped (w/out form changed)	1	1.89
	Sherd tool (scraper/smoother?)	5	9.43
El Paso Bichrome	Edge shaping	1	1.89
El Paso Brown	Disc	1	1.89
	Edge shaping	2	3.77
	Indeterminate drill hole	2	3.77
El Paso Polychrome	Drill hole (suspension or closure)	1	1.89
	Indeterminate drill hole	37	69.81
Indet. White Mountain b/r	Edge shaping	1	1.89
Total		53	100

repaired and reused or were being repaired at the time of the structure abandonment.

Structure 6 (Feature 38)
Eighty-nine sherds were recovered from Structure 6 including El Paso Brown, El Paso Bichrome, El Paso Polychrome, and Chupadero Black-on-white (Table 6.28). The distribution of ceramic types suggests a Doña Ana-phase assemblage, which is consistent with a two-sigma, calibrated radiocarbon date of A.D. 900–1260. Both bowls and jars were recovered from the structure. All three bowl fragments were from decorated sherds, while the jars (n=8) included both utility and decorated pottery. No identifiable vessels were recovered from Structure 6. Postfiring modifications were lacking within Structure 6.

Table 6.28 Ceramic Types and Vessel Forms from Structure 6, LA 6829

Ceramic Type	Vessel Form	Count	
		n	%
Chupadero Black-on-white	Jar	4	4.49
El Paso Bichrome	Bowl	2	2.25
	Jar	1	1.12
El Paso Brown	Jar	1	1.12
El Paso Polychrome	Bowl	1	1.12
	Jar	2	2.25
Too small	Not analyzed	40	44.94
Unspecified brown	Not analyzed	38	42.7
Total		89	100

Structure 7 (Feature 79)
Seven-hundred-eight sherds were recovered from Structure 7 including local pottery and trade ware from Mexico and the Cibola region to the north. Identified types include El Paso Brown, El Paso Bichrome, El Paso Polychrome, Chupadero Black-on-white, Three Rivers Red-on-terracotta, Playas Red Incised, and St. Johns Black-on-red (Table 6.29). These indicate an El Paso-phase affiliation for this structure, although there are no chronometric dates from this feature. The majority of sherds include El Paso Polychrome (n=39) and Chupadero Black-on-white (n=21). Twenty bowl sherds and 57 jar sherds were recovered from Structure 7. Both utility and decorated pottery were identified as jars, while bowls were only represented by decorated ceramics. No reconstructible vessels were recovered from Structure 7. Five sherds showed evidence of postfiring modifications including undifferentiated

Table 6.29 Ceramic Types and Vessel Forms from Structure 7, LA 6829

Ceramic Type	Vessel Form	Count	
		n	%
Chupadero Black-on-white	Bowl	7	0.99
	Jar	14	1.98
El Paso Bichrome	Bowl	3	0.42
	Jar	7	0.99
El Paso Brown	Jar	2	0.28
El Paso Polychrome	Bowl	6	0.85
	Jar	33	4.66
Playas Red Incised	Jar	1	0.14
St. Johns Black-on-red	Bowl	1	0.14
Three Rivers Red-on-terracotta	Bowl	3	0.42
Too small	Not analyzed	524	74.01
Unspecified brown	Not analyzed	107	15.11
Total		708	100

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shaped edges found on Chupadero Black-on-white, El Paso Brown and El Paso Bichrome sherds. Since so little of the shaped edges are present, their function cannot be determined.

Structure 8 (Feature 119)
One hundred nine sherds were recovered from Structure 8 including El Paso Bichrome, El Paso Polychrome, Chupadero Black-on-white, and Playas Red Incised (Table 6.30). The ceramic types indicate an El Paso-phase assemblage. Both bowl and jar fragments were recovered from the structure, including six decorated bowl sherds and 14 decorated jar sherds. No reconstructible vessels were recovered from the structure. Two sherds displayed evidence of postfiring modifications, including a Chupadero Black-on-white pendant blank and an El Paso Polychrome sherd with a shaped edge. Because so little of the worked edge is present, its function cannot be determined.

Table 6.30 Ceramic Types and Vessel Forms from Structure 8, LA 6829

Ceramic Type	Vessel Form	Count	
		n	%
Chupadero Black-on-white	Bowl	1	0.92
	Jar	2	1.83
El Paso Bichrome	Bowl	3	2.75
	Jar	3	2.75
El Paso Polychrome	Bowl	2	1.83
	Jar	8	7.34
Playas Red Incised	Jar	1	0.92
Too small	Not analyzed	62	56.88
Unspecified brown	Not analyzed	27	24.77
Total		109	100.00

Structure 9 (Feature 141)
Seventy-three sherds were recovered from Structure 9, including El Paso Brown, El Paso Bichrome, El Paso Polychrome and Chupadero Black-on-white (Table 6.31). Although no absolute chronometric dates were obtained from the structure, ceramic data suggests a late Doña Ana or early El Paso phase assemblage. A single decorated bowl fragment and 16 jar fragments were identified including both utility and decorated pottery. No reconstructible vessels or postfiring modifications were identified within the assemblage.

Table 6.31 Ceramic Types and Vessel Forms from Structure 9, LA 6829.

Ceramic Type	Vessel Form	Count	
		n	%
Chupadero Black-on-white	Jar	1	1.37
El Paso Bichrome	Jar	5	6.85
El Paso Brown	Jar	1	1.37
El Paso Polychrome	Bowl	1	1.37
	Jar	9	12.33
Too small	Not analyzed	39	53.42
Unspecified brown	Not analyzed	17	23.29
Total		73	100

Structure 10 (Feature 142)
Seventy-six sherds were recovered from Structure 10, including El Paso Brown, El Paso Bichrome, El Paso Polychrome, and Chupadero Black-on-white (Table 6.32). The ceramic data indicates a late Doña Ana or El Paso phase residence. Most of the ceramics were too small to analyze (n=55). Four bowl fragments and eight jar fragments were noted. Both utility and decorated pottery was identified within each vessel form. No reconstructible vessels were recovered from the structure. No postfiring modifications were noted in the assemblage.

Table 6.32 Ceramic Types and Vessel Forms from Structure 10, LA 6829

Ceramic Type	Vessel Form	Count	
		n	%
Chupadero Black-on-white	Jar	1	1.32
El Paso Bichrome	Jar	2	2.63
El Paso Brown	Bowl	1	1.32
	Jar	1	1.32
El Paso Polychrome	Bowl	3	3.95
	Jar	4	5.26
Too small	Not analyzed	55	72.37
Unspecified brown	Not analyzed	9	11.84
Total		76	100.00

Structure 11 (Feature 179)
Thirty-three sherds were recovered from Structure

11, including Chupadero Black-on-white, El Paso Bichrome, and El Paso Polychrome (Table 6.33). The variety of types indicates a late Doña Ana or El Paso-phase structure containing primarily decorated ceramics. A radiocarbon date from the structure produced a two-sigma, calibrated range of A.D. 1180 to 1420, which is consistent with a Late Formative temporal affiliation. Given that the only brown ware rim sherd is a decorated fragment from an El Paso Polychrome jar, it is possible that the unspecified and too small brown ware sherds are from the same jar along with the other decorated brown ware. Given that the single jar fragment of Chupadero Black-on-white was reworked into a disc shape, the vessel assemblage from the structure probably consists of a single El Paso Polychrome jar.

Table 6.33 Ceramic Types and Vessel Forms from Structure 11, LA 6829

Ceramic Type	Vessel Form	Count	
		n	%
Chupadero Black-on-white	Jar	1	3.03
El Paso Bichrome	Jar	1	3.03
El Paso Polychrome	Jar	5	15.15
Too small	Not analyzed	22	66.67
Unspecified brown	Not analyzed	4	12.12
Total		33	100

Structure 12 (Feature 57)

Three-hundred-two sherds were recovered from Structure 12, including El Paso Brown, El Paso Bichrome, El Paso Polychrome, Chupadero Black-on-white, Three Rivers Red-on-terracotta, Playas Red, Playas Red Incised, and Corona Corrugated (Table 6.34). The last three types suggest trade with communities to the south in Mexico and to the north near the Gran Quivira area, and the assemblage most likely dates from the early El Paso phase. Most of the sherds were identified as jar fragments (n=42) while the remaining 12 are from bowls. As shown in Table 6.34, decorated and utility jars are present in the assemblage. No reconstructible vessels were recovered, and no postfiring modifications were identified within the assemblage.

Table 6.34 Ceramic Types and Vessel Forms from Structure 12, LA 6829

Ceramic Type	Vessel Form	Count	
		n	%
Chupadero Black-on-white	Bowl	1	0.33
	Jar	15	4.97
Corona Corrugated	Jar	1	0.33
El Paso Bichrome	Jar	7	2.32
El Paso Brown	Jar	1	0.33
El Paso Polychrome	Bowl	8	2.65
	Jar	17	5.63
Playas Red	Bowl	1	0.33
Playas Red Incised	Jar	1	0.33
San Andres Plain	Bowl	1	0.33
Three Rivers Red-on-terracotta	Bowl	1	0.33
Too small	Not analyzed	186	61.59
Unspecified brown	Not analyzed	62	20.53
Total		302	100

Structure 13 (Feature 111)

Seventy-six sherds were recovered from Structure 13, including Alma Plain, Chupadero Black-on-white, El Paso Polychrome, and Jornada Red (Table 6.35). Structure 13 probably dates solely to the Doña Ana phase. All of the typeable sherds are from jars with the exception of four El Paso Polychrome bowl fragments. A minimum of five vessels is represented in the small collection from Structure 13. None of the sherds have evidence of use wear, postfiring modifications, or appendages. The Alma Plain sherds are two of only three identified in the site assemblage, but indicate some interaction with the Mimbres area.

Table 6.35 Ceramic Types and Vessel Forms from Structure 13, LA 6829

Ceramic Type	Vessel Form	Count	
		n	%
Alma Plain	Jar	2	2.63
Chupadero Black-on-white	Jar	2	2.63
El Paso Polychrome	Bowl	4	5.26
	Jar	6	7.89
Jornada Red	Jar	1	1.32
Too small	Not analyzed	46	60.53
Unspecified brown	Not analyzed	15	19.74
Total		76	100

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Structure 14 (Feature 137)

Sixty-five sherds were recovered from Structure 14, including El Paso Brown, El Paso Bichrome, El Paso Polychrome, and Chupadero Black-on-white (Table 6.36). The ceramic data suggest a late Doña Ana or early El Paso phase assemblage, although there are no associated radiocarbon dates. Seventeen jar fragments and one bowl fragment were identified. The single bowl fragment is from a decorated vessel, while both utility and decorated pottery were from jars. A partial vessel was recovered from the structure, an El Paso Polychrome jar (Vessel D). The vessel is described in detail above. Postfiring modifications were identified on two sherds. A shaped edge was noted on a Chupadero Black-on-white jar fragment. Since so little of the edge was still present, its function cannot be determined. The second worked sherd was an El Paso Brown sherd reshaped into a pendant blank.

Table 6.36 Ceramic Types and Vessel Forms from Structure 14, LA 6829

Ceramic Type	Vessel Form	Count	
		n	%
Chupadero Black-on-white	Jar	6	9.23
El Paso Bichrome	Jar	2	3.08
El Paso Brown	Jar	2	3.08
El Paso Polychrome	Bowl	1	1.54
	Jar	7	10.77
Too small	Not analyzed	23	35.38
Unspecified brown	Not analyzed	24	36.92
Total		65	100

Structure 15 (Feature 146)

Thirty-seven sherds were recovered from Structure 15, including Chupadero Black-on-white, El Paso Brown, and El Paso Polychrome (Table 6.37). A radiocarbon date from this structure yielded a two-sigma, calibrated range of A.D. 1050–1290, which is consistent with a proposed Doña Ana-phase affiliation. Vessels represented in this small assemblage include a Chupadero Black-on-white olla, an El Paso Polychrome bowl, and an El Paso Polychrome jar. It is likely that the El Paso Brown and unspecified brown sherds are from one of the polychrome vessels. The Chupadero Black-on-white bowl fragment was reused as a tool for scraping or smoothing, suggesting that the sherd was brought into the structure as a tool.

Table 6.37 Ceramic Types and Vessel Forms from Structure 15, LA 6829

Ceramic Type	Vessel Form	Count	
		n	%
Chupadero Black-on-white	Bowl	2	5.41
	Jar	1	2.7
	Olla	1	2.7
El Paso Brown	Jar	1	2.7
El Paso Polychrome	Bowl	1	2.7
	Jar	9	24.32
Too small	Not analyzed	12	32.43
Unspecified brown	Not analyzed	10	27.03
Total		37	100

Structure 16 (Feature 166)

Two-hundred ninety-five sherds were recovered from this structure, including El Paso Brown, El Paso Bichrome, El Paso Polychrome, Chupadero Black-on-white, Three Rivers Red-on-terracotta, Playas Incised (Sierra Blanca Variety), and Playas Red Incised (Table 6.38). Although absolute dates are not available for Structure 16, the ceramic data suggest an early El Paso-phase assemblage. The presence of Playas Red Incised suggests trade relations with communities to the south in northern Mexico. Based on temper identification, it is likely that the Playas Incised (Sierra Blanca Variety) was locally produced. Fourteen bowl and 34 jar fragments were identified including both utility and decorated pottery. No reconstructible vessels were identified from Structure 16. A shaped-edge was noted on a single El Paso Brown bowl fragment. Since so little of the shaped edge is present, its function cannot be determined. No other postfiring modifications were identified.

Structure 17 (Feature 186)

One-hundred-nineteen sherds were recovered from Structure 17, including El Paso Brown, El

Table 6.38 Ceramic Types and Vessel Forms from Structure 16, LA 6829

Ceramic Type	Vessel Form	Count	
		n	%
Chupadero Black-on-white	Bowl	2	0.68
	Jar	10	3.39
El Paso Bichrome	Bowl	1	0.34
	Jar	5	1.69
El Paso Brown	Bowl	2	0.68
	Jar	3	1.02
El Paso Polychrome	Bowl	6	2.03
	Jar	10	3.39
Playas Incised (Sierra Blanca Variety)	Jar	1	0.34
Playas Red Incised	Jar	5	1.69
Three Rivers Red-on-terracotta	Bowl	3	1.02
Too small	Not analyzed	191	64.75
Unspecified brown	Not analyzed	56	18.98
Total		295	100

Paso Bichrome, El Paso Polychrome, and Chupadero Black-on-white (Table 6.39). A radiocarbon date from the structure yielded a two-sigma, calibrated range of A.D. 1160–1300, which is consistent with a proposed late Doña Ana-phase affiliation. Three decorated bowl fragments and 24 utility and decorated jar fragments were identified. Three sherds with shaped edges were identified including an El Paso Polychrome jar fragment and two Chupadero Black-on-white jar fragments. Since so little of the worked edges are present, their function cannot be determined. No reconstructible vessels were identified.

Table 6.39 Ceramic Types and Vessel Forms from Structure 17, LA 6829

Ceramic Type	Vessel Form	Count	
		n	%
Chupadero Black-on-white	Bowl	1	0.84
	Jar	8	6.72
El Paso Bichrome	Jar	1	0.84
El Paso Brown	Jar	2	1.68
El Paso Polychrome	Bowl	2	1.68
	Jar	13	10.92
Too small	Not analyzed	70	58.82
Unspecified brown	Not analyzed	22	18.49
Total		119	100

Structure 18 (Feature 68)

Four sherds were recovered from Structure 18, located along the edge of the right-of-way and only a small portion of which was excavated. The small assemblage includes three sherds that were too small to analyze and one unspecified brownware body sherd that fell outside the sampling parameters. Because the sherds were not fully analyzed, along with the absence of decorated specimens, no further information is available and a ceramic date for the structure is not possible.

Summary Of Jaca Site Ceramics

The ceramic assemblage from LA 6829 revealed a wealth of information concerning chronological and functional aspects of the site, structures, and features. The ceramics also provided information concerning the technological and functional aspects of the pottery itself, as well as data for interpreting patterns of trade and regional interaction. Many of these issues are discussed in more detail and in a broader perspective in Chapter 20.

Chronologically, the ceramic assemblage supports other evidence (including numerous radiocarbon dates) indicating a more-or-less continuous occupation of the site beginning in the late Doña Ana phase and continuing into the early El Paso phase. The small number of El Paso Brown rims suggests that very few of the brownware vessels were unpainted, and this is consistent with an occupational span beginning in the late Doña Ana phase. Three times the number of brownware rim sherds have painted designs. An increase in the percentage of El Paso Polychrome vessels is one indication of an El Paso phase component. The small number of Mimbres Black-on-white and Alma Plain sherds suggests little, if any, occupation during the early Doña Ana phase, while the presence of Playas Red Incised and White Mountain Red Ware serve as indices for the El Paso-phase occupation. The absence of Mexican polychromes indicates the occupation ends during the early El Paso phase.

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Functional interpretations can be made on the basis of vessel forms, use-wear, and ceramic tool use. Jars dominate the assemblage in most of the ceramic type categories. The El Paso Polychrome vessels are primarily necked jars and ollas lacking very little evidence of cooking pot use. Chupadero Black-on-white ceramics include primarily the classic jar forms, but a significant number of the vessels were bowls. Because very little of the assemblage consisted of reconstructible jars, evaluation of cooking pot use based on soot and oxidation patterns was difficult.

One of the most interesting functional aspects of the assemblage is the number of sherds with post-firing modification. Sherds with wear patterns signifying use as scraping or smoothing tools indicate that broken potsherds were used extensively as tools. The consistency with which the wear patterns are duplicated throughout the sherd tool assemblage suggests that they were used to process a specific type of material. Spindle whorls, disks, pendants, and other worked sherd items also provide a glimpse into the daily life of the site's residents. For example, the worked sherd assemblage from Structure 1 includes a large number of El Paso Polychrome fragments with drill holes, suggesting that repaired vessels were used in the structure or vessels were in the process of repair. Also, the concentration of scraper/smoothing tools in Structure 1 suggests that some type of material processing took place there.

Finally, ceramic tradition and type data indicate that interaction and trade relationships occurred with peoples to the south, west, and north of the Tularosa Basin. Playas Red Incised from northern Mexico, Mimbres pottery and White Mountain Red Ware ceramics from the Mimbres and southern Cibola areas, and Chupadero and Corona Corrugated from the Gran Quivira and Chupadero Mesa areas to the north suggest that the residents at LA 6829 obtained nonlocal pottery through extra-regional interaction networks. The technological data (e.g., petrography and NAA), however, suggest that the Chupadero Black-on-white pots may have been produced in an area within the greater Tularosa Basin, and that the Three Rivers Red-on-terracotta ceramics were produced using a specific isolated clay source and local granitic tempers. Local imitations of Playas Red Incised, identified as Sierra Blanca Variety, may have been produced with granitic tempers rather than in the Sierra Blanca area, where biotite hornblende syenite was used. Petrographic data on the Sierra Blanca Variety ceramics would have supplemented the binocular temper categorization and possibly prompted a Tularosa Basin Variety of Playas Red Incised. In this case and others, analysis of the ceramics from LA 6829 opened more avenues of inquiry as well as supporting previously identified trends and interpretations.

Lithic Artifacts

LA 6829, a Formative-period site, yielded a large and diverse lithic assemblage including chipped stone tools, debitage, and cores, as well as ground stone implements. Also present are pigments, unaltered minerals, and stone beads. Due to the abundance of debitage collected (n=4,280), this artifact class at this site was sampled for analysis (this was the only US 54 site assemblage to be sampled). The analysts employed a random stratified sampling strategy, designed to sample debitage from all proveniences; this involved selecting 50 percent of the bags brought in from the field from each provenience, and analyzing all artifacts in the selected bags (see Chapter 21 for a thorough discussion). Debitage is the only artifact class sampled; all other artifact classes underwent 100 percent analysis. Because non-debitage artifacts were sometimes identified mixed in with debitage, it is likely that some formal tools and other nondebitage lithic artifacts escaped analyses. For this reason, no analysis comparing ratios of tools to debitage should be employed for the data from this site.

Chipped Stone

Table 6.40 presents a summary of the analyzed chipped stone artifacts categories at LA 6829, by material type. Silicified shale, a relatively low-

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Table 6.40 All Analyzed Chipped Stone Artifacts from LA 6829

Materials	Projectile point	Biface	Retouched tool	Core	Debitage	Total
Unknown material					2	*2*
Chert	5		4	2	204	*215*
Granite					18	*18*
Igneous				2	23	*25*
Limestone			5	2	20	*27*
Obsidian	1				3	*4*
Quartz crystal					1	*1*
Quartzite				1	131	*132*
Rhyolite	1	1			22	*24*
Sandstone			2		2	*4*
Silicified shale		2	9	17	1895	*1923*
Total	*7*	*3*	*20*	*24*	*2321*	*2375*

quality lithic material, dominates the chipped-stone assemblage, followed distantly by chert and quartzite. Overall, the chipped stone assemblage suggests a relatively expedient reduction technology focused on local materials, with some tool production.

Projectile Points

Only seven projectile points were recovered from LA 6829. Four of these are Late Formative arrow point types, including two Harrell points and two unnotched Fresno points (Carmichael 1986:99; Seaman *et al.* 1988:324). All are triangular points with slightly concave bases. The Harrell points exhibit shallow side notches near the midpoint of the artifact; one (specimen 123) has a single basal notch as well. One Fresno point, specimen 897, is obsidian, identified by x-ray fluorescence analysis as originating from the Mount Taylor obsidian source. This material is abundant in the Rio Grande gravels (see Chapter 22).

In addition to these Formative points, two points conforming to Archaic types were recovered, including one large rhyolite point exhibiting deep, wide corner notches consistent with the San Pedro type. This type was initially identified by Sayles and Antevs (1941) and found throughout the Southwest during the Late Archaic period (Huckell 1988, 1995; Mabry 1998; Sliva 1999; Van Hoose 2000). Also consistent with Late Archaic forms is specimen 508, a chert dart point with wide corner notches and straight base consistent with descriptions of Ellis points (Seaman *et al.* 1988:207), also a Late Archaic type.

Finally, one point consists of a minimally modified chert flake exhibiting two notches for hafting (specimen 1502). This point is small enough to be considered an arrow point, but is not morphologically distinct enough to assign to a culture-historical type.

Three points were recovered from feature contexts. These include specimen 1331, a Fresno point, from Feature 54; specimen 1585, a San Pedro point, from Feature 142, and the notched flake, specimen 1502, from Feature 111.

Other Bifaces

Three Stage I bifaces, exhibiting the early stages of initial retouch, were analyzed from this site in non-feature contexts. One of these is a fragmentary silicified shale biface, recovered from the subsurface. The other two bifaces are whole and were collected from the surface; one is rhyolite and the other is silicified shale.

Retouched Tools

Twenty retouched tools were analyzed (Table 6.41). These are dominated by relatively expedient, nonformal retouched pieces (n=13), followed by scrapers (n=4). The latter includes two single-edge side scrapers, one double-edge scraper, and one fragmentary scraper of indeterminate configu-

Table 6.41 Retouched Tools Analyzed from LA 6829

Tool Type	chert	limestone	sandstone	silicified shale	Total
chopper		1			1
projection	1				1
retouched piece, miscellaneous	2	2	2	7	13
side scraper, single edge		1		1	2
side scraper, double edge	1				1
scraper, miscellaneous				1	1
tabular knife		1			1
Total	*4*	*5*	*2*	*9*	*20*

ration. Also present are a chert projection, a flake showing formal retouch that isolates a projecting bit possibly used as a graver, a limestone chopper, and an artifact identified as a tabular knife. This artifact is a tabular piece of limestone with discontinuous unifacial retouch along two parallel working edges, which exhibit some rounding wear. Although chert and rhyolite were the most common materials in the projectile point assemblage, silicified shale is the most common material in the more expedient retouched tool sample, followed by chert and limestone.

Cores and Core Tools

Twenty-four cores were analyzed from LA 6829. This assemblage is dominated by silicified shale (n=17), and most are multidirectional (n=17; Table 6.42). This pattern is consistent with the debitage from this site, and suggests a relatively expedient and opportunistic reduction strategy.

Seven of these cores show evidence of additional use as tools (Table 6.43). These include three choppers, three hammerstones, and one core possibly used as a large scraper. The cores used as hammerstones show longitudinal battering (n=2) and battering on a single protuberance (n=1).

Table 6.43 Core Tool Types by Core Directionality

Tool Type	Bi-directional	Multi-directional	Uni-directional	Total
Chopper	2	1		*3*
Hammerstone		2	1	*3*
Scraper		1		*1*
No use as tool	3	13	1	*17*
Total	*5*	*17*	*2*	*24*

Debitage

Two-thousand three-hundred-twenty-one pieces of lithic debitage were analyzed from LA 6829, representing an analysis of an approximately 50 percent random stratified sample of the total collected debitage. Nine percent of the debitage was collected from the surface (n=216), while the majority (n=2,105) was collected from subsurface contexts. Over 80 percent of the material analyzed is silicified shale (n=1,895), followed by nine percent chert (n=204) and six percent quartzite (n=131). The remaining three percent of material types are derived from igneous material, granite, limestone, rhyolite, obsidian, quartz crystal, and sandstone. As with the other large Formative-period site in the study area (LA 115260), the main difference between this site and

Table 6.42 Directionality of cores analyzed from LA 6829

Materials:	Bi-directional	Multidirectional	Unidirectional	Total
Chert		1	1	2
Ligneous		2		2
Limestone	1	1		2
Quartzite	1			1
Silicified shale	3	13	1	17
Total	*5*	*17*	*2*	*24*

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others is the reliance on silicified shale, a low-quality lithic material (compare to less than 20 percent for other sites). In general, small flake sizes and weights from locally derived materials are consistent with tool manufacture and extended maintenance. See Chapter 21 for more information on this site's lithic assemblage and how it compares to the others in the study area.

Ground Stone and Battered Stone

One-hundred-seventy-three ground or battered stone artifacts were recovered from LA 6829, Table 6.44. Most of these are milling implements—manos and other hand stones (n=65) and metates or grinding slab fragments (n=42)—but also included are 17 hammerstones, a polishing stone, and a possible ground stone axe head. In addition, 46 ground stone fragments were too incomplete to determine artifact class or morphology. Ground and battered stone artifacts are listed by material type in Table 6.44. Granite and sandstone are the most common material types, with granite more common for manos and sandstone more common for metates.

The vast majority of ground stone artifacts are fragments. Fifty-two of the hand stones are less than 33 percent complete, while only 13 are whole or nearly whole; only three of the metates or grinding slabs are greater than 66 percent complete, with 33 being less than 33 percent complete. No whole metates were recovered.

Manos, Hand stones, and Polishing Stones

Artifacts identified as hand stones were classified as such according to overall shape, including size suitable for holding in the hand, as well as convex grinding surfaces usually characteristic of hand-held grinding stones. The largest subset of these are manos, large stones usually used for intensive grinding tasks involving food materials. Table 6.45 shows all hand stone types, according to their cross-sectional shape. Cross-sectional shape reflects the kind of stroke used (Adams 1993), with wedge-shaped manos more likely to reflect reciprocal (back and forth) strokes and a preferred grinding direction; manos with parallel faces are more likely to be reoriented often during grinding or to reflect circular strokes (Adams 1993). Cross-sectional shape may also reflect intensity of use; Carmichael (1986) presents a possible use sequence for Tularosa Basin manos beginning with parallel-face (or plano) manos and ending with triangular and wedge-shaped manos. By proportional weight, wedge-shaped manos are slightly less common at LA 6829 than parallel-face manos. Patterns in mano cross-sectional shape are discussed further in Chapter 21.

There were two, two-hand manos identified at this site, and they are unique in the US 54 assemblage. One is complete, and the other is broken in half. Both are highly prepared manos that are long enough for two hands to be placed side-by-side on the implement. Two-hand manos of this type are

Table 6.44 Ground and Battered Stone Artifacts, by Material

Material	Axe	Hammerstone	Mano/ Hand stone	Metate/ Grinding slab	Polishing stone	Unknown ground stone	Total
Unknown			1				1
Basalt					1		1
Chert		1	1				2
Granite		2	30	12		20	64
Igneous		1	3	3	1	4	12
Limestone		1	4	7		10	22
Quartzite		3	1				4
Sandstone	1		24	20		9	54
Silicified shale		9	1			2	12
Slate				1		1	1
Total	*1*	*17*	*65*	*42*	*2*	*46*	*173*

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Table 6.45 Cross-sectional Shapes of Hand Stones Recovered from LA 6829

Tool Type	Parallel faces	Tabular	Triangular (beveled)	Wedge	Irregular	Unknown	Total
Abrader					1		1
Mano	10		2	14	3	22	51
Other		1					1
Polishing stone					2		2
Two-hand mano	2						2
Unknown hand stone	1			2	1	5	9
Unknown ground stone (miscellaneous)						1	1
Total	*13*	*1*	*2*	*16*	*7*	*27*	*67*

typically associated with trough metates, which together provide an efficient grinding system by allowing maize processing over a large surface area. In allowing both hands to be used together, this system lets the grinder use more force to do the task, distributing stress and pressure across both arms and shoulders. Kernels are crushed more quickly and thoroughly (Adams 1993). No corresponding trough metate was identified in the LA 6829 assemblage, and all other manos in the US 54 assemblage are typical of "one-hand" manos. It is possible, though, that the greater length of two-hand manos makes them disproportionately subject to fragmentation, in which case they may be underrepresented in the data.

A single chert pebble shows slight polishing wear, suggesting use as a polishing stone. In addition, a small somewhat cylindrical basalt pebble also shows a patch of possible polishing wear. These may have been associated with ceramic production, being used for finishing pot surfaces, although other uses are possible. In addition, a piece of limestone with slight wear is interpreted here as an abrader.

Metates and Grinding Slabs

Of the 41 grinding slab fragments, 33 are extremely fragmentary. These are divided into three main kinds of grinding slab: metates (including basin and slab metate forms), nether stones, and palettes. Metates are large grinding stones used with manos for large-scale or intensive grinding purposes, usually involving food processing. Nether stones are smaller stones, usually quite thin (approximately 10 mm or less), with grinding surfaces too small to represent significant food preparation; these may have been used for grinding minerals and pigments. Finally, palettes were also extremely thin, but are more formalized than nether stones, with highly ground surfaces. At LA 6829, most fragments were identified as metates (n=28), including four basin metate fragments (based on markedly concave grinding surfaces), 11 slab metate pieces (those with flat grinding surfaces), and 13 metate fragments of indeterminate type. In addition, twelve small nether stone fragments and most of one palette were recovered. The palette includes 39 fragments from the same provenience, which are likely parts of the same artifact.

None of the metates appeared to exhibit a high degree of preparation; most were relatively unprepared slabs. Most of the basin forms identified in the US 54 assemblages likely began as simple slab metates, acquiring their deeply concave grinding surfaces though extensive use. These forms are consistent with the dominance of small one-hand manos. Material type distribution among the metates is presented in Table 6.46.

Ground Stone Axe Head

The item interpreted as an axe is similar to the wedge-shaped manos found throughout the US 54 project sites; it is sandstone, with two convex surfaces ground to form an acute angle in cross-section. A possible hafting groove extends across the back of the axe, oriented perpendicular to the plane of the artifact. The axe's working edge

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Table 6.46 Metate/Grinding Slab Forms Noted in LA 6829 Assemblage, by Material

Material:	Basin metate	Slab metate	Metate	Nether stone	Palette	Total
Granite		1	8	3		12
Igneous		1	2			3
Limestone		5	2		1	8
Sandstone	4	4	1	9		18
Total	*4*	*11*	*13*	*12*	*1*	*41*

shows strong reworking, creating a retouched edge at approximately 45 degrees to the artifact's long axis. This edge shows battering use-wear.

Hammerstones

In addition to the three cores described above showing battering wear, 17 hammerstones were analyzed from LA 6829 (Table 6.47). Most of these (n=9) are silicified shale, a local material, followed by quartzite (n=3), granite (n=2), and other materials. Most hammerstones show longitudinal battering patterns (n=9), followed by those with generalized battering across the entire surface (n=5). Three hammerstones show polar battering, exhibiting wear on opposite ends of the stone only.

Table 6.47 Hammerstones analyzed from LA 6829, by Material

Material	Polar	Longitudinal	Generalized	Total
Chert		1		1
Granite	1		1	2
Igneous		1		1
Limestone		1		1
Quartzite		2	1	3
Silicified shale	2	4	3	9
Total	*3*	*9*	*5*	*17*

Ornaments, Pigments, and Minerals

One stone bead and fifteen mineral samples were recovered from LA 6829. The bead is a cylindrical form with drilled holes. It effervesces with dilute hydrochloric acid and is probably limestone.

The mineral samples include two pieces of red ochre and four pieces of yellow ochre. These were likely used for pigment; three of the yellow ochre pieces are ground and faceted. In addition, nine pieces of unmodified mineral were collected. This includes four small euhedral quartz crystals, one chunk of biotite (dark mica), and four very small pieces of unworked turquoise.

Biological Remains

Biological remains from the Jaca site include phytoliths, pollen, and macrobotanical remains, along with extracted lipid residues, and the second largest faunal assemblage from the US 54 project sites.

Botanical Remains

Eight phytolith, 27 pollen, and 31 flotation samples were analyzed from LA 6829 (see Chapters 24–26). In terms of the overall project, these samples yielded comparatively rich assemblages of botanical remains. Jaca was the only project site to yield remains of maize from all three sample types—macrobotanical, pollen, and phytolith. The presence of maize in all three botanical assemblages suggests that corn was not only being used at the site, but was probably being grown on-site as well, or at least in the immediate vicinity. Jaca was also the only site to yield remains of other domesticates, including beans (recovered from both flotation and phytolith samples) and gourd (from a flotation sample). The location of this site at the foot of a large alluvial fan, along with a small playa immediately to the south, made this locality especially favorable for agricultural production.

The vast majority of botanical remains, however, come from a diverse range of native wild plants. Most of these are probably incidental inclusions of common plants and/or high pollen producers. For example, pollen samples from the site are dominated by low spine *Asteraceae*, Cheno-Ams, *Poaceae*, and *Juniperus*, all of which tend to dominate recent and modern pollen profiles in the region, as they produce abundant pollen that tends to preserve well and have distinctive features making them easily identified. Pollen from wild plants of potential economic importance include Brassicaceae, *Cylindropuntia* and

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Platyopuntia, *Eriogonum*, *Portulaca*, *Typha*, *Yucca*, *Prunus*, and *Rhus*. Although many of these grains may have been deposited through fortuitous circumstances, it is likely that the site's inhabitants utilized all of these plants, and at least some of the pollen from these species probably arrived at the site as a result of subsistence-related activities.

Macrobotanical remains reflect similar patterns. The vast majority of specimens from flotation samples are wild species, many of which are of potential economic importance, although the remains themselves very likely reflect a mix of both fortuitous occurrences and debris deposited directly as a result of cultural activities (processing, wood burning, etc.).

Faunal Remains

Excavations at the Jaca site produced the second largest faunal assemblage from the US 54 sites, after LA 115260, and these two sites provided the only substantial collections of animal bone from the project. One-thousand four-hundred-forty-nine faunal specimens were recovered from Jaca; this is far fewer than were recovered in the smaller-scale excavations at LA 115260 (n=13,783), reflecting the poorer preservation conditions at Jaca. Still, the assemblage was large enough to ascertain meaningful comparisons between the two sites.

Lagomorphs overwhelmingly dominate the identifiable assemblage (beyond class) at Jaca. The vast majority of the remains are jackrabbit, with cottontail rabbit being the second most frequent species; all other species represented by only very small quantities. Still, the Jaca site assemblage yielded somewhat higher proportions of both cottontail and artiodactyls than did LA 115260—the latter site was focused even more intensively on jackrabbits. Both sites were occupied during Late Formative times, and the differences may be due to locational context; whereas LA 115260 is situated on the basin floor, the Jaca site lies at the base of an alluvial fan, in closer proximity to uplands. The upland zone likely supported higher populations of artiodactyls (deer and sheep) than did the more open, desert floor, and perhaps hosted more cottontails as well.

Despite these minor differences, both sites reflect an intensive focus on jackrabbits, which are abundant on the desert floor. The focus on such a lean meat source underscores the marginal conditions of the desert floor environment, and may have encouraged a more intensive focus on plant food, including both wild and domesticated species. There is comparatively little evidence that animal species (or portions thereof) from the mountain or riverine zones were procured and transported to the site. This suggests that the inhabitants of the Jaca site either did not directly exploit animals from these zones (which includes deer) on a regular basis, or if they did, they consumed the meat elsewhere and/or processed it into food products (such as jerky or pemmican) that were then transported back to the site. Such food products would not leave any durable archaeological remains. Alternatively, such non-durable meat products may have been acquired through trade and consumed on site.

The faunal remains also include one marine shell bead made from *Glycymeris* sp. It is similar in morphology to the stone bead from this site. See Chapter 23 for a description of this artifact and a full presentation and discussion of the faunal remains from this site.

Lipid Residues

Along with botanical and faunal samples, lipid residue analysis provided another window into subsistence patterns at the Jaca site. Residues identified at this site included one from foods of very high fat content (Feature 43), one from foods of high fat content (Feature 179), one from foods of medium fat content (Features 185), and one of large herbivore (Feature 89), possibly in combination with plants. Because of elevated levels of medium chain saturated fatty acids, residues from Feature 179 were likely produced by seeds or nuts; those from Feature 185 are

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probably from mesquite or corn; and those from Feature 43 are from seeds, nuts, or possibly rendered fat from a small–medium mammal. The lipid residues analyzed from this site provide further evidence that the Jaca site residents were consuming a wide variety of foods, including both domesticated and wild species. See Chapter 28 for more information on the lipid residues from Jaca and the other US 54 sites.

Historic Artifacts

Five historic artifacts were collected from the surface at LA 6829, and two artifacts were recovered from the test units at LA 6829 (Table 6.48). Four cans and one glass insulator fragment in eight pieces were found on the surface. One condensed milk can and two other metal cans were made before or after 1900. The baking powder can is embossed with “Clabber Girl Baking Powder” on the lid and dates between 1931–1942. The glass insulator recovered from the surface and the two lead artifacts cannot be dated with precision. The insulator is probably contemporaneous with the occupation of Orogrande, but the lead bullets might be intrusive.

Site Chronology

Although several projectile points from the site indicate an ephemeral Late Archaic presence, chronological data from the Jaca site comes primarily from 22 radiocarbon dates and a rich ceramic assemblage, which together indicate an occupation spanning the late Doña Ana–early El Paso phases. The radiocarbon dates are listed in Table 6.49, and are shown graphically in Figure 6.65. The Doña Ana phase is conventionally considered to fall within a 100- or 150-year time span, between A.D. 1100–1250, whereas the El Paso phase is usually considered to begin at A.D. 1200 or 1250 and last until 1400 or 1450. O’Laughlin (2001a), however, provides good evidence that the El Paso phase persists until the late fifteenth century; accordingly, this report considers the phase to end at ca. A.D. 1475. Part of the problem in pinning these phases down to more specific dates is the nature of radiocarbon calibration, and the frequent multiple intercepts along the calibration curve for samples falling into the time span covered by these phases. The important point, however, is that the Jaca site occupation apparently spans the chronological point in time at which native peoples in the southern Jornada region began constructing agglutinated, pueblo-like room blocks, sometime around A.D.

Table 6.48 Historic Artifacts Recovered from the Jaca Site (LA 6829)

Provenience	Object	Attributes	Marks	Date
Surface (FS 89)	Metal can	Internal rolled side seam; solder dot	Slash-cut opened	Ca. 1900 +
Surface (FS 256)	Baking powder can	External friction, cylindrical closure	Lid reads “Clabber Girl Baking Powder”; lid is 10.6 cm in diameter	1931–1942
Surface (FS 454)	Metal can	Internal rolled seam; solder dot	Knife-cut opened	Ca. 1900 +
Surface (FS 530)	Insulator glass fragment, clear; in 8 pieces	One piece is embossed with “- 16”		
Surface (FS 585)	Condensed milk can	Internal rolled side seam; solder dot	Puncture and pry or knife-cut opened	1900 +
1 x 1 Level 1 (FS 634)	.22 caliber spent lead			
1 x 1 Level 1 (FS 893)	.270 caliber lead, unfired			

Table 6.49 Radiocarbon dates from the Jaca Site (LA 6829)

Feature	Beta #	Date type	Conventional Radiocarbon Age (B.P.)	Calibrated (2-Sigma)
120	156949	Standard	680 ± 60	A.D. 1250–1410
179 (Structure 11)	156956	Extended count	700 ± 90	A.D. 1180–1420
118	156945	Standard	700 ± 60	A.D. 1230–1400
111 (Structure 13)	156953	Standard	710 ± 70	A.D. 1200–1400
120	156947	Standard	750 ± 70	A.D. 1170–1320 AND A.D. 1350–1390
46	156936	Standard	750 ± 60	A.D. 1180–1310 AND A.D. 1370–1380
89	161834	Standard	760 ± 70	A.D. 1160–1310 AND A.D. 1360–1390
186 (Structure 17)	156957	Standard	780 ± 60	A.D. 1160–1300
62	156937	Standard	790 ± 70	A.D. 1050–1100 AND A.D. 1140–1300
86	156939	Standard	810 ± 40	A.D. 1170–1280
146 (Structure 15)	161835	Standard	810 ± 60	A.D. 1050–1100 AND A.D. 1140–1290
85	156941	Standard	810 ± 40	A.D. 1170–1280
185	156955	Standard	810 ± 60	A.D. 1050–1100 AND A.D. 1140–1290
178	156951	Standard	830 ± 80	A.D. 1020–1300
83	156954	Extended count	840 ± 70	A.D. 1030–1290
17.1 (Structure 5)	156950	Extended count	850 ± 60	A.D. 1030–1280
41	156935	Standard	860 ± 80	A.D. 1010–290
54.13	156946	Standard	890 ± 60	A.D. 1020–1270
54.16	156948	Standard	890 ± 60	A.D. 1020–1270
95	156944	Extended count	890 ± 60	A.D. 1020–1270
38 (Structure 6)	156938	Extended count	960 ± 90	A.D. 900–1260
54.2	156943	Standard	1010 ± 50	A.D. 960–1160

1200–1250. The occupation does not appear to have extended very far into the El Paso phase, however.

Although the occupational time span at the site appears to be of limited duration, and the radiocarbon dates do not provide a very high level of chronometric precision for the phases in question, both ceramic and stratigraphic data offer more chronologically sensitive evidence as to the occupational sequence at the site. These lines of evidence are discussed above, in the sections on spatial patterning and ceramics, and their chronological implications were arrived at independently, yet show a very gratifying degree of convergence for at least certain structures. Although the stratigraphic evidence suggested minimally two occupational periods, based on stratigraphic position relative to the Bw soil horizon, the later of these two is subdivided further into two periods based on ceramic evidence. Taken together, then, the stratigraphic and ceramic evidence suggests three occupational periods (Table 6.50; Figure 6.66). For the sake of discussion, these three periods are tentatively equated here with the late Doña Ana phase (Jaca I), transitional Doña Ana/El Paso phase (Jaca II), and early El Paso phase (Jaca III). This should not be taken as an attempt to reify these phase-name designations; rather, this usage is employed simply to allow the phase names to do what they are supposed to do—facilitate

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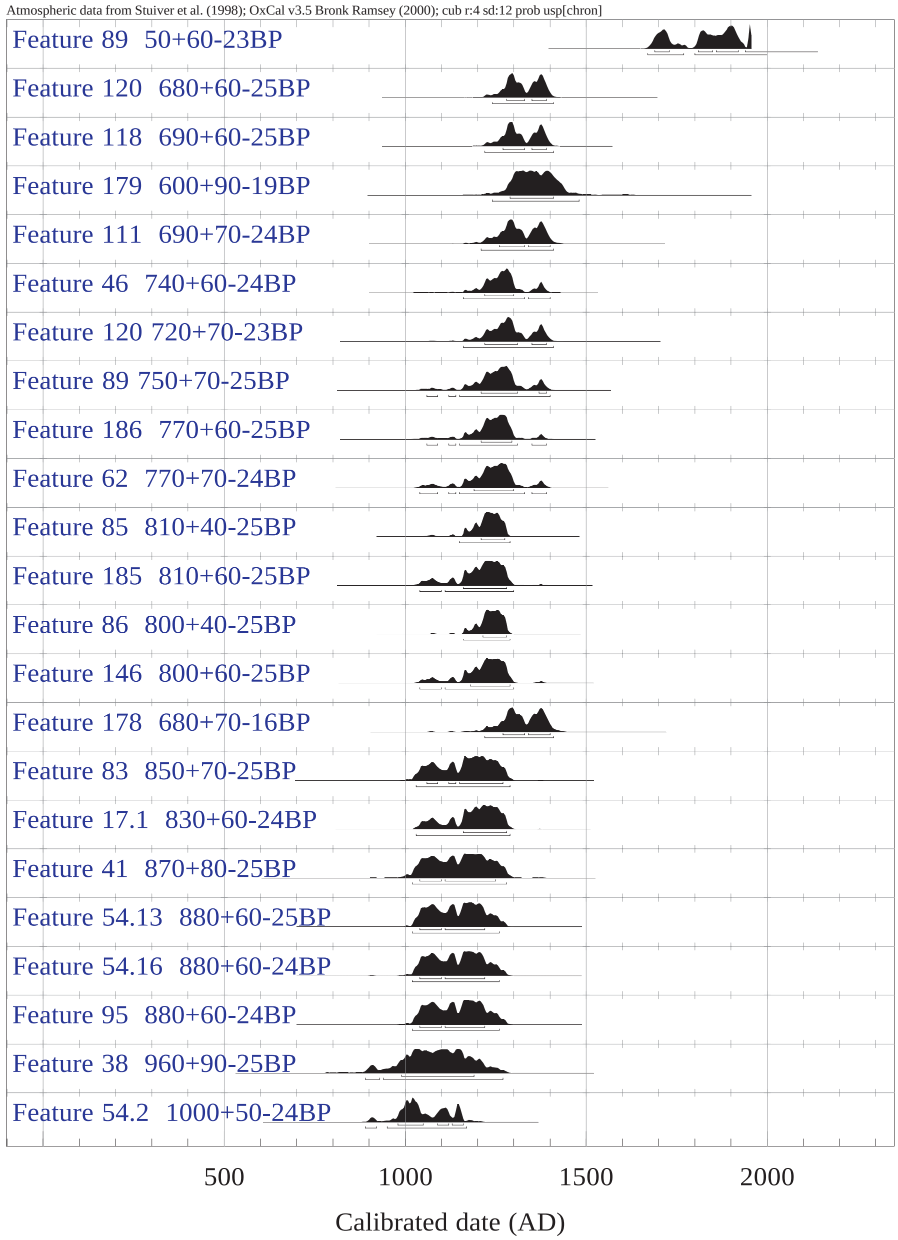

Figure 6.65 Calibrated radiocarbon dates from the Jaca site (LA 6829).

description, comparison, and discussion of temporally diachronic archaeological remains.

Eight structures (2, 4, 6, 11, 13, 15, 16, and 17) are assigned to Jaca I. The most securely dated of these is Structure 13, which underlies the Bw horizon, and contains a ceramic assemblage that appears to date solely from the Doña Ana phase (i.e., Alma Plain is present, and there are no sherds unequivocally dated to the El Paso phase). Structure 13 was apparently among the earliest of the investigated pithouses at the site, although a radiocarbon date from this pithouse is, paradoxically, among the more recent in the series of dates from the site (A.D. 1200–1400). Taken together, the evidence from Structure 13 suggests that Jaca I began very late in the Doña Ana phase, or that

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Table 6.50 Proposed Sequence of Structures at the Jaca Site (LA 6829)

Occupation Period	Structures	Evidence
Jaca III (early El Paso phase)	5, 7, 8, 12	Stratigraphic (Structures 3, 5, and 7); Ceramic (Structures 5, 7, 8, 12, and 16); Radiocarbon (Structure 5—calibrated radiocarbon age extends into the early El Paso phase).
Jaca II (transitional)	1, 3, 9, 14	Stratigraphic (Structures 3, and 9), Ceramic (all but Structure 3), Architectural (Structure 1)
Jaca I (late Doña Ana phase)	2, 4, 6, 11, 13, 15, 16, 17	Stratigraphic (Structures 2, 11, 13, 16), Ceramic (all but Structures 4 and 16), Radiocarbon (Structures 2, 6, and 17)

slightly more recent, burned wood became incorporated into the fill of this pithouse following its abandonment. Structure 4 lacks associated ceramics and radiocarbon dates, but is overlain by the Bw horizon and thus is included here. The possible *hueco* features just north of Structure 4 also underlie the Bw horizon, and also are thus included in Jaca I. To the south, Structure 11 appears to underlie the Bw horizon, although this is not entirely clear from the profile drawing and this structure is tentatively included here (its calibrated radiocarbon date of A.D. 1180–1420 is not precise enough to help in this assessment). Structure 2 (the formalized pithouse below Structure 1) is also tentatively included in Jaca I. Although the stratigraphic association of this pithouse with the Bw horizon is unknown, it is assigned to this period by virtue of its vertical position beneath Structure 1, and a small ceramic assemblage that lacks diagnostics unequivocally datable to the El Paso-phase. Structures 15 and 17 also lack stratigraphic association with the Bw horizon, but also are tentatively placed in Jaca I based on ceramic assemblages that do not include any sherds dating securely to the El Paso phase. Structure 16 contains some diagnostic El Paso-phase ceramics, but is included in Jaca I because it underlies the Bw-horizon sediments; thus it is assumed that the El Paso-phase sherds were deposited into this house pit sometime following its abandonment.

Radiocarbon evidence also comes into play for the Jaca I period. The two-sigma, calibrated date from Feature 54.2 (A.D. 960–1160), one of the large support posts in Structures 1 and 2, wholly pre-dates the beginning of the El Paso phase.[4] This post may originally have been part of the Structure 2 frame and if so, remained in place and was incorporated into the overlying communal building, Structure 1. The calibrated radiocarbon date from Structure 6 (A.D. 900–1260) only barely overlaps the beginning of the El Paso phase and suggests this pithouse was probably built prior to A.D. 1250. The calibrated date from Structure 17 (A.D. 1160–1300) overlaps further into the El Paso phase, but is not inconsistent with a Doña Ana-phase affiliation.

Four structures (1, 3, 9, and 14) are included in Jaca II, which for this discussion is equated with the Doña Ana/El Paso phase transition. Structures 3, 9, and 14 all overlie the Bw horizon. Although Structure 3 lacks associated ceramics, the assemblages from Structures 9 and 14 do not contain any diagnostics unequivocally assignable to the El Paso-phase. The same is true for the ceramics from Structure 11, although the stratigraphic relationship of this pithouse to the Bw horizon is unknown. The stratigraphic relationship of the Bw horizon with Structure 1 also is unknown, but this large communal building overlies Structure 2 and was apparently conjoined to Structure 3. Thus Structure 1 post-dates Structure 2, and contemporaneity with the Structure 3 can be assumed. Two identical, calibrated radiocarbon dates (both A.D. 1020–1270) from Structure 1 subfloor features only barely overlap the beginning of the El Paso phase. Assuming these various temporal associations to be correct, it was in this peri-

4 This is the only radiocarbon determination from the site whose calibrated range wholly pre-dates A.D. 1200. It is entirely possible that the sample from this large post is "old wood," whose radiocarbon age pre-dates its use in this structure.

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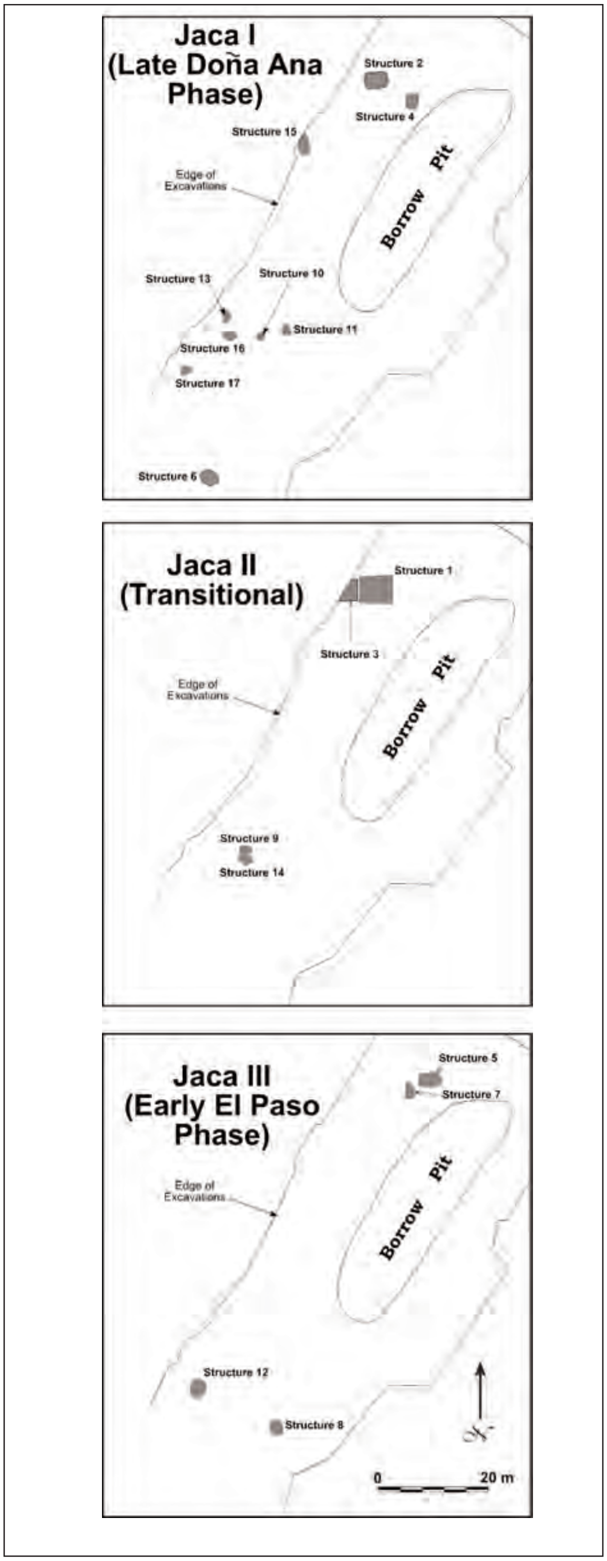

Figure 6.66 Structures associated with proposed Jaca site phases.

od that the site's occupants began construction of a linear room block, or at least what was intended to become one. Most likely, this episode began with the building of Structure 1, the large communal room, followed by the addition of the smaller room to the west, Structure 3 (and, perhaps, additional rooms outside the right-of-way, further to the west).

Jaca III, the final temporal interval for this site, includes four simple pithouses (Structures 5, 7, 8, and 12). The most securely dated of these are Structures 5 and 7, both of which were dug into the Bw horizon and overlie several of the possible *hueco* features in the northern portion of the core area. Structures 5 and 7 also yielded ceramic assemblages that include nonlocal pottery types cross-dated to the El Paso phase (St. Johns Black-on-red, White Mountain Red Ware, and Playas Red sherds). Structure 7 was not radiocarbon dated, but a subfloor feature in Structure 5 yielded a calibrated date of A.D. 1030–1280 that, together with the ceramic assemblage, indicates a very early El Paso-phase affiliation. Structure 12 was not radiocarbon-dated, but appears to have been excavated into the Bw horizon and contains northern Mexico sherds (Playas series) that are cross-dated to the El Paso phase. Structure 8 also contained one Playas Red Incised jar and thus is tentatively included in Jaca III, although its stratigraphic relationship to the Bw horizon is unknown, and this pithouse was not radiocarbon-dated.

Although the Jaca site structures are tentatively subdivided into these three temporal divisions, it should be reiterated that the overall time span of the site occupation appears to be relatively brief, perhaps covering less than a century. This, in turn, implies almost continuous occupation of the site from the late Doña Ana phase to the early El Paso phase. There may have been an occupation hiatus between some of the pithouses in Jaca I on the one hand, and structures of the subsequent two periods on the other, based on stratigraphic position below and above the Bw horizon. But in any event, it appears the sediments that

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became the Bw horizon accumulated rapidly and then stabilized to form the Ab horizon. It is also likely that the occupational spans of the individual structures did not break as cleanly as this three-part division of the site occupation might seem to imply, and temporal overlap in the occupation of some structures assigned to different periods here is entirely conceivable. It is also possible that some of the diagnostic ceramics used to date structures (especially some of those assigned to Jaca III) may not accurately date the structures themselves; almost all of the associated ceramic assemblages from these structures derive from house pit fill, and most or all of these sherds were deposited in the structures following their abandonment. This is especially a problem with structures assigned to an occupation period on the basis of ceramics alone.

Considering the calibrated ranges and intersections of the multiple radiocarbon dates, along with stratigraphic and ceramic evidence, an occupation span of ca. A.D. 1200–1300 is postulated for the Jaca site. This is also consistent with the high incidence of maize remains at this site, which do not appear in such frequencies until late in the Doña Ana phase (see O'Laughlin 2001a:126). Radiocarbon dates from thermal pits and nonstructural features (see Table 6.51) also likely fall within this time span. These findings further imply that A.D. 1250 (rather than A.D. 1200) is probably a useful beginning date for the El Paso phase, which accords with previous findings in the region suggesting the materials markers of this phase are probably not fully in place until sometime shortly after A.D. 1200 (see O'Laughlin 2001a:126; Scarborough 1989). This conclusion presents important implications for Late Formative-period chronology, but will require further evaluation as more investigations carried out in the region, especially if such investigations can produce potentially more precise archaeomagnetic and dendrochronological dates, in conjunction with temporally sensitive diagnostic materials and good stratigraphic context.

Table 6.51 Size data for simple Pithouses by Site Occupation Period at Jaca (LA 6829)

Period	No. of Simple Pithouses	Floor Area, Range (Mean), in meters*
Jaca I	6	2.5–> 4.3 (3.95)
Jaca II	2	2.6–2.69 (2.65)
Jaca III	4	>1.72–10.35 (5.93)

* Averages do not include structures whose total floor area was unknown.

Site Interpretation Discussion

A wealth of information was obtained from investigations within the right-of-way at the Jaca site. Although there is some evidence of ephemeral Late Archaic activity at the site, the main component (including most or all of the excavated features) consists of an intensive occupation spanning the late Doña Ana phase and early portion of the El Paso phase. Stratigraphic, ceramic, and radiocarbon evidence suggest the time span of this occupation was brief and probably continuous, ranging between ca. A.D. 1200–1300. Even so, these same lines of evidence tentatively suggest this occupation can be subdivided into three occupational periods.

Jaca I dates to the last few decades of the Doña Ana phase, probably between ca. A.D. 1200–1230. Ceramics in use at the site include El Paso Bichrome and Polychrome, along with some plain, El Paso Brown vessels and an occasional Alma Plain pot. Chupadero Black-on-white, a nonlocal ware from the north, was in circulation in the central Jornada region at this time, and vessels of this type were in use at the site during Jaca I. This settlement was established as a scatter of simple pithouses, which in the right-of-way, at least, were segregated into northern and southern house clusters. In the northern cluster, a larger, formalized pithouse (Structure 2) was probably constructed during this initial period of occupation. The special attributes of this structure, including its plastered floor, indicate that Structure 2 likely served as a ceremonial facility for the newly founded village. An unusual, rectangular post structure (Structure 4) was also built during this period, and its function remains unknown.

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During the Jaca I period, the site's occupants also dug several very large, mostly irregular pits that may have been used as water catchment facilities or *huecos*. These "mini-tanks" differ from the much larger, Late Formative water reservoirs documented in the vicinity of Hot Well Pueblo and other Doña Ana- and El Paso-phase sites approximately 40 km to the south (Scarborough 1988; Bentley 1993; Leach *et al.* 1993; see Chapter 3, this volume). Assuming these smaller features at Jaca were indeed water catchment facilities, they may indicate that the capture and control of water was a household-level concern at this site (or at least in this period), whereas the reservoirs in the Hot Well area appear to have been communal facilities constructed and used by larger groups, and represent a much more intensive capital investment. These differences are perhaps consistent with architectural differences as well, with Jaca I involving simple pithouses, whereas the Doña Ana and El Paso sites in the Hot Well area feature more substantial adobe structures, including the large pueblo at the Hot Well site.

The initial period of occupation at Jaca apparently occurred shortly before, or during, an episode of rapid eolian deposition of sediments, in places several decimeters thick, that would become the Bw horizon.[5] Following stabilization of this deposit, an A soil horizon formed and occupation of the site resumed or, perhaps, simply continued. Jaca II spans the transition between the Doña Ana and El Paso phases. Ceramic assemblages include the same range of types found in Jaca I, except for Alma Plain, which is now absent. Several new pit structures were dug into the Bw-horizon sediments. The most prominent "event" of this period, however, was the razing and partial filling of the formalized pithouse (Structure 2), and the building of a large, rectangular communal building (Structure 1) directly on top. In many respects, Structure 1 is typical of large communal rooms in El Paso-phase pueblos. Its floor was plastered, and it includes four main support posts (which may have supported the frame of the earlier Structure 2, and if so were left in place to serve as the main supports for Structure 1). An adobe-plastered, formalized hearth was constructed just north of the center of the south wall—the usual location of these features in El Paso-phase pueblos. Several other sub-floor features (including another, semi-formal lined hearth in the northern part of the room) were also sunk below the floor of Structure 1.

Structure 1 was apparently intended as the beginnings of a linear room block. At least one other, apparently smaller room, Structure 3, was appended to the west side of Structure 1, and additional rooms may or may not have been added on further to the west (and outside the right-of-way, where no excavations were carried out). But there is no evidence that any rooms were added on to the east side of Structure 1, and this early attempt at room-block construction may have been aborted. Insofar as this is true, it may indicate that the small group of people who built Structures 1 and 3 did not attract sufficient followers to continue expanding their nascent pueblo. The room block-pithouse dichotomy in the settlement during this period may also indicate some budding hierarchical differences within the Jaca site community; if this is true, we can envision the higher ranking of two social divisions occupying the room block in the northern portion of the site, with the lower ranking members dwelling in the pithouses at the southern end of the core area. At any rate, at least some occupants of the site, or at least those living in the southern portion of the core area, continued dwelling in simple pithouses at this time.

Jaca III is the final episode in the occupational history of the site, and covers the opening decades of the El Paso phase. During this occupational period, the incipient pueblo, represented by Structures 1 and 3, was apparently abandoned.

5 A potentially similar situation was encountered at US 54 site LA 115260, another Doña Ana occupation several km to the south (see Chapter 9). At this site, archaeological remains (including a midden stain) were distributed throughout the vertical span of a B soil horizon, and were capped by an A horizon.

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But elsewhere on the site, including both the northern and southern portions of the core area, the site's occupants continued to construct simple pithouses. These pithouses are larger on average than the simple pithouses associated with the Jaca I and II periods (see Table 6.51), but are still simple pit and basins, with no plastering or other special features. Included in the fills of these structures are nonlocal ceramic types (including St. Johns Black-on-red, White Mountain Red Ware, and Playas series sherds) that are cross-dated to the El Paso phase, and generally are not present in the Jaca I and II structures. Sometime around A.D. 1300 or perhaps slightly earlier, the site (or at least the investigated portion of the Core Area) was abandoned.

It is worth noting that all three occupational periods are represented in both of the discrete clusters of structures and other features in the site core area. This shows that these two main feature concentrations are not temporally discrete. Rather, spatial segregation of these two clusters was apparently maintained throughout the occupational span of this component. This finding underscores the likelihood that the Late Formative occupation within the Core Area was continuous, with no major hiatus. Moreover, the segregation of structures into two clusters suggests the possibility that this small community was organized into two social groups, possibly moieties. This inference is tempered, however, by the spatial limitations of the site excavations; it remains unknown how many more structure remains may be present outside the right-of-way, and what their overall spatial configuration may look like, nor do we know how many structures may have been destroyed by previous machine excavation of the borrow pit and adjacent US 54.

An especially significant finding of the Jaca site investigations relates to the discovery that rather rudimentary, simple pithouses were built and used at the site throughout the span of the Late Formative component. Although pithouses are not unknown for the late Doña Ana phase or even El Paso phase (e.g., O'Laughlin 2001a), most pit structures from these time frames are much more substantial, with more formal attributes than those found at Jaca (except Structure 2). The late Doña Ana-phase pithouses at Meyer (Peterson 2001; Scarborough 1986) and Hueco Tanks (Kegley 1982) are certainly much more impressive constructions, with distinctly El Paso-phase features such as plastered floors and the hearth-step arrangement (see Chapter 3). That the majority of structures at the Jaca site, including all of those in the final occupation period (Jaca III) are simple, informal pithouses indicates the degree of architectural variation in the late Doña Ana and El Paso phases is greater than previously recognized. This finding underscores even further the highly unstable and dynamic nature of social organization and settlement patterns in the Late Formative period of the central Jornada region, where pueblo-like room blocks were frequently abandoned and their occupants dispersing into smaller, single-family dwellings.

Although pithouses are often considered indicators of high mobility and short-term, seasonal occupation, at the Jaca site there is no evidence that this was the case. Indeed, in several important respects the occupation at Jaca looks very much like other late Doña Ana- and El Paso-phase residential sites. First, the site is situated at the foot of an alluvial fan, similar to the basin-edge localities where most of the major settlements from this time frame are located. As such, the Jaca site was positioned to take advantage of accumulated precipitation runoff, which was further enhanced by the presence of a small playa at the south end of the site. These conditions made this a favorable location for agricultural possibilities. The inhabitants of the Jaca site were farmers and probably growing crops on and/or immediately adjacent to the site. This is indicated by remains of maize, including macrobotanical specimens, pollen grains, and phytoliths. In addition, some of the lipid residues may indicate roasting of maize in some of the site's many thermal features. Beans were also consumed at the site, as indicated by both macrobotanical specimens and

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phytoliths, and the macrobotanical assemblage included remains of a domesticated gourd as well.

Taken together, the evidence suggests the Jaca site was a residential, Late Formative settlement occupied for an extended period (or perhaps multiple seasons) over the course of any given year. Although the simple pithouses at this site in themselves might suggest shorter-term occupancy, the possible *huecos*, and certainly the nascent room block represented by Structures 1 and 3, reveal a level of investment indicating a more substantial occupational commitment. In sum, the findings suggest that architectural, social, and settlement trends at this time were more complex than current models might otherwise suggest.

True to form, the Late Formative residents at Jaca also foraged, collected, and hunted a wide range of wild food resources. Botanical remains from the site include Cheno-Ams, purslane, dropseed, coyote melon (*Apodanthera undulata*), prairie sunflower and Indian rice grass (*Oryzopsis hymenoides*), seeds from the edible fruits of datil (*Yucca baccata*), pitaya and prickly pear (*Platy-Opuntia* sp.), and the seeds and edible pods of mesquite. Extracted lipid residues indicate a wide variety of wild plants were cooked in roasting pits at the site. Hunting was focused on jackrabbit, although cottontails and occasional artiodactyls were also taken and consumed. One of the lipid residue samples indicates an artiodactyl (or portions thereof) was roasted in at least one of the thermal features.

Finally, the occupation at Jaca is of particular interest because it spans the "transition" between the Doña Ana and El Paso phases, with an occupation that was apparently in progress during the years that southern Jornada Mogollon peoples began constructing pueblo-like room blocks. A similar occupational "bridge" between these two Late Formative phases has not been clearly documented elsewhere in the central Jornada region. The findings at Jaca thus help to clarify the Doña Ana–El Paso phase transition, including the beginnings of room-block construction, and present a substantial contribution to the region's archaeology and cultural history.

Recommendations

Investigations at the Jaca site (LA 6829) have fulfilled the goals outlined in the data recovery plan, and the proposed construction activities will have no effect on cultural resources at this site. Fencing along the edge of the impact area should be maintained to ensure that any sensitive features documented immediately to the west of the right-of-way are not disturbed during construction. Some of the features outside the right-of-way contain significant, subsurface remains that could shed additional light on this site's occupational history. Accordingly, any future ground-disturbing activities in the site outside of the right-of-way, which fall under appropriate federal or state regulations, should be preceded by further testing and, if necessary, a data recovery plan.

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Chapter 7

LA 115256

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Introduction

LA 115256 is a Jornada Mogollon campsite consisting of a lithic, ceramic, and fire-cracked rock scatter with five thermal features. It lies on low alluvial fans of the Jarilla Mountains in the east-central Tularosa Valley, within the Chihuahuan biotic zone. The terrain is nearly level, sloping slightly (1 degree) to the north-northeast (Figure 7.1). Intermittent drainages are present to the north and south of the site area. Each drainage is shallow but broad. The southernmost drainage extends to US 54, where it is artificially diverted north, along the highway near the eastern edge of the site. Vegetation is dominated by creosote, tarbush, and prickly pear with some mesquite in the nearby drainages. Surface cover is sparse, with surface visibility at over 80 percent. Geomorphic observations indicate that Historic, Organ III, and Organ I eolian deposits are present in surface and near-surface sediments.

The site is located along the western side of US 54, on federal lands administered by the BLM. Archaeological remains are present inside and out of the right-of-way. Construction activities will occur from the centerline of the existing road to the existing right-of-way fence located 30 m to the west.

Previous construction of US 54 has removed the eastern edge of the site, and the drainage along the western edge of US 54 has eroded an unknown portion of the site here.

Previous Investigations

The site was originally identified as a campsite composed of an artifact scatter with two features, covering a 70 x 30-m area (Marshall and Marshall 1998). Based on the presence of brownware ceramics, the site was dated to the Jornada Mogollon period.

Testing Investigations

TRC and SWCA crews conducted site testing in the fall of 1999. During testing, the surface was carefully inspected and then mapped with a total station instrument. Other tasks included surface collection of a small sample of artifacts, recording of identified features, and test excavations. Testing investigations at the site consisted of shovel tests along the edge of the right-of-way and trowel tests within identified features. Ten shovel tests were excavated; each measured 0.5 x 0.5 m and were evenly spaced within the 1.5–2.5-m wide, undisturbed portion of the site along the highway right-of-way fence (Table 7.1). No cultural materials were recovered in any of the shovel tests; soil profiles suggested the site was largely deflated and that no subsurface cultural deposits are present outside of features (or at least within the right-of-way). Caliche-free sediments extended to a maximum depth of only 0.50 m bgs. Results of trowel testing within features are included in Table 7.2.

Surface Investigations

During the initial inspection the site boundaries were expanded, with documented surface debris and features covering a 128 x 26-m area, encompassing an estimated 3,328 m^2 (Figure 7.2). Only a narrow strip of the site occurred within right-of-way, however, measuring 8–12-m wide x 128-m long. This area encompasses approximately 1,300m^2 or approximately eight percent of the total site area. Three additional features were documented in addition to those noted during the

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Figure 7.1 Overview of LA 115256, looking north-northeast. The Sacramento Mountains are in the distance.

initial survey. Two of these features (Features 4 and 5) are located outside of the right-of-way.

Subsurface Testing Results

Five thermal features were identified and described (Table 7.1); Marshall and Marshall (1998) had previously identified two of these (Features 1 and 2). Feature 1 was a small ash stain eroding out of a cut bank in the south-central portion of the site. It was within the right-of-way and near the edge of the drainage paralleling US 54. Feature 2 was a 1-m diameter depression lined with fire-cracked rocks; it was the northernmost feature and one of three features within the right-of-way. Feature 3 was a small ash stain located on the edge of the right-of-way in the center of the site. Features 4 and 5 consisted of fire-cracked rock scatters located outside of the right-of-way; these two features were also the furthest south. Features 1, 3, and 4 retained ash stains and possible dateable materials. Features 2 and 5 lacked any staining, and the rocks in Feature 2 were arranged in a circle that appeared to be a recent construction.

Site Stratigraphy and Geomorphology

Geomorphologic evaluation at LA 115256 was based upon observations of shovel tests. These examinations indicate that the cultural features and materials at this site are concentrated at or near the current land surface. They also indicate that all sediments at the site are alluvial in origin.

In all, three alluvial units (Units 1–3) were observed within shovel tests at the site (Figure

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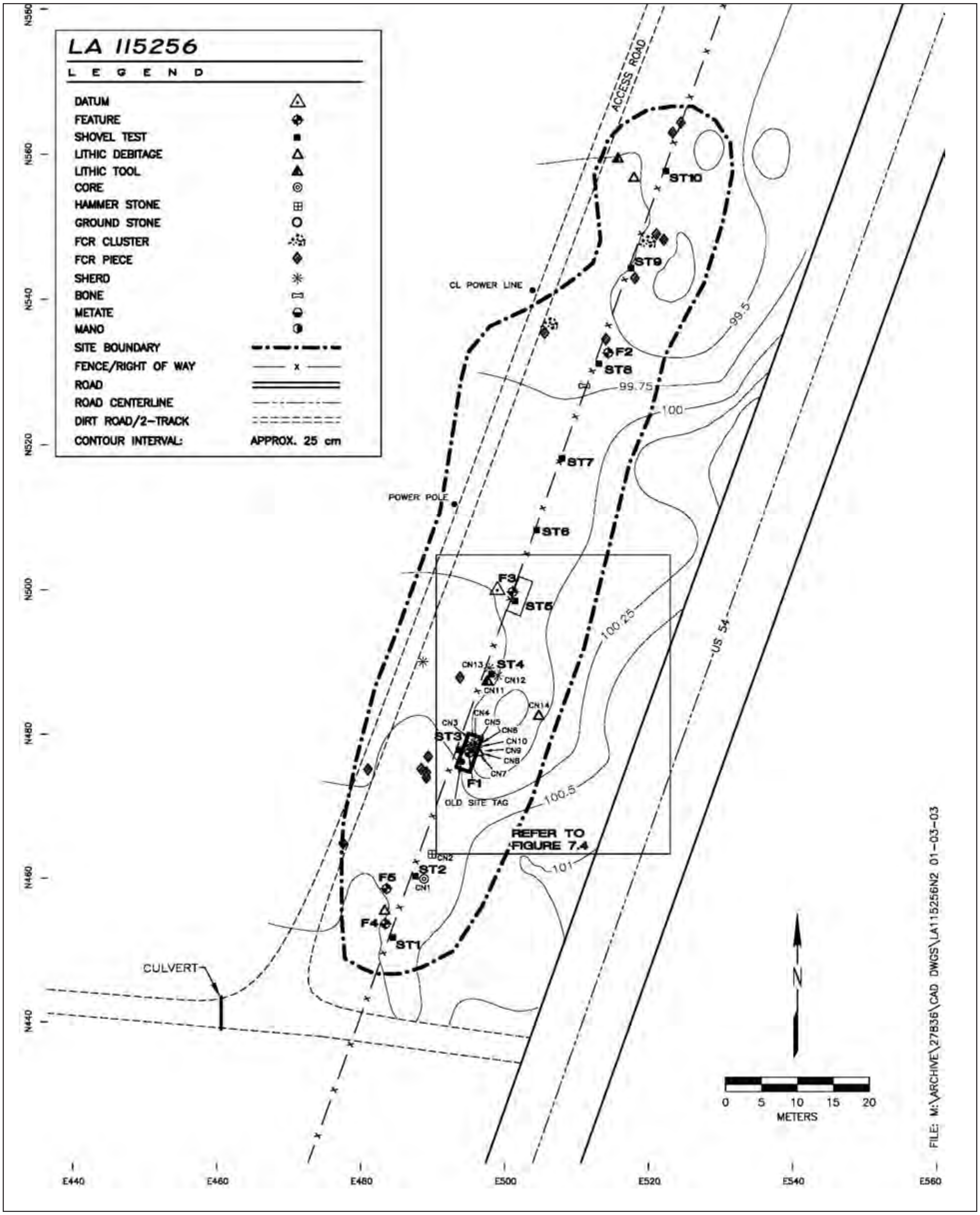

Figure 7.2 **Topographic Map of LA 115256, showing artifacts, features, and shovel tests documented during the testing phase.**

Table 7.1 Shovel Test Results LA 115256

Test No.	North	East	Location	Depth (m)	Surface Soil	Cultural Evidence	Stratum 1	Cultural Evidence	Stratum 2	Cultural Evidence
ST 1	451.88	485.51	South–2 m SE of Feature 4	0.25	Friable, brown, sandy loam (7.5YR5/4), surface to 0.06–0.1m	None	Slightly compact, brown, sandy loam (7.5YR5/4) with small caliche inclusions, 0.1–0.23 m	None	Compact, light brown, sandy loam (7.5YR6/4) with moderate density of caliche nodules, 0.23–0.25 m	None
ST 2	460.41	488.56	South–4 m NE of Feature 5	0.38	Friable, brown, sandy loam (7.5YR5/4), surface to 0.08 m	None	Slightly compact, brown, sandy loam (7.5YR5/4) with few caliche and moderate gravel inclusions, 0.08–0.32 m	None	Compact, light brown, sandy loam (7.5YR6/4) with moderate density of caliche nodules, 0.32–0.38 m	None
ST 3	476.26	494.6	South-central–2 m west of Feature 1	0.4	Friable, light brown sand (7.5YR6/4) with few gravel inclusions, surface to 0.05 m	None	Slightly compact, reddish-brown (5YR5/6), silty sand with moderate density of gravel inclusions, 0.05–0.30 m	None	Compact, reddish brown (5YR5/6), silty sand with moderate density of caliche nodule inclusions, 0.30–0.40 m	None
ST 4	488.59	498.99	South-central	0.5	Friable, light brown, sand (7.5YR6/4) with few gravel inclusions, surface to 0.03 m	None	Slightly compact, reddish-brown (5YR5/6), silty sand with moderate density of gravel inclusions, 0.03–0.50 m	None	N/A	N/A
ST 5	498.53	502.41	Central–1 m SE of Feature 3	0.3	Friable, light brown sand (7.5YR6/4) with few gravel inclusions, surface to 0.03 m	None	Slightly compact, reddish brown (5YR5/6), silty sand with moderate density of gravel inclusions, 0.03–0.27 m	None	Compact, reddish-brown (5YR5/6), silty sand with moderate density of caliche nodule inclusions, 0.27–0.30 m	None

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Table 7.1 Shovel Test Results LA 115256 (continued)

Test No.	North	East	Location	Depth (m)	Surface Soil	Cultural Evidence	Stratum 1	Cultural Evidence	Stratum 2	Cultural Evidence
ST 6	508.37	505.4	Central	0.3	Friable, brown sand (7.5YR5/4) with few gravel inclusions, surface to 0.05 m	None	Slightly to compact, brown (7.5YR5/4), sandy loam with a low to moderate density of gravel inclusions	None	Compact, light brown (7.5YR6/4) loam with a moderate density of gravel and caliche inclusions	None
ST 7	518.4	509.01	Central	0.3	Friable, light brown sand (7.5YR6/4) with few gravel inclusions, surface to 0.06 m	None	Slightly compact, reddish-brown (5YR5/6), silty sand with moderate density of gravel inclusions, 0.03–0.30 m	None	Compact, reddish-brown, (5YR5/6) silty sand with high density of caliche nodule inclusions, 0.30+ m	None
ST 8	531.6	514.06	North–1 m South of Feature 2	0.4	Friable, light reddish-brown (5YR6/4), sand/sandy loam, surface to 0.10 m	None	Compact, reddish-yellow (5YR6/6) sandy loam with few gravel inclusions, 0.10–0.34 m	None	Extremely compact, reddish, sandy loam (5YR6/6) with moderate gravel and caliche inclusions	None
ST 9	544.86	518.5	North	0.4	Friable, light reddish-brown (5YR5/4), sand/sandy loam with few gravel inclusions, surface to 0.13 m	None	Compact, reddish-brown (5YR5/4) loam with low to moderate density of gravel inclusions, 0.13–0.30 m	None	Very compact, light reddish-brown (5YR6/4), sandy loam with a moderate density of caliche nodules and gravels, 0.30–0.40+ m	None
ST 10	558.37	523.38	Far north edge	0.2	Friable, reddish-brown (5YR5/4), sandy/sandy loam, surface to 0.07 m	None	Compact, reddish-brown (5YR5/4), sand/sandy loam	None	Very compact, reddish-brown (5YR5/4), sand/sandy loam with a high density of caliche nodule inclusions	None

Table 7.2 Feature Data from the Testing Results

Feature No.	North	East	Location	Type	Plan Shape	L (m)	W (m)	Trowel Test Depth	Cultural Materials
1	477.65	495.93	South-central	Hearth	Circular	0.74	0.33	>.05m	Ash stain
2	523.3	515.3	North	Hearth	Circular	1.0	1.0	.05m	54 Fire-cracked limestone, rhyolite, and granite in circular pattern—modern—no ash stain
3	499.5	502.0	Central	Hearth	Circular	0.97	0.97	>0.10m	Ash stain
4	453.7	474.4	South end	Hearth	Circular	*0.5	*0.5	>0.05m	14 Fire-cracked limestone, granite, and rhyolite scattered over 4.0 m diameter area, 2 fire-cracked rock within 50 cm diameter ash stain
5	458.6	484.5	South end	Hearth	Oval	2.0	1.0	Surface	13 Fire-cracked limestone, granite, and rhyolite scattered—no ash stain

7.3). The uppermost stratum, Unit 1, consists of a thin veneer of historic alluvium. This alluvium varies from 0–0.15-m thick and is only sporadically distributed across the area. These sediments are light brown (7.5YR6/4) and have a loamy sand texture. The general lack of soil formation and the surface position of this unit suggest that it is historic in age and has very limited archaeological potential. Surface archaeological materials typically occurred in areas where the historic alluvium is thin or absent.

Underlying the historic alluvium is Unit 2, a 0.10–0.15-m-thick unit of light brown (7.5YR6/4), loamy sand. This unit lacks internal stratification or strong pedogenic accumulations, but the high chroma of the sediment suggests that it was subject to minor pedogenic alteration. For this reason, Unit 2 is considered a cambic Bw horizon and is tentatively correlated with Organ III (1100–100 B.P.) sediments (Gile *et al.* 1981; Monger 1993). Cultural materials appear to be associated with Unit 2 which, based on its proposed age from other studies, suggests that its archaeological potential is limited to Formative-age components.

Unit 2 overlies Unit 3, a calcareous Bk (Organ I) horizon that is light brown (7.5YR6/3) and has a loamy sand texture. Unit 3 also exhibits common (5 percent), fine, irregular calcium carbonate filaments that are considered a Stage I pedogenic carbonate accumulation. The contact between the Bw and Bk horizons is sharp, suggesting that this may be an erosional boundary and that the horizons are from two separate soil forming episodes. Although the cultural materials and features are associated with the overlying Bw horizon, many of the features intrude into the Bk horizon. No cultural materials, however, were observed within the Bk horizon that would be considered contemporaneous with these sediments.

Based on these interpretations of soil/sediment units, some conclusions about cultural-bearing deposits may be made. If all of the cultural materials are Formative in age, it is likely that all evidence of occupation is restricted to the current ground surface. Partial erosion of the Organ III unit would have concentrated the materials on the surface and exposed intrusive features. Features 1 and 3 both were excavated into underlying Organ I deposits. Although it is possible that the under-

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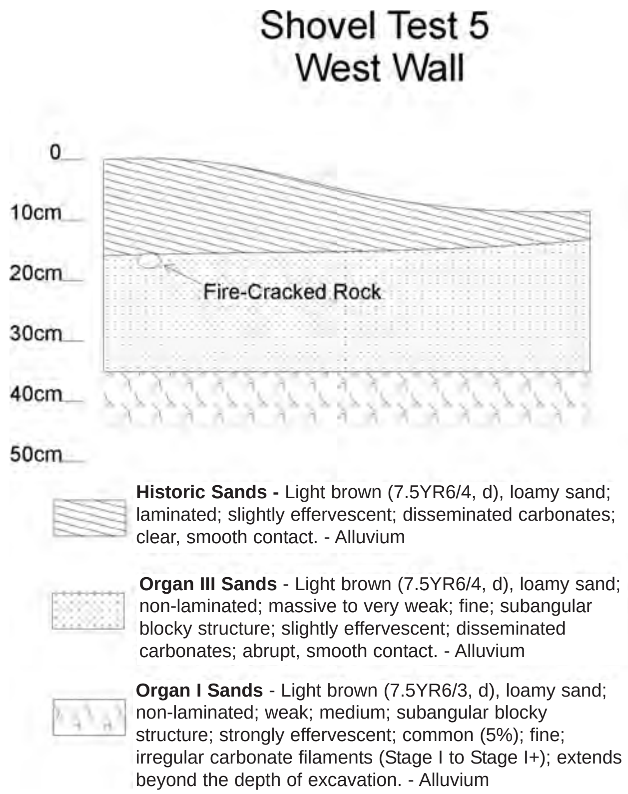

Figure 7.3 Stratigraphy observed in Shovel Test 5 at LA115256.

lying Organ I unit could also contain cultural materials, no evidence of such materials (e.g., Archaic components) was observed.

Data Recovery Strategy

Because LA 115256 contains few archaeological remains, and only a narrow strip of the site is present within the right-of-way, the proposed data recovery strategy at the site was minimal (Acklen *et al.* 1999). A site datum had been established west of, and just outside, the right-of-way during testing. During data recovery, the datum was assigned the grid provenience of N500/E500 with an arbitrary elevation of 100 m. No surface collections were carried out during data recovery; this had been previously accomplished during the testing phase, and no additional artifacts were observed on the surface during data recovery.

The data recovery plan called for the excavation of two 2 x 5-m blocks, one each over Features 1 and 3 (Figure 7.4). As it turned out, neither of these were excavated as 2 x 5-m blocks; rather, each was somewhat irregular in shape, given the narrow (approximately 2 m) span between the right-of-way fence and the drainage edge immediately to the east. Feature 2 was not investigated because it lacked associated staining and appeared to be a recent construction. Because testing demonstrated that the site was largely deflated, no machine stripping or mechanical excavations were undertaken.

Data Recovery Results

A total of 20.5 m^2 was hand excavated in the two blocks. Including shovel tests excavated during the testing phase, 22.5 m^2 was excavated within

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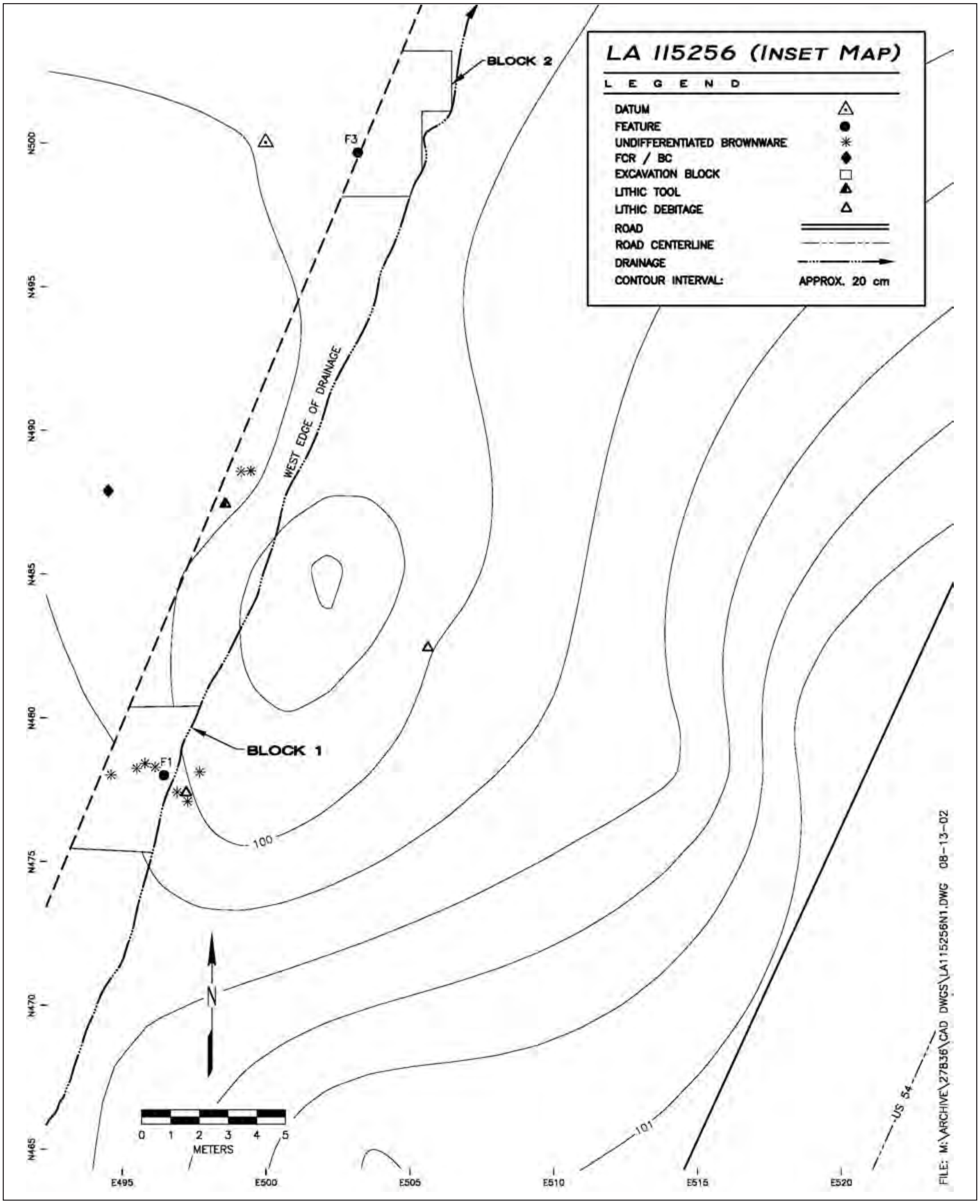

Figure 7.4 Features 1 and 3 at LA 115256, showing extent of data recovery excavation blocks and recovered artifacts.

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the right-of-way, with a total excavated volume of 3.37 m^3. Both Features 1and 3 were sectioned, mapped, profiled, and excavated. One of the excavation blocks produced two pieces of debitage and a single ceramic, but excavation revealed no evidence of subsurface cultural deposits outside the features themselves. Besides Features 1 and 3, no other features were unearthed in the two excavation blocks. Table 7.3 presents data from the excavations Features 1 and 3.

Feature 1 was originally defined as an oval ash stain near an eroded cut bank (Figure 7.5). Part of the feature had been removed by erosion along the edge of the cut bank. Remaining portions of the feature measured 55 x 33 cm, with the long axis oriented northeast/southwest. Excavation demonstrated that Feature 1 was a partially intact, basin-shaped hearth. The majority of the feature had been eroded into the adjacent drainage along the east edge of the block. The fill extended only 7 cm below the present surface and no oxidation was noted. It is likely that Feature 1 was originally circular in plan.

A single El Paso Brown sherd was recovered from the surface of Feature 1. Additional El Paso Brown sherds, all apparently from the same vessel (see below) were collected in the immediate vicinity of this feature, and were likely associated with this hearth. Three pieces of debitage were recovered from the immediate vicinity of Feature 1 (two from the shallow subsurface in the excavation block surrounding this feature and one from the surface 1 m east of the hearth). Four fire-cracked rocks were also noted approximately 5 m to the southwest (outside the right-of-way).

Feature 1 probably functioned as a simple hearth, or roasting pit. The lack of oxidation may indicate that its use-history was limited. It seems likely that the artifacts surrounding this hearth were associated with its use. However, the extent of disturbance severely limits any further interpretation of this feature.

Feature 3 was an intact, basin-shaped thermal feature located in the central portion of the site. The fence marking the edge of the right-of-way bisects the feature, and a fence post penetrates the center of this stain. The feature measured 97 cm in diameter and extended 16 cm below the present surface (Figure 7.6). The feature contained two internal strata. Stratum I was a brown (7.5YR5/3), sand loam mixed with ash and charcoal. Stratum II was darker (7.5YR3/2, dark brown) with otherwise similar characteristics to Stratum I. No artifacts were recovered from the feature surface, feature fill, or the surrounding excavation block. There were also no artifacts identified on the modern ground surface in the vicinity of the feature. The nearest cultural materials were approximately 11 m to the south, where three El Paso Brown sherds and a lithic tool were located. Like Feature 1, Feature 3 is probably a hearth or roasting pit. Since there was no evidence of oxidation, it was likely only used for a brief period of time. Both Features 1 and 2 were likely contemporaneous as they originate in a similar stratum. Datable materials support this inference (see below). No subsurface archaeological remains were encountered outside of Features 1 and 3.

Table 7.3 Excavated Features from LA 115256

Feature No.	Location	Type	Plan Shape	Morphology	L (m)	W (m)	Depth (m)	TAR kg/1	Cultural Materials
1	South Central	Thermal Feature	Oval	Basin	0.74	0.33	0.07	0	1 undifferentiated brownware ceramic
3	Central	Thermal Feature	Circular	Basin	0.97	0.97	0.16	0	None

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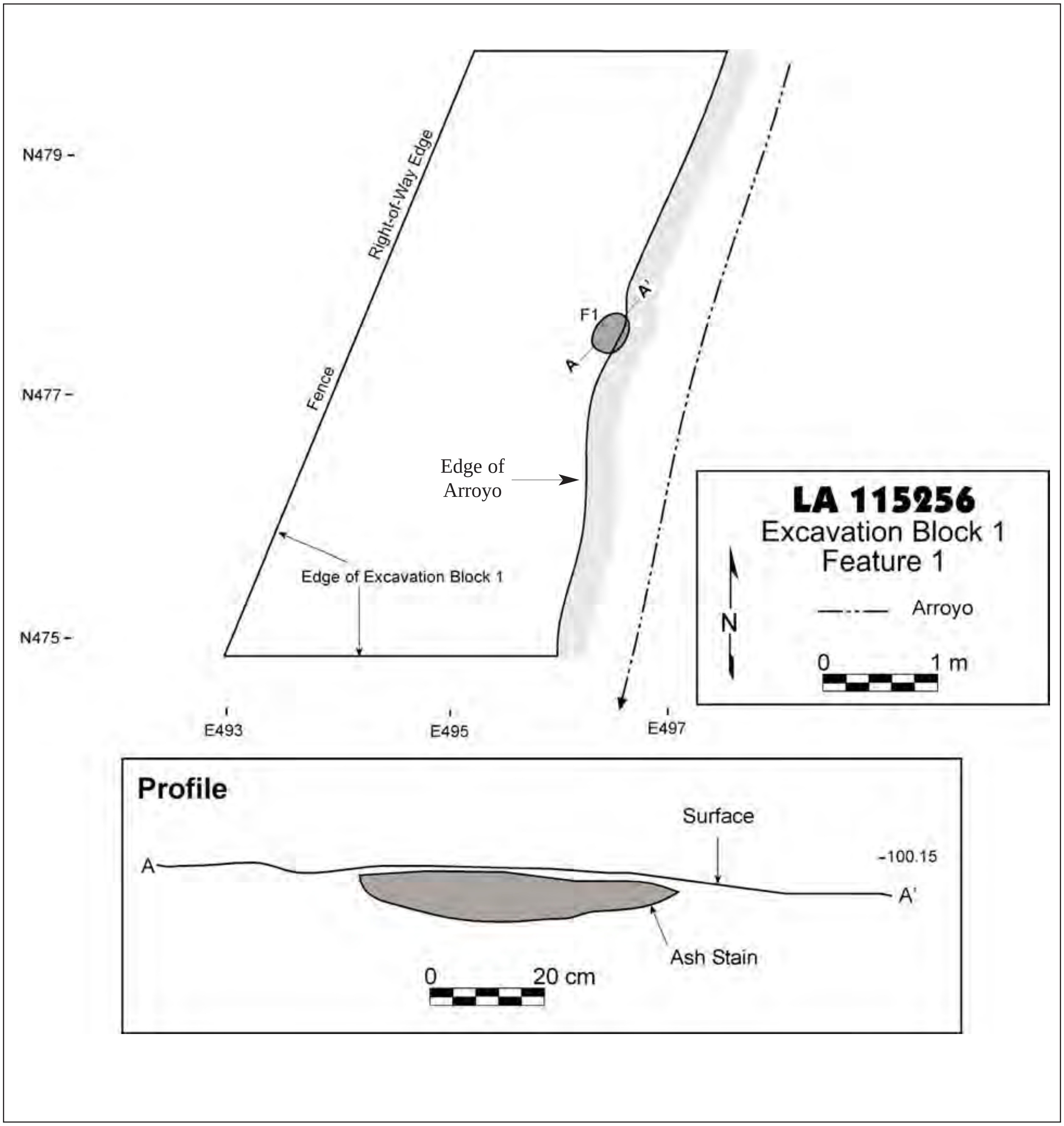

Figure 7.5 **LA 115256, Feature 1.**

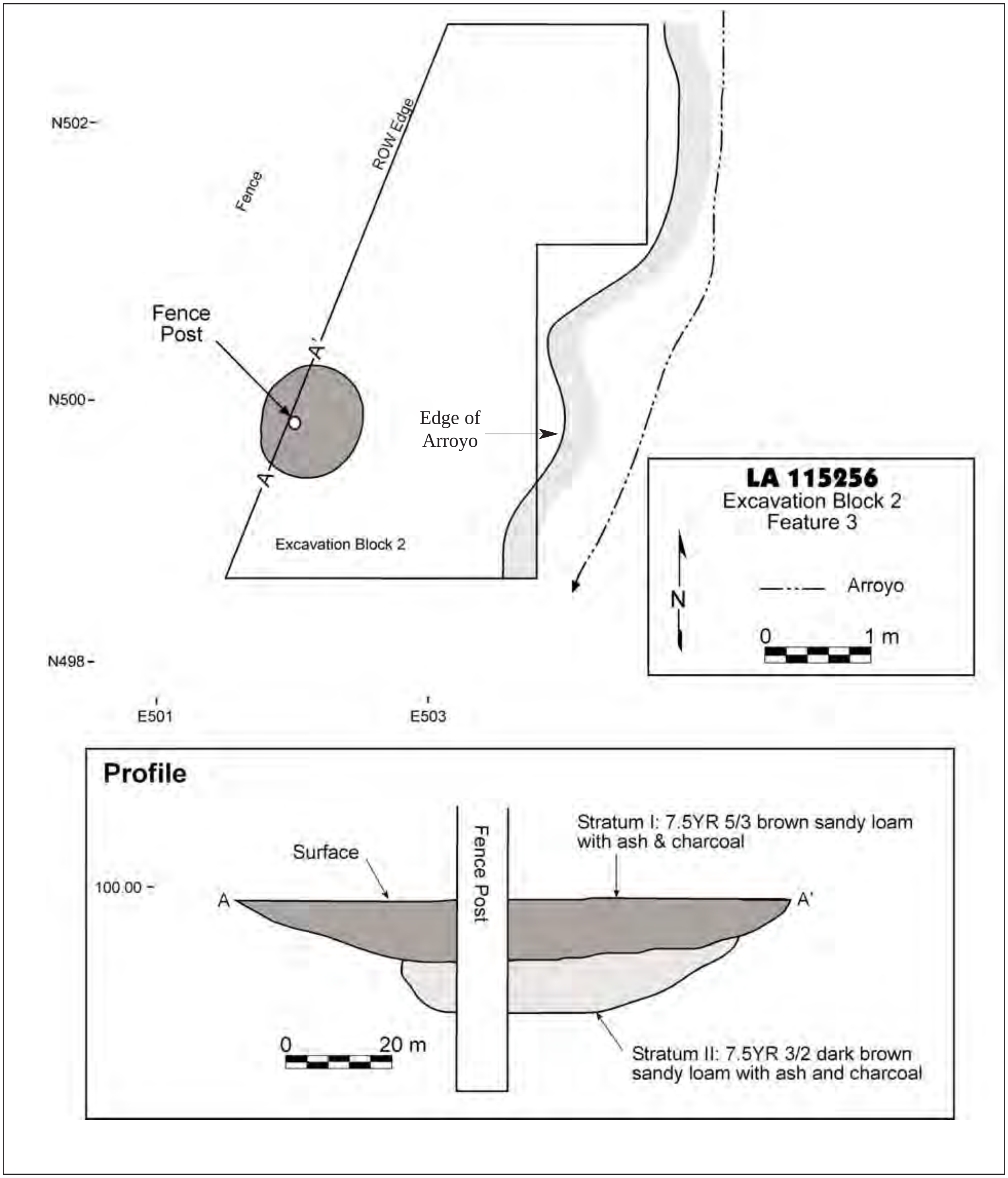

Figure 7.6 LA 115256, Feature 3.

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Artifact Assemblage

A total of 19 artifacts was collected from the site and analyzed, including 12 El Paso Brown sherds and seven lithic artifacts. Sixteen artifacts were recovered from the site surface, while three came from shallow subsurface contexts. The majority (n=12) of the recovered artifacts came from within 2 m of Feature 1, while the remaining seven recovered artifacts were located at greater distances to the north, east, and south of Feature 1. In addition to the recovered artifacts, one limestone utilized flake, one quartzite flake, a cluster of five or more brownware sherds, and 50+ pieces of fire-cracked rock were noted outside the right-of-way, on BLM land, during testing but were not collected.

Ceramic Artifacts

Twelve sherds, weighing 59.4 grams, were collected from LA 115256 during the testing and data recovery investigations. Of these, all but one came from the surface, with one from Level 2 in Block 1 (Feature 1 area). All but three of the sherds came from within 2 m of Feature 1, with three others located roughly midway between Features 1 and 3 (see Figure 7.4). All of the sherds appear to derive from a single El Paso Brown vessel. All were tempered with coarse angular granite, had a semi-friable fracture, a gray exterior surface and brown interior surface color. No polish was noted. The sherds were from a single jar, but the absence of rim sherds precluded classification of a specific jar shape (e.g., necked jar, wide-mouthed jar, or seed jar). No use-wear or post-firing modifications were noted. Because no attrition was noted, vessel use can only be surmised. It is likely that the vessel was used for cooking and/or storage.

Lithic Artifacts

Of the seven lithic artifacts recovered from LA 115256, three were lithic tools and four were pieces of unmodified debitage. All were from surface or shallow subsurface contexts. The tools include one quartzite hammerstone, one chert side scraper, and one expediently retouched piece of silicified shale. The hammerstone is a cortical stream cobble with a longitudinal battering configuration. All were recovered from surface contexts.

All four pieces of debitage were chert. Although the sample size is too small to be conclusive, larger and heavier flake sizes are consistent with an expedient technology and with the short-term nature of this site. See Chapter 21 for more information on the lithics from this site and how they compare to the other sites in the study area.

Biological Remains

Analyzed remains included one phytolith, two flotation, and one charcoal sample from Feature 3, a large hearth. The phytolith sample did not identify any economic taxa. The flotation samples were from 39.75 liters of feature fill and contained mainly *Prosopis glandulosa* charcoal with a small amount of *Atriplex canescens* charcoal. Both species are known to have been fuel/wood sources and as such are of little information value as to subsistence patterns associated with the site's occupation(s).

Site Chronology

Ceramics recovered from the site were all El Paso Brownware body sherds. Based on the absence of decorated sherds, the assemblage probably represents a Mesilla phase occupation. Feature 3 did not yield diagnostic artifacts, but did produce a two-sigma calibrated radiocarbon date of A.D. 330–580 (Beta-156958), which is also consistent with an early Mesilla phase affiliation.

Site Interpretation and Summary

This site is a small, Formative period artifact scatter with five associated thermal features. The limited artifact assemblage suggests a narrow range of activities was undertaken on the site. These activities potentially include cooking or storage, expedient stone tool manufacture, and animal and/or plant processing. Simple hearths or roasting pits were the only features identified.

There were no structural remains or storage features. The ephemeral nature of the remains suggests the site was a dispersed camp, or multiple small, non-contemporary camps. If any structures were erected at the site, they were probably of an expedient type that did not leave any archaeological traces. A scatter of pottery sherds in the immediate vicinity of Feature 1 suggests that this hearth hosted at least one episode of cooking, and that at least one ceramic vessel was broken here. At least this feature apparently dates from the early Mesilla phase, as does Feature 3, which was radiocarbon dated to this time frame. The other features cannot be dated at this time. Although the sample size is too small, the debitage suggests an expedient flake technology, which is also consistent with Formative-period assemblages.

Recommendations

The results of site testing and geomorphological assessment suggest that this site is largely deflated with little depth potential outside of the feature areas. The data potential within the right-of-way has been exhausted by the data recovery investigations. Outside of the right-of-way, Feature 4 was associated with an ash stain, and so this hearth retains some data potential. Accordingly, any future construction activities within the portion of the site outside of the right-of-way should be preceded by a data recovery plan and field investigations.

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Chapter 8

LA 115259

Timothy B. Graves, Grant D. Smith, Joell Goff, Lance Lundquist, Jonathan E. Van Hoose, Jim A. Railey, and John C. Acklen

Introduction

LA 115259 is a sparse, Jornada Mogollon habitation site with a thin scatter of lithics, ceramic sherds, fire-cracked rock, and several features. The site is in a nearly level area on the alluvial fans of the Jarilla Mountains in the east-central Tularosa Valley. The terrain slopes slightly to the southeast and is cut by a 1–3-m wide, southwest-flowing arroyo on the edge of the US 54 right-of-way, just west of the present right-of-way fence. Numerous smaller arroyos cut through the western portion of the site, all of which drain east into the main, southwest-flowing arroyo. Along the southwest edge of the site is an artificial highway ditch, which runs next to US 54, and drains to the southwest. The site lies within the Chihuahuan biotic zone, with vegetation at this locality including creosote, mesquite, grasses, prickly pear, four-wing saltbush, and tarbush. Low-lying, mesquite-covered coppice dunes are present along the western edge of the site (west of the main arroyo). Other mesquite thickets are present near the highway edge, though dunes have not formed around these plants. Vegetation cover is sparse, with surface visibility over 80 percent.

The major land modifications to the site include the original construction of US 54 and subsequent erosion along the eastern edge of the site. Bank erosion associated with the main arroyo along the western edge of US 54 has removed an unknown portion of the site. In addition, an ATT communication line had been excavated under, and adjacent to, the fence line west of the highway. The depth of this excavation is unknown, although the trench has likely redistributed some cultural materials in this portion of the site. Feature 1 has been partially impacted by slope erosion into the highway ditch along the western edge of US 54.

The site extends both inside of and outside of the right-of-way, on private land and right-of-way obtained from private sources. In consultation with the NMSHTD, the right-of-way for data recovery investigations was originally defined as 35 m west of the US 54 centerline. Early stages of data recovery proceeded on this assumption and some excavation occurred to the west of the existing right-of-way fence. It was later determined, however, that the actual right-of-way width was 26 m to the west of the US 54 centerline corresponding to the existing right-of-way fence.

Previous Investigations

During the survey, the site was documented as a sparse artifact scatter with four features, contained within a 50 x 30-m area (Marshall and Marshall 1998). The features include a rock alignment and three fire-cracked rock concentrations. Among the surface artifacts were three “agave knives,” two manos, and chipped stone flakes. Based on the lack of ceramics and presence of the “agave knives,” the investigators suggested the site might represent a specialized agave-processing locale, possibly dating from Archaic times.

Testing Investigations

Site testing within the right-of-way was conducted by TRC in the fall of 1999 (Acklen *et al.* 1999). During testing, the surface was carefully inspected, artifacts were mapped with a total station instrument, surface artifacts within the right-of-way (10 lithics and one ceramic) were collected, features were described, and test excavations were conducted (Figure 8.1).

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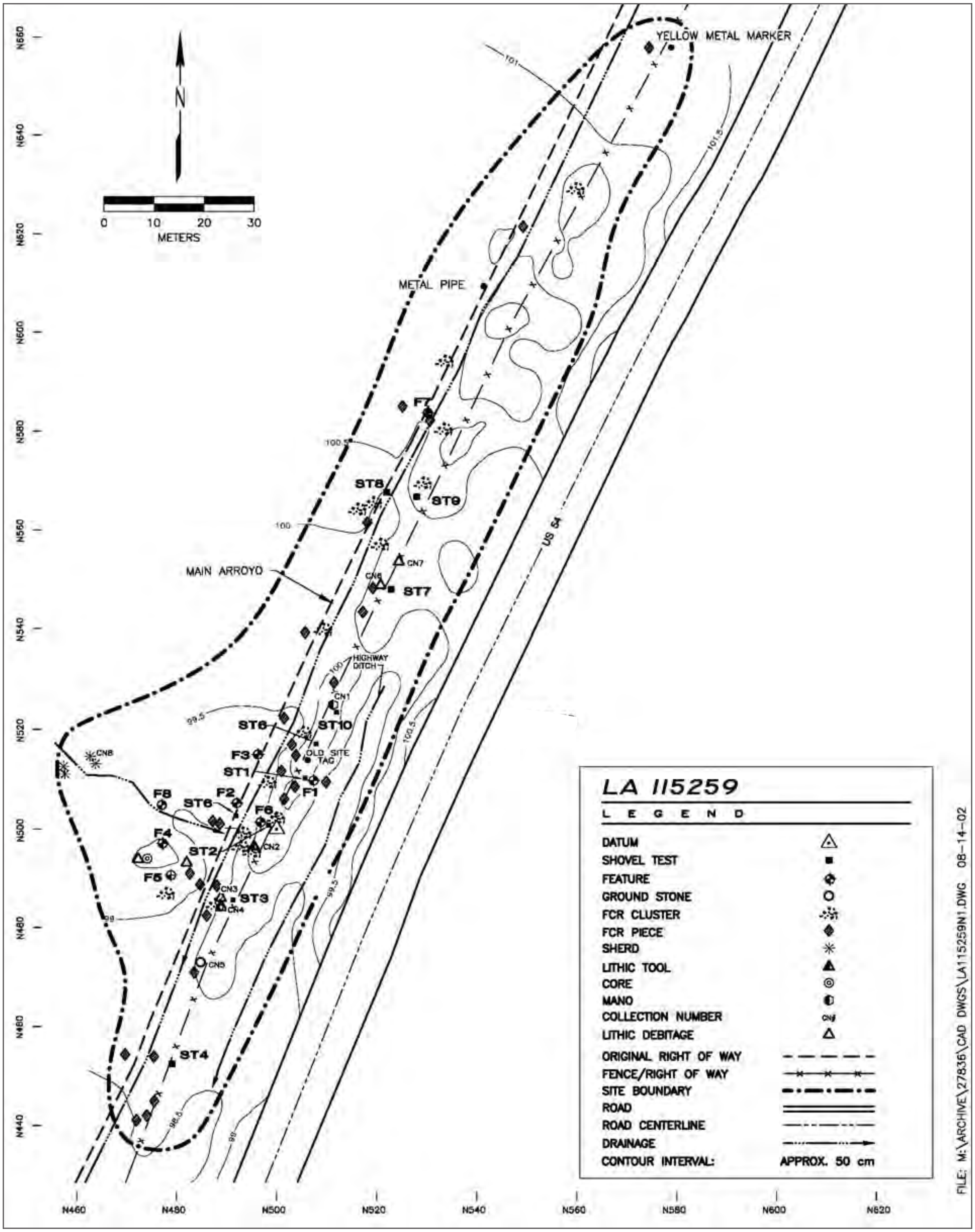

Figure 8.1 **Topographic Map of LA 115259, showing artifacts, features, and shovel tests documented during the testing phase.**

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Surface Investigations

Based on the surface inspection, the site boundaries were expanded to cover a 250 x 32-m area. This area encompasses an estimated 8,410 m^2 including 2,353 m^2 within the right-of-way fence (i.e., 26 m west of road centerline). Eight features were identified, including seven fire-cracked rock concentrations and one ash stain. Features 1–4 were identified during the initial survey of the site (Marshall and Marshall 1998). Of the eight features, three occur within the original (35 m) highway right-of-way (Features 1, 6, and 7). Only Feature 1, however, lies between the right-of-way fence and US 54. Characteristics of the eight features recorded on this site are presented in Table 8.1

Subsurface Testing Results

The testing strategy at LA 115259 involved excavation of ten 0.5 x 0.5-m shovel tests (Table 8.2). The shovel tests included three at or near features identified within the 35-m right-of-way, with the remainder evenly spaced along the right-of-way edge or placed in areas where surface artifacts were observed. Trowel testing of all features was also conducted. Shovel testing near the features was done to determine whether or not they contained (or were associated with) intact subsurface cultural deposits.

The results of site testing indicated that two of the three features contained within the 35-m right-of-way were deflated and lacked subsurface cultural materials. The third feature, Feature 7, is an ash-stained, small basin feature that contained datable charcoal. This feature was the focus of subsequent data recovery. Table 8.2 summarizes the results of the shovel tests, including depths, brief soil descriptions, and cultural materials recovered. None of the shovel tests contacted a caliche substrate, indicating that caliche is deeply buried at this site.

Cultural materials and features were generally clustered in the southern portion of the site, both inside and outside the 35-m right-of-way. Outside this cluster, only one feature, a few scattered lithic artifacts, and some fire-cracked rock occur, both to the north and south. Ceramics are also clustered against the southwestern edge of the site, well outside of the right-of-way, and are not associated with any of the features. Many dispersed scatters and clusters of fire-cracked rock occur throughout the site, and these likely represent the remains of former features that have been destroyed by deflation. Five of the features (Features 2, 3, 4, 6, and 8) are burned rock concentrations located west of the 35-m right-of-way, along the main arroyo and its tributary. Two of these five features (Features 2 and 3) were buried under 1–2 m of sediment (bgs), and Features 4, 5, and 8 also appeared to have preserved subsurface remains.

Site Stratigraphy and Geomorphology

Geomorphologic examinations of shovel tests and arroyo profiles at site LA 115259 revealed that cultural materials are present on both the current land surface and in the subsurface. The sediments observed on the site appear to be a mixture of alluvial and eolian sediments. The probable depositional scenario is that slopewash on the alluvial fan brought the majority of the sediments into the study area, and eolian reworking further modified these sediments. In all, three alluvial units were observed within the excavations at the site (Figure 8.2), with an even older unit exposed at the base of the arroyo cut.

The uppermost unit observed on the site consists of laminated historic sands. Coppice dunes on the western margin of the site are composed of these historic sands, which also thinly blanket much of the site. These sands are typically a light brown (10YR6/4, d), laminated, loamy sand. Within the coppice dunes, the sediments may be more than 1-m thick, but over the rest of the site they typically vary from 0–10-cm thick. The general lack of soil formation and the surface position of this unit indicate that it is historic in age and, thus, has very limited archaeological potential. Cultural materials observed on the site typically occur in areas where the historic sand is thin or absent.

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Table 8.1 Feature Characteristics from the Testing Results

Feature No.	North	East	Location	Type	Plan Shape	L (m)	W (m)	Trowel Test Depth	Cultural Materials
1	509.72	507.62	South-central	Hearth	Oval	0.95	0.73	Surface	23 articulated FCR
2	504.67	492.86	South-central	Hearth	Circular	1	1	Surface	55 FCR over a total 1.5 m diameter area with articulated pieces within a 1.0 m diameter area, 1–2m bgs.
3	514.87	496.44	South-central	Hearth	Circular	1.3	1.3	Surface	>40 FCR, 50 cm bgs. Another 26 FCR scattered down slope to east of main concentration
4	497.16	477.54	Southwest	Hearth	Circular	0.5	0.5	>0.10 m	> 12 FCR outside right-of-way barely exposed on surface
5	490.49	479.03	South-central	Hearth	Oval	3	2	Surface	> 15 FCR, siltstone flakes, 1 core, a sandstone metate fragment west of right-of-way
6	501.16	497.01	South-central	Hearth	Circular	4	4	Surface	> 25 FCR on 10 degree west slope into main deep arroyo
7	583.7	527.5	North-central	Hearth	Circular	0.5	0.5	> 0.05 m	Ash stain, covered by approx. 10 cm of recent sand
8	504.75	477.22	Southwest	Hearth	Circular	0.75	0.75	>0.10 m	14 FCR, outside right-of-way

Table 8.2 Shovel Test Results for LA 115259

Test No.	North	East	Location	Depth	Surface Soil	Cultural Evidence	Stratum 1	Cultural Evidence	Stratum 2	Cultural Evidence
ST 1	509.75	506.62	Central, Feature 1	0.3 m	Friable, yellowish-red, sandy loam (5YR5/8), surface to 0.1 m	None	Compact, yellowish-red, sandy loam (5YR5/8) with small caliche inclusions, 0.1–0.3 m	None	N/A	N/A
ST 2	500.84	498.13	Central, east of Feature 6	0.4 m	Friable, yellowish-red, sandy loam (5YR5/8), surface to 0.02 m	None	Compact, yellowish-red, sandy loam (5YR5/8) with small caliche inclusions, 0.02–0.4 m	None	N/A	N/A
ST 3	485.01	491.47	South-central	0.3 m	Friable, yellowish-red, sand loam (5YR5/8), surface to 0.02 m	None	Compact, yellowish-red, sandy loam (5YR5/8) with small caliche inclusions, 0.02–0.3 m	None	N/A	N/A
ST 4	452.54	479.32	South	0.3 m	Friable, yellowish-red, sandy loam (5YR5/8), surface to 0.1 m	None	Compact, yellowish-red, sandy loam (5YR5/8) with small caliche inclusions, 0.1–0.3 m	None	N/A	N/A
ST 5	513.1	506.02	North-central	0.63 m	Friable, yellowish-red, sand loam (5YR5/8), surface to 0.05 m	None	Compact, yellowish-red, sandy loam (5YR5/8) with small caliche inclusions, 0.05–0.63 m	None	N/A	N/A
ST 6	503.13	492.14	Central, southwest of Feature 2	0.3 m	Friable, yellowish-red, sandy loam (5YR5/8), surface to 0.02 m	None	Compact, yellowish-red, sandy loam (5YR5/8) with small caliche inclusions, 0.02–0.3m	None	N/A	N/A
ST 7	548.14	523.11	North-central	0.3 m	Friable, yellowish-red, sandy loam (5YR5/8), surface to 0.02 m	None	Organic lens or “A” horizon, semi-compact, yellowish-red, sandy loam (5YR5/8), 0.02–0.06 m	None	Compact, yellowish-red sandy loam (5YR5/8) with small caliche inclusions, 0.06–0.3 m	None
ST 8	567.75	522.24	North	0.4 m	Friable, yellowish-red, sandy loam (5YR5/8), surface to 0.02 m	None	Compact, yellowish-red, sandy loam (5YR5/8) with small caliche inclusions, 0.02–0.4 m	None	N/A	N/A
ST 9	566.84	528.21	North	0.3 m	Friable, yellowish-red, sandy loam (5YR5/8), surface to 0.02 m	None	Compact, yellowish-red, sandy loam (5YR5/8) with small caliche inclusions, 0.02–0.3 m	None	N/A	N/A
ST 10	523.59	510.85	North	0.3 m	Friable, yellowish-red, sandy loam (5YR5/8), surface to 0.12 m	None	Compact, yellowish-red, sandy loam (5YR5/8) with small caliche inclusions, 0.12–0.3 m	None	N/A	N/A

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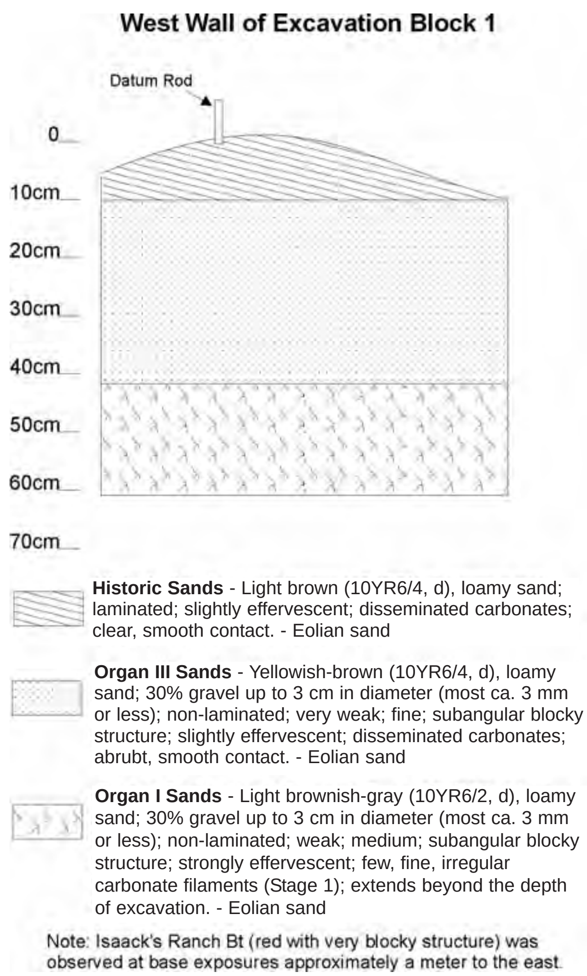

Figure 8.2 Stratigraphy observed in the west wall of Excavation Block 1 at LA 115259.

Underlying the laminated historic sands in some portions of the site, and often exposed at the surface, is a unit comprised of a slightly compact, noncalcareous, sandy loam. This soil/sediment unit appears to match the characteristics of the Organ III (100–1100 B.P.) eolian unit described by Monger (1993). The surface materials at the site are associated with this unit and are probably Formative in age. This assessment is supported by the brownware ceramics identified on the site. The Organ III sediments appear to be partially eroded due to the lack of a discernable A horizon. These sediments extend to a depth of 30–60 cm bgs, which indicates that a substantial amount of this unit is still preserved.

Underlying the Organ III sediments is a sandy loam unit with calcium carbonate filaments (Stage I accumulation). These filaments suggest that this unit may be an Organ I (2200–7000 B.P.) eolian deposit. Based on the arroyo cutbank exposures, the Organ I sediments extend to approximately 1.5 m bgs. Some of the cultural features on the site are weathering out of the Organ I sediments and, based on the proposed age for this soil/sediment unit, it is presumed that these features are probably Archaic in age. Radiocarbon dating of these features would be necessary to confirm this possibility.

The basal unit observed on the site was only visible in deep arroyo cuts. This unit consists of a reddish brown (5YR 5/4, d) paleosol with a Stage II calcium carbonate accumulation. It has a sandy clay loam texture, which suggests that the horizon may have experienced illuviation of pedogenic clays. These characteristics are typically associated with the Isaack's Ranch alluvium in the region, a soil/sediment unit dated to the 8000–15,000 B.P. time frame (Gile *et al.* 1981; Monger 1993). As a result, the potential of these sediments is limited to Paleoindian components. No such materials were observed at the site.

Data Recovery Strategy

Because of the sparse nature of archaeological remains at LA 115259, the goals defined in the data recovery plan were correspondingly modest in scope (see Acklen *et al.* 1999). The plan called for the excavation of a 2 x 5-m block around Feature 7 and limited stripping with a backhoe between the existing right-of-way fence and the edge of the 35-m right-of-way. The limited stripping was to be conducted to search for additional features that might be buried in the alluvial deposits associated with the Organ III sediments. Plans for stripping were abandoned, however, when it was determined that all construction activities were to be contained within the existing right-of-way fence.

Data recovery investigations at LA 115259 were initiated in the spring of 2000. A site datum had

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been established just inside (east) of the right-of-way and a topographic map had been prepared as a part of the testing phase. During data recovery, the datum was assigned the grid provenience N500/E500, with an arbitrary elevation of 100 m. All surface artifacts had been mapped during the testing phase, and no additional artifacts were located on the surface during data recovery. Subsurface investigations commenced with the placement of an excavation block over Feature 7. The excavation block measured 2 m east-west, and 5 m north-south, with the edge of the main arroyo clipping the southeastern margin of the block (Figure 8.3). The feature was sectioned, mapped, profiled, and excavated. The excavation block uncovered 10 m^2, or less than 0.2 percent of the site area within the right-of-way. Including the shovel tests from the testing phase, a total of 12.5 m^2 was uncovered at the site. Total volume excavated was 3.13 m^3.

Data Recovery Results

Data recovery excavations were limited to the single block excavated over Feature 7 in the northern portion of the site (see Figures 8.3, 8.4). This ash-stained thermal feature appeared to have intruded into Organ I deposits. Subsurface cultural deposits outside of the hearth area were not identified within the block or any of the 10 shovel tests excavated during the testing phase. None of the other identified features were investigated; they were all either outside the right-of-way or were completely deflated.

The characteristics of Feature 7 are summarized in Table 8.3. The feature was overlain by approximately 10 cm of sandy sediment. This feature was determined to be a basin-shaped hearth that measured 0.86–0.23 m; the eastern side of the feature had been truncated by erosion along the arroyo edge (Figure 8.4). The feature fill was silty sand loam, dark brown (7.5YR3/2), and marked by prominent charcoal staining. A lithic tool and two pieces of debitage were recovered from the block excavation unit. The lithic tool was recovered in the stratum above the feature.

Artifact Assemblage

The testing and data recovery phases produced 10 artifacts that were recovered and analyzed. These include one El Paso Brown sherd and nine lithic artifacts. Seven artifacts were recovered from the site surface during testing, while three came from the shallow subsurface within Excavation Block 1.

Ceramic Artifacts

One El Paso Brown jar body sherd, weighing 5.3 grams, was recovered from the surface. It was located outside the right-of-way within the cluster of sherds in the westernmost part of the site (see Figure 8.1). The sherd was tempered with coarse angular granite, had a semi-friable fracture, and a gray exterior and brown interior surface color. No polish was noted on the ceramics, nor was there any evident use wear or post-firing modifications. Because no attrition was noted, vessel use can only be surmised. It is likely that the vessel was used for cooking and/or storage.

Lithic Artifacts

Of the nine lithic artifacts recovered from LA 115259, three were chipped stone tools. Two of these are scrapers made on silicified shale. One, recovered from the subsurface within Excavation Block 1, exhibits retouch along one margin. The other was recovered from the surface, and shows retouch along two parallel margins. In addition, a possible digging tool or large scraping tool made

Table 8.3 Excavated Feature Results on LA 115259.

Feature No.	Location	Type	Plan Shape	Morphology	L (m)	W (m)	Depth	Cultural Materials
7	North	Large Thermal Feature	Oval	Basin	0.86	0.23	0.09	Fire-cracked rock

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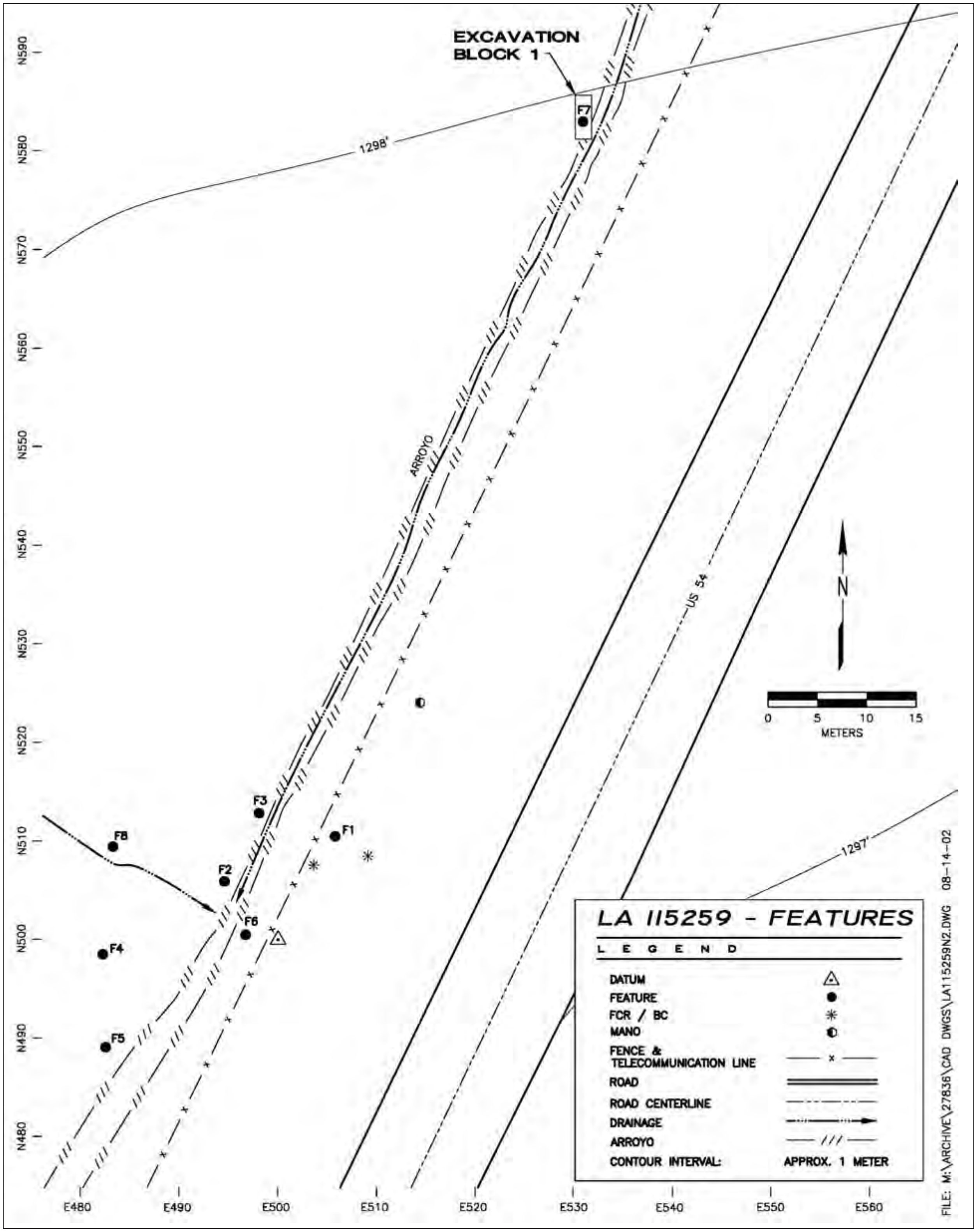

Figure 8.3 Distribution of Features at LA 115259, showing location of Excavation Block.

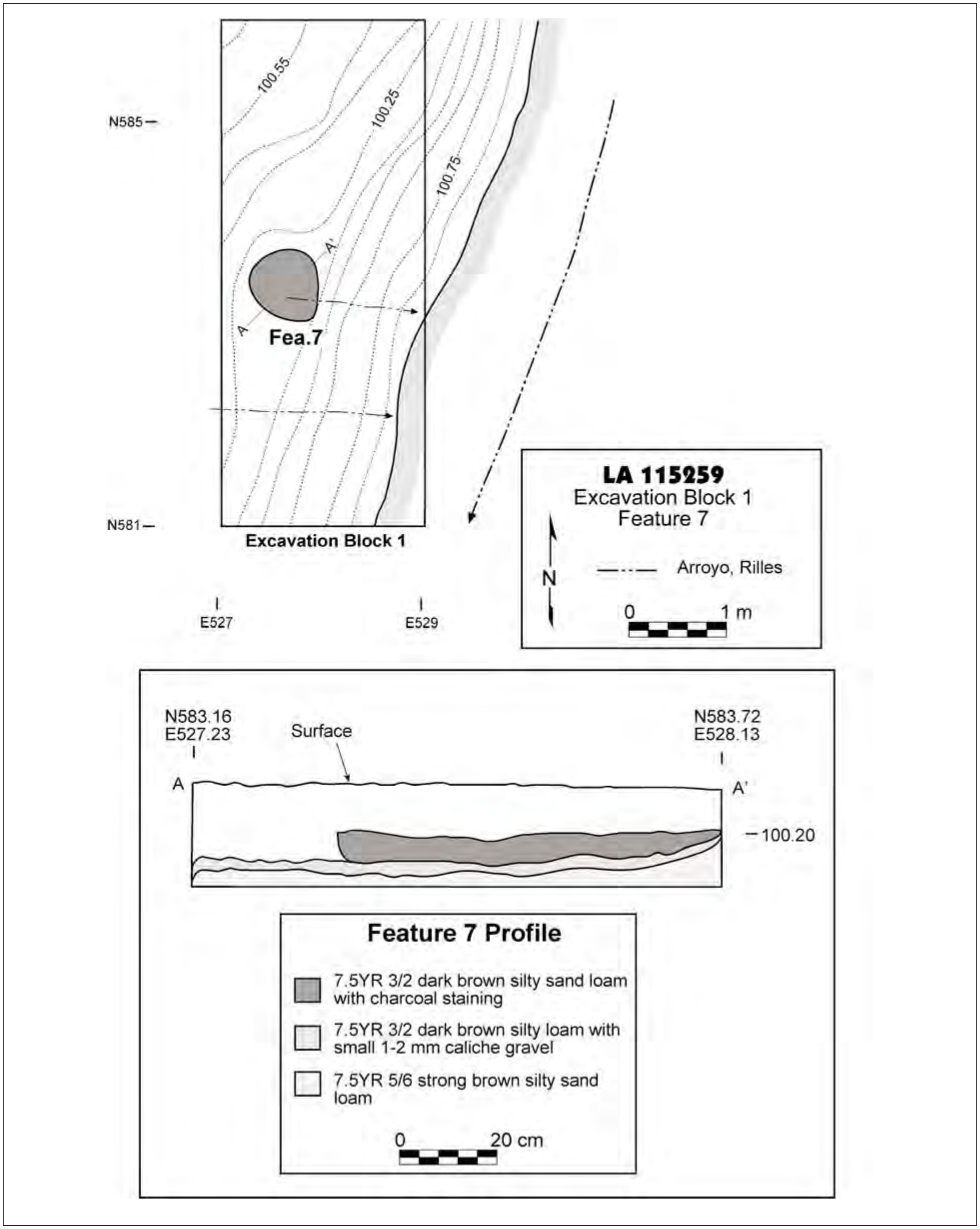

Figure 8.4 LA 115259, Feature 7.

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of granite was also recovered from surface context. This artifact, 12.1 cm in length, was retouched along three edges.

A total of four pieces of lithic debitage was collected and analyzed. Two pieces of debitage were collected from the surface and two were from the subsurface in Excavation Block 1. Material types include two pieces of silicified shale, one chert, and one sandstone. Although the sample size is too small to be conclusive, larger and heavier flake sizes are consistent with an expedient technology and with the short-term nature of the site's occupation.

An intact granite mano, showing a moderate degree of intentional shaping, was recovered from the surface of the site. The size of the mano suggests one-hand use (10.4-cm long) and has a triangular or beveled cross-section with two grinding faces. A single small sandstone metate or grinding slab fragment (27.1 grams) was also recovered from the site surface. See Chapter 21 for more information on the lithics from this site and how they compare to the other sites in the study area.

Biological Remains

Biological remains from LA 115259 were sparse and were recovered from one 8-liter flotation sample collected from Feature 7. The sample produced *Prosopis glandulosa* charcoal and two *Amaranthus* sp. seeds. *Prosopis* is generally indicative of locally available wood/fuel sources. As such, the sample is of limited interpretative value with respect to subsistence patterns associated with the site's occupation(s). No pollen, phytolith, or lipid samples were sent for analysis, and no faunal remains were recovered from this site.

Site Chronology

The only ceramics observed at the site were undifferentiated brownware body sherds, and these indicate a Formative period component (A.D. 200–1450). Geomorphological study of the soils indicates that archaeological materials at the site occur within both the Organ I and Organ III sediments, suggesting both Archaic and Formative components. No diagnostic artifacts were recovered from Feature 7 or the surrounding Excavation Block 1, although a single radiocarbon sample from this feature yielded a two-sigma calibrated date of A.D. 350–440 (Beta-156958). This falls within the early Mesilla phase. Although the undifferentiated brownware sherds were not directly associated with Feature 7, the lack of decorated pottery on the site tentatively suggests the documented ceramics may also date from the Early or Middle Mesilla phase. Note that subsurface investigations at the site focused on Feature 7, and that geomorphological evidence suggests some of the other features may date from preceramic times.

Site Interpretation and Summary

LA 115259 is a multi-component prehistoric site with a sparse artifact scatter and at least eight thermal features. Based on the presence of undifferentiated brownware ceramics on the site, along with the single radiocarbon date from Feature 7, LA 115259 minimally contains a Mesilla phase component. The presence of buried features, eroding out of the Organ I horizon, indicate there is likely also an Archaic component at this site. The only features identified at the site were thermal facilities, including hearths and, possibly, roasting pits. The absence of deep pit features or structural remains indicates a lack of investment in site architecture, consistent with a short-term camp or, more likely, multiple small encampments. Any structures that may have existed at the site were of an expedient type that did not leave any surviving archaeological traces.

The sparse nature of the artifact remains is also consistent with a small-scale, short-term, limited-activity function for this site. The reported presence of agave knives during the initial survey suggests possible harvesting and/or roasting of agave by the site's inhabitants, although these artifacts could not be relocated during the testing and data

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recovery phases. The presence of milling implements at the site indicates some level of logistical planning in the site occupation, as the manufacture and transport of these heavy items represents an appreciable time and energy investment. Still, only two such items were recovered from the site, and the overall picture is one of a short-term, logical camp or series of camps.

Recommendations

The results of site testing and geomorphology assessment demonstrate that the site contains buried cultural evidence and a demonstrated potential for yielding significant archaeological data. It is considered eligible for inclusion in the NRHP. Intact, subsurface archaeological remains are outside the official right-of-way edge (i.e., the present fence line), but these will not be impacted by the highway construction. Excavation fulfilled the primary goals outlined in the data recovery plan and no additional investigations are recommended within the right-of-way. Any future construction activities beyond the right-of-way fence, that fall under appropriate regulations, should involve a data recovery plan.

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Chapter 9

LA 115260

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Introduction

LA 115260 is a Jornada Mogollon site with a small but dense concentration of features. It is situated on the desert floor in the central portion of the Tularosa Valley, within a small playa. The local terrain slopes slightly to the south and southeast, draining into the playa center. A ridge marking the northwestern margin of the playa borders the western portion of the site, and thick eolian sands cover the interior ridge slope approaching the site from the west. Large, semi-stabilized coppice dunes surround and partially cover the site to the west of the right-of-way, and historic sands blanket the site to a depth of more than 0.75 m in most areas. The terrain here slopes from 1,228 m (4,095 feet) amsl at the northwest end of the site to 1,225 m (4,085 feet) amsl at the southeast end. The general surface slope is less than 1 degree, although the surface is uneven and pocked with small depressions. Artifacts are exposed in the bottoms of these depressions. The site locality lies within the Chihuahua biotic zone. Flora in the area includes dropseed, grama grass, narrow leaf yucca, fourwing saltbush, and mesquite.

Major land modifications to the site include construction of the US 54 roadbed that has subjected a portion of the eastern edge of the site to soil redistribution and removal. The affected area includes soils near the right-of-way fence line that contained cultural materials to a depth of 20–50 cm bgs. In addition, the fence line that demarcates the right-of-way impacted a portion of the site, removing and redistributing soils where fence posts were placed.

The site occurs on the western side of US 54, on federal lands administered by the U.S. Army at Fort Bliss, and includes remains both inside and outside of the right-of-way. Two right-of-way fences run through the site. One is an old right-of-way fence 53 m west of the US 54 centerline. The other runs 28 m west of the centerline. Testing investigations were confined to the 28-m right-of-way. During the initial portion of the data recovery phase, the NMSHTD instructed TRC that the proposed construction right-of-way extended to the 53-m fence. For this reason, the initial portion of the data recovery investigations included the area extending all the way to this outer fence. It was subsequently determined, however, that all construction activities were to be confined to the area between the US 54 centerline and the fence 28 m to the west, and data recovery was discontinued beyond this line. Areas tested beyond the 28-m fence were mapped, described, stabilized, and covered with tarp. The backhoe scrape and trenches between 28 m and 53 m west of centerline were backfilled.

Previous Investigations

Marshall and Marshall (1998) described the site as a sherd and lithic scatter with three charcoal-stained features, extending over a 63 x 30 m area. Abundant burned bone fragments were observed both within and around the features. A sample of artifacts recorded during survey included 70 sherds, 14 pieces of chipped stone, two hammerstones, one metate fragment, numerous burned bone fragments, and fire-cracked rock. The ceramics included 60 El Paso Brownware sherds and 10 sherds of El Paso Polychrome. The chipped stone artifacts included two cores, 11 flakes, and one projectile point fragment. Material types included 11 pieces of silicified

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shale and one piece each of black, gray, and brown chert. Two limestone hammerstones and one sandstone, slab-basin metate fragment also were present. The site was described as occurring mostly outside of the right-of-way. The portion of the site included within the right-of-way was depicted on the survey map as comprising an area 63 m long but only 4 m wide. Much of the site was described as buried by sand deposits.

Testing Investigations

TRC conducted testing at LA 115260 in the fall of 1999 (Acklen *et al.* 1999). The testing investigations found that certain characteristics of the site did not match the survey description. Specifically, the topography, feature assemblage, and spatial relationship of the site with the right-of-way are notably different from what the survey description would suggest. The survey description stated that the site was within an area of mesquite coppice dunes, but testing found the site occurs in an almost level area with sheet sand deposits. The survey description described three charcoal features with abundant burned bone, but only one such feature was documented during testing. Finally, the surveyed site was described as mostly outside of the right-of-way while most of the surface remains documented during testing occurred inside of the right-of-way. Considerable effort spent on examining the area around the site failed to resolve these discrepancies.

Surface Investigations

Testing investigations were confined to the 28-m right-of-way. During testing, the surface was carefully inspected and mapped with a total station instrument (Figure 9.1). A site datum was established just outside (west) of the 28-m right-of-way, and a topographic map of the site was produced. LA 115260 was originally recorded as extending 63 m north-south x 30 m east-west, with a total site area of 2,136 m^2. TRC's testing investigations determined the site measures 89 m in length along the right-of-way fence and a maximum 24 m in width (Figure 9.1), based on observed distributions of surface materials. Within the 28-m right-of-way, cultural materials covered a 70 x 14 m area, or about 980 m^2. The average width of the site outside the 28-m right-of-way is 16 m. All surface artifacts within the 28-m right-of-way were collected, Feature 1 (see below) was described and trowel tested to determine its depth potential, and test excavations were conducted. Surface inspection revealed that LA 115260 contained a low-density surface scatter of lithic and ceramic artifacts, with a denser concentration of artifacts in and around Feature 1, with another discrete cluster of ceramic sherds at the northern end of the site (Figures 9.1 and 9.2).

Feature 1, a large surface midden stain with a high density of artifacts, was defined near the center of the site. This feature was situated in a low-lying area between extensive sheet sand deposits. The surface limits of Feature 1 extended approximately 9 m north-south x 10 m east-west. It straddled the 28-m right-of-way fence, with roughly 75 percent of the surface stain lying within the right-of-way. The portion of Feature 1 within the 28-m right-of-way measured 8.6 m in length x 3.1 m wide. Surface density of materials within and around Feature 1 was considerably lower inside the right-of-way than on the other side of the fence.

Subsurface Testing

Besides trowel testing within Feature 1, the subsurface testing strategy for LA 115260 included the manual excavation of seven shovel tests, and the excavation of backhoe trenches along the length of the site within the right-of-way (see Figure 9.1). Two backhoe trenches (BHT 1 and 2) were excavated at LA 115260 during testing. The trenches were placed roughly 4–6 m east of (inside) the edge of the 28-m right-of-way. In addition, seven shovel tests, each measuring 1.0 x 0.5 m, were excavated in feature areas and within the 28-m right-of-way.

The results of the shovel testing uncovered buried archaeological remains outside the observable surface remains of Feature 1, both to the south and north. Trowel tests excavated within Feature

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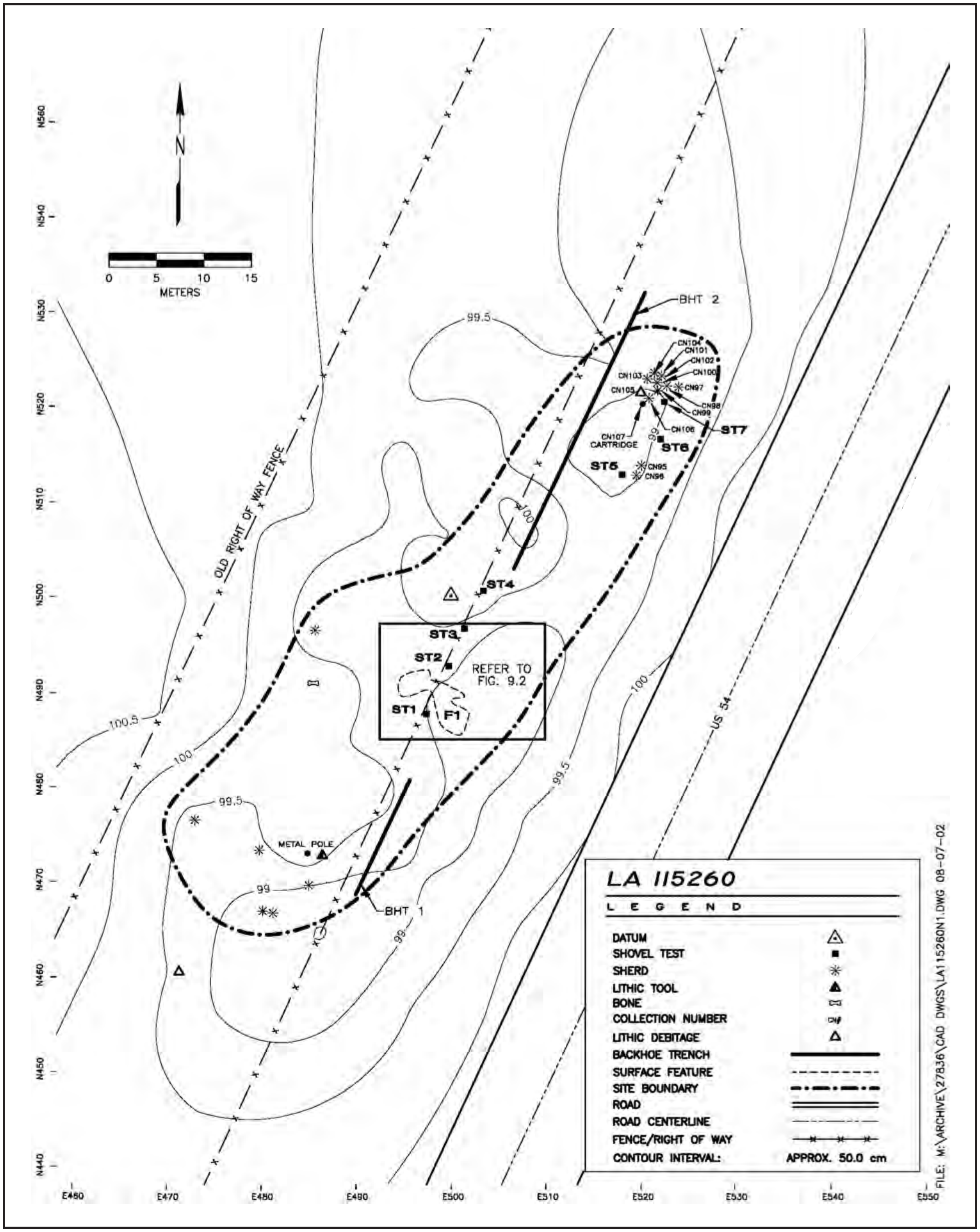

Figure 9.1 LA 115260, testing phase site map.

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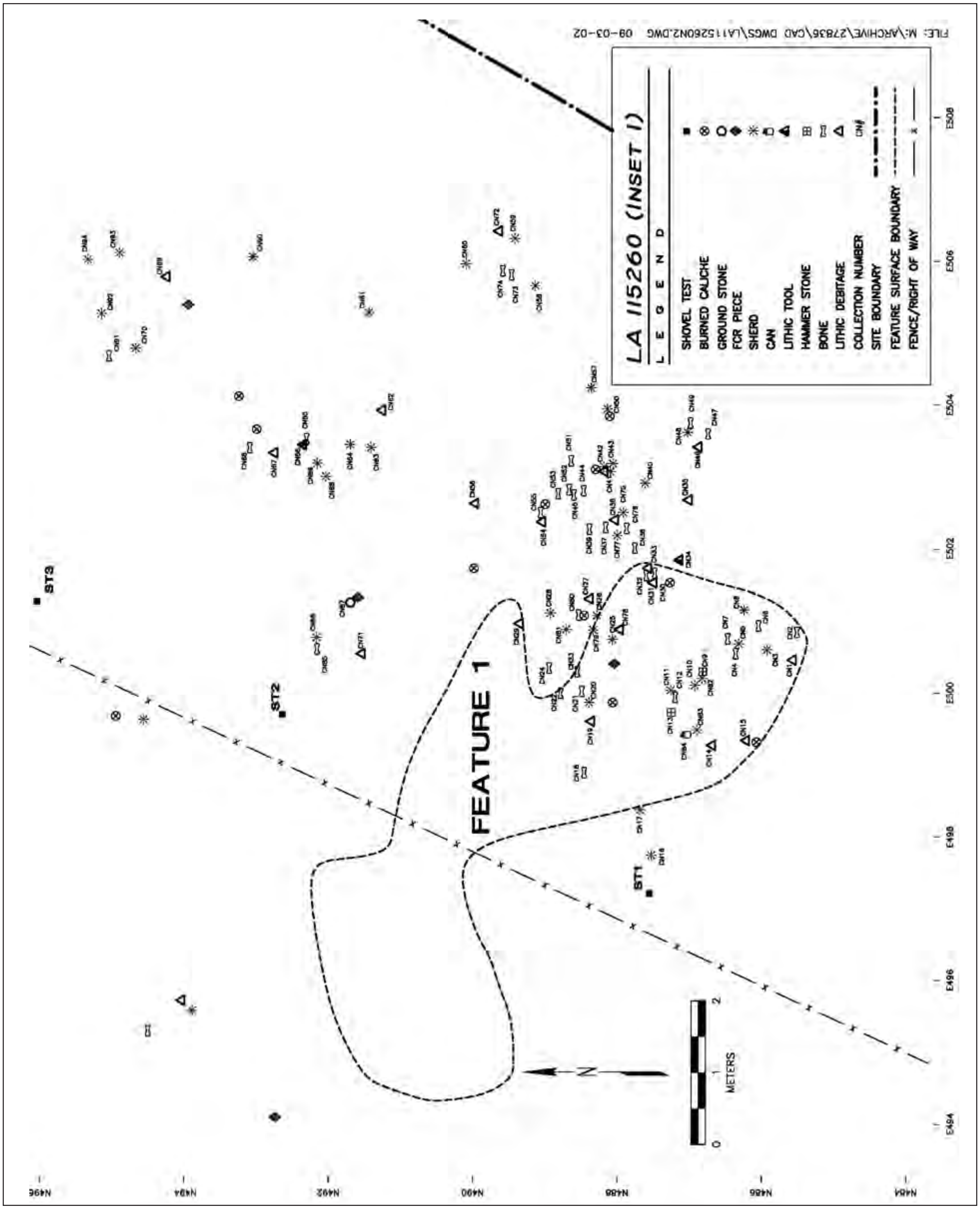

Figure 9.2 **Feature 1 area, showing surface extent of the midden stain and surface artifacts collected during the testing phase.**

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1 revealed up to 0.25 m of fill overlying archaeologically sterile subsoil. Backhoe trenching also revealed a thick Ab horizon to the northeast of Feature 1. Artifacts were recovered from intact deposits in the vicinity of Feature 1, in STs 1, 2, 3, and 4, and most of the 130 items recovered from subsurface contexts, including numerous bone fragments, came from these shovel tests. To the north, modern bottle glass, cans, and a single brownware sherd were recovered from the shallow subsurface in ST 5. No other subsurface materials were recovered in the northern portion of the site, and the ceramic concentration here appears to be surficial. Table 9.1 summarizes the findings of the shovel test pits, including depths, soil descriptions, and cultural materials recovered.

Site Stratigraphy and Geomorphology

Excavations at LA 115260 revealed a relatively intact stratigraphic sequence including *in situ* archaeological materials. Historic to recent sands have blanketed older sedimentary units, reducing the surface visibility of archaeological remains. Most cultural materials and stains are exposed in slight depressions, especially where Unit 3 (Ab horizon) or Unit 4 (Bk horizon) are exposed.

The uppermost deposit at the site (Unit 1) consists of 10–75 cm of historic to recent sands and disturbed fill (Figure 9.3). Throughout the site, these sediments are light brown (7.5YR6/4, d) and have a loamy sand texture. In BHT 1, the Unit 1 sediments exhibit an abundance of carbonate nodules. These nodules indicate that the sediments are disturbed and are probably the result of previous construction along the highway right-of-way. In contrast, other Unit 1 sediments lack carbonate nodules, are laminated, and appear to be of natural origin. The presence of a recent glass fragment 60 cm bgs suggests that the Unit 1 sands

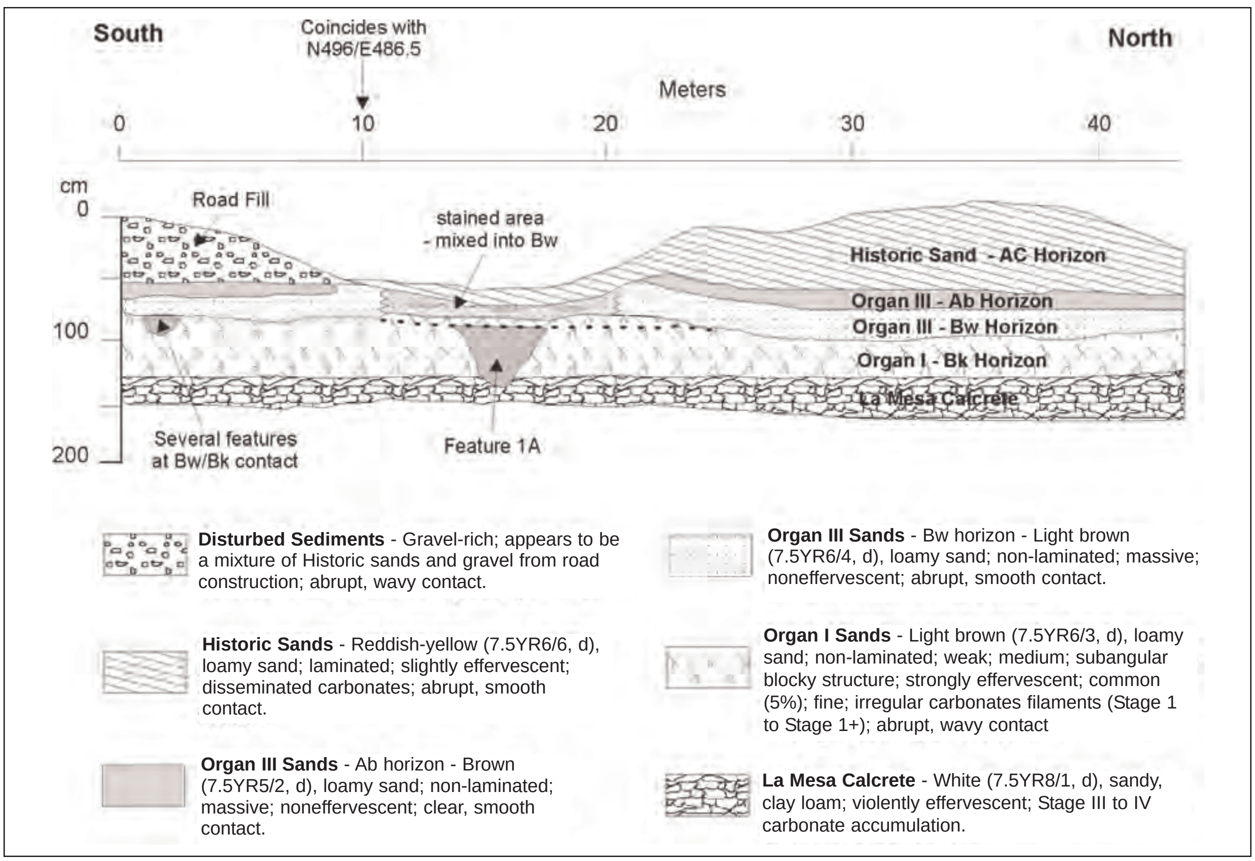

Figure 9.3 Generalized Stratigraphy for LA 115260.

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Table 9.1 Shovel Test Results for LA 115260

Test No.	North	East	Location	Depth	Surface Soils	Cultural Evidence	Stratum 1	Cultural Evidence	Stratum 2	Cultural Evidence
ST 1	485.75	497.24	South of Feature 1	0.3 m	Friable, light brown sands with some organics (7.5YR6/4), surface to 0.04–0.14 m	7 UB ceramic, 3 flakes, 24 bones, 1 GS	Semi-compact, light brown, sandy loam (7.5YR6/3), 0.04–0.14—0.15 m	Midden fill at 0.15 m dark, ash sand with charcoal	Compact, light brown, sandy loam with caliche nodule inclusions (7.5YR6/4), 0.15–0.3+ m	Midden fill contained within this strata depth extent 0.25+ m
ST 2	492.59	499.79	North of Feature 1	0.34 m	Friable, light brown sands (7.5YR6/4), surface to 0.02–0.1 m	2 flakes	Semi-compact, light brown, sandy loam (7.5YR6/3), 0.02-0.1 – 0.34+ m	45 bones, 2 UB ceramics, 6 flakes, 1 burned caliche 0.1–0.34 m	Dark, ash-stained fill of Feature 1 in northwestern portion of unit, charcoal present.	Feature 1 fill at 0.26–0.34+ m in northwestern portion of unit
ST 3	496	501.37	North of Feature 1	0.58 m	Friable, light brown sands (7.5YR6/4), surface to 0.07 m	None	Semi-compact, light brown, sandy loam (7.5YR6/3), 0.07–0.32 m	1 bone, 2 flakes, 1 UB ceramic 0.2–0.3 m	Compact, light brown, sandy loam (7.5YR6/4), 0.32–0.58+ m, contact Feature 1 dark ash stain sand at 0.58 m south ½ of unit	1 bone, 2 flakes, 1 rim sherd 0.3–0.58 m
ST 4	500.51	503.43	North of Feature 1	0.8 m	Friable, light brown sands (7.5YR6/4), surface to 0.08 m	None	Semi-compact, light brown to brown, sandy loam with trace of caliche (7.5YR6/3-5/4), 0.08–0.4 m	None	Compact, brown to strong brown, sandy loam (7.5YR5/4-5/8), 0.4–0.8+ m	1 UB ceramic, 1 burned caliche 0.4–0.5 m
ST 5	512.74	518.05	North-central	0.6 m	Friable, light brown sands (7.5YR6/4), surface to 0.08 m	None	Semi-compact, light brown to brown, sandy loam (7.5YR6/3-5/4), 0.08–0.6+ m	5 modern bottle glass, 2 cans, 1 UB ceramic	N/A	N/A
ST 6	516.47	522.08	North	0.4 m	Friable, light brown sands (7.5YR6/4), surface to 0.05 m	8 modern bottle glass	Semi-compact, light brown to brown, sandy loam (7.5YR6/3-5/4), 0.05–0.4+ m	None	N/A	N/A
ST 7	520.38	522.39	North	0.3 m	Friable, light brown sands (7.5YR6/4), surface to 0.05 m	None	Semi-compact, light brown to brown, sandy loam (7.5YR6/3-5/4), 0.05–0.3+ m	None	N/A	N/A

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were deposited in the past 50 years. It is possible cultural materials were mixed into this unit during prior construction, especially in BHT 1 where the sediments are disturbed. Materials found in this context would lack stratigraphic integrity. Features are apparent on the site surface only where Unit 1 is absent or very thin.

Underlying the historic sands is Unit 2, which is 5–22-cm thick and appears to be an Ab horizon. This unit reaches its maximum thickness in the north half of BHT 2, although it also was present at the center of BHT 1. The unit consists of a pinkish-gray, loamy sand (7.5YR6/2, d). The humate-enriched appearance of this unit makes it stand out from the sediments above and below it. Based on its stratigraphic position and the amount of carbonate in the accompanying Bk horizon (see Unit 4 below), this unit appears to correlate with Organ I or Organ II (7,000–1,100 B.P.) as described by Monger (1993), or with the Q3 sediments (7,300–100 B.P.) described by Blair *et al.* (1990). The Ab horizon is significant because it indicates a stable surface that supported vegetation and may have been favorable for prehistoric inhabitants.

Unit 2 transitions into a slightly compact, non-calcareous, sandy loam with relatively high chromas (Unit 3). Based on these properties, this unit is considered a cambic Bw horizon. This soil/sediment unit appears to match the characteristics of the Organ III (100–1,100 B.P.) eolian unit described by Monger (1993). The majority of the cultural materials observed at this site appear to be associated with this Bw horizon. This is something of a curious association because conventional wisdom would expect occupations to be associated with the more stable, overlying Ab horizon. Instead, many of the features appear to originate within the lower 10 cm of the Bw horizon and intrude into the underlying Bk horizon. Such an association suggests that the site was occupied while the eolian sands were actively accumulating.

Unit 3 transitions into a calcareous Bk horizon that is light brown (7.5YR6/4, d) and has a loamy sand texture (Unit 4). The most distinct property of this soil/sediment unit is a Stage I carbonate accumulation that makes the sediments more durable than the overlying sediments. The durability of this unit may have been a factor in the selection of this site for habitation, as pits and other subsurface facilities that intruded into this horizon would not collapse as easily as they would in the more recent sands. The Stage I accumulation of carbonates suggests that this unit may correlate to the Organ I eolian unit (2,200–7,000 B.P. after Monger 1993). Thus, this unit has the potential to yield in situ, non-intrusive Middle and Late Archaic remains, although no such remains were encountered. It is also possible that some later (Formative) materials could have intruded into the upper portion of Unit 4 due to foot traffic. Individuals occupying what was then the site surface could have trampled materials into this lower Bk horizon. Trampling of cultural materials in sandy sediments can result in vertical displacement of up to 10 cm (Schiffer 1987). As a result, some Formative cultural materials may have been displaced downward into the upper portions of the Bk horizon. Excavators were alerted to this possibility, especially considering the position of several hearths at or near the Bw/Bk contact

The basal unit at LA 115260 is the La Mesa calcrete. This unit is white to pinkish-white (7.5YR8/1–8/2, d) and has a clay loam texture. In excavations, this unit is evident by its white color and hardness. The calcrete provides a barrier that cannot easily be breached by the backhoe or hand excavations, although cultural features do occasionally penetrate the calcrete. Based on studies by Gile *et al.* (1981), Blair *et al.* (1990), and Monger (1993), the La Mesa calcrete is Mid-Pleistocene in age (ca. 250,000 B.P.) and, thus, predates accepted dates for the human occupation of North America. For this site, the calcrete is considered to be the sterile level for archaeological excavations.

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Chapter 9

Data Recovery

Strategy

Data recovery excavations at LA 115260 were initiated in the spring of 2000. During data recovery, the datum was assigned the grid provenience of N500/E500 with an arbitrary elevation of 100 m. Originally, the data recovery plan called for investigations to be conducted from the centerline of the existing alignment of US 54 to the 28-m fence. Under the direction of the NMSHTD, the area was later expanded to the 53-m fence. During the course of the data recovery investigations, the right-of-way boundary once again was established at the 28-m fence.

The data recovery plan for LA 115260 called for the excavation of a large block over Feature 1 (the midden stain) east of the 28-m fence. In addition, a 2 x 2 m unit was to be excavated on top of a potential stain associated with the A horizon, which was encountered in BHT 2 in the northern portion of the site during the testing phase. Additional 1 x 1 m units were to be excavated to better define the extent and content of cultural deposits. Subsequently, stripping in the vicinity of Feature 1 was to be carried out and any features uncovered were to be sectioned and excavated. Based upon a memo dated December 1, 1999, from Craig Conley and Michael Dussinger of the NMSHTD, the area between the 28-m and 53-m fences was also to be tested mechanically. Given the archaeological richness of Feature 1 and its vicinity, it was suspected that this locality could contain important Late Formative deposits. The aereal expansion of the data recovery investigations was coordinated with Camille Sayer of Taschek Environmental on behalf of the NMSTHD, and Brett Ruby and Jim Bowman of Fort Bliss.

Subsurface data recovery investigations commenced with the placement of a hand excavation block over Feature 1, east of the 28-m fence (Figures 9.4 and 9.5). The block covered an area 9 m north-south x 8–11 m east-west and uncovered a total of 74 m^2. The block excavation limits encompassed two of the shovel tests (ST 1 and 2) excavated during the testing phase. Including backhoe trenches and all hand excavations, a total of 111 m^2 was excavated east of the 28-m fence, or just over 11 percent of the site area on this side of the fence.

Data recovery efforts west of the 28-m fence included an irregular, 11 x 12 m stripped area over Feature 1 (adjacent to the hand excavation block on the east side of the fence), referred to here as the West Scraped Area (Figure 9.5). This area uncovered roughly 78.9 m^2, including the small portion of Feature 1 that extended west of the 28-m fence. The West Scraped Area removed the Feature 1 surface stain, and revealed several smaller features intruding down to the top of the Organ I Bk horizon.

Hand and machine excavations in the Feature 1 locality exposed subsurface portions of the Feature 1 midden stain and uncovered a dense concentration of smaller features underlying, and outside of, the Feature 1 stain (Figure 9.6). These smaller features originated in the Organ III Bw horizon, and most intruded into the Organ I Bk horizon.

Eight backhoe trenches, each 0.75-m wide and varying in length, were excavated west of the 28-m fence, totaling 137.2 linear meters (102.9 m^2) (see Figure 9.5). Backhoe Trenches 3 and 4 exposed seven additional features, indicating the dense concentration of subsurface facilities in the Feature 1 continues to the south on the west side of the 28-m fence. These features were mapped, but before further documentation of these and the other backhoe trenches could commence, data recovery efforts on the west side of the 28-m fence were suspended, and investigations were once again restricted to the east side of the fence (see above).

Including hand excavations and backhoe trenches, a total of 213.9 m^2 (just over 10 percent) of the entire site area was excavated. The total volume of earth excavated by hand was 13.47 m^3, and including mechanical trenches, the total volume was 59.37 m^3.

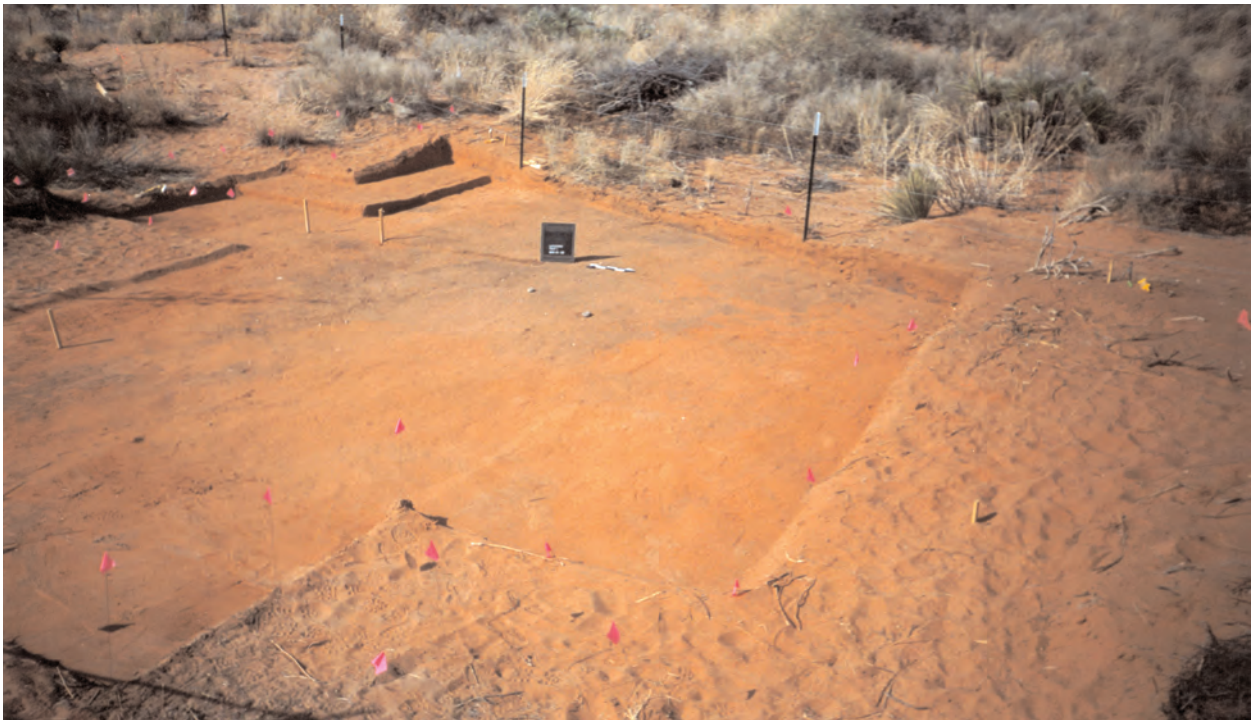

Figure 9.4 Excavation block at LA 115260, showing exposure of the dark midden stain, Feature 1.

After all hand and backhoe trench excavations had been completed, mechanical stripping was carried out east of the 28-m fence. Two scraped areas were defined, one south and one north of the Feature 1 hand excavation block (see Figure 9.5). The South Scraped Area extended 7 m south of the hand excavation block limits and averaged 8.0 m east-west, covering roughly 56 m^2. Six features were uncovered in the South Scraped Area (see Figure 9.6). The North Scraped Area extended 34.8 m north of the hand excavation block. This block ranged from 1.2 to 10.4 m east of the 28-m fence, covering roughly 220 m^2. No features were uncovered in the North Scraped Area. The two scraped areas together exposed 276 m^2 of the site east of the 28-m fence.

Data Recovery Results

A total of 35 features was documented during data recovery. (Figure 9.6; Table 9.2). Of these only the features east of the 28-m fence were fully excavated. Nineteen features were excavated within the hand excavation block and adjacent South Scraped Area. Most of these features underlay the Feature 1 midden stain. In some cases, what were originally recorded as two separate features merged together upon excavation, and so some numbers were dropped to facilitate analysis and discussion (i.e., Features 4 and 18 were deleted and became parts of Features 3 and 16, respectively). Feature 5, a small midden stain, includes three shallow pockets designated Features 5.1, 5.2, and 5.3. Among the excavated features, the following types were defined during analysis: large midden stain (Feature 1); smaller, subsurface midden stains (n=3), thermal features (n=4); non-thermal pits (n=2); postholes (n=5); amorphous ash stains (n=2); and non-cultural krotavinas (n=2). The following presents descriptions of the excavated features, and this is followed by a discussion of the additional feature uncovered east of the 28-m right-of-way.

Large Midden: Feature 1

As discussed above, Feature 1 was first observed on the surface during the testing phase, appearing

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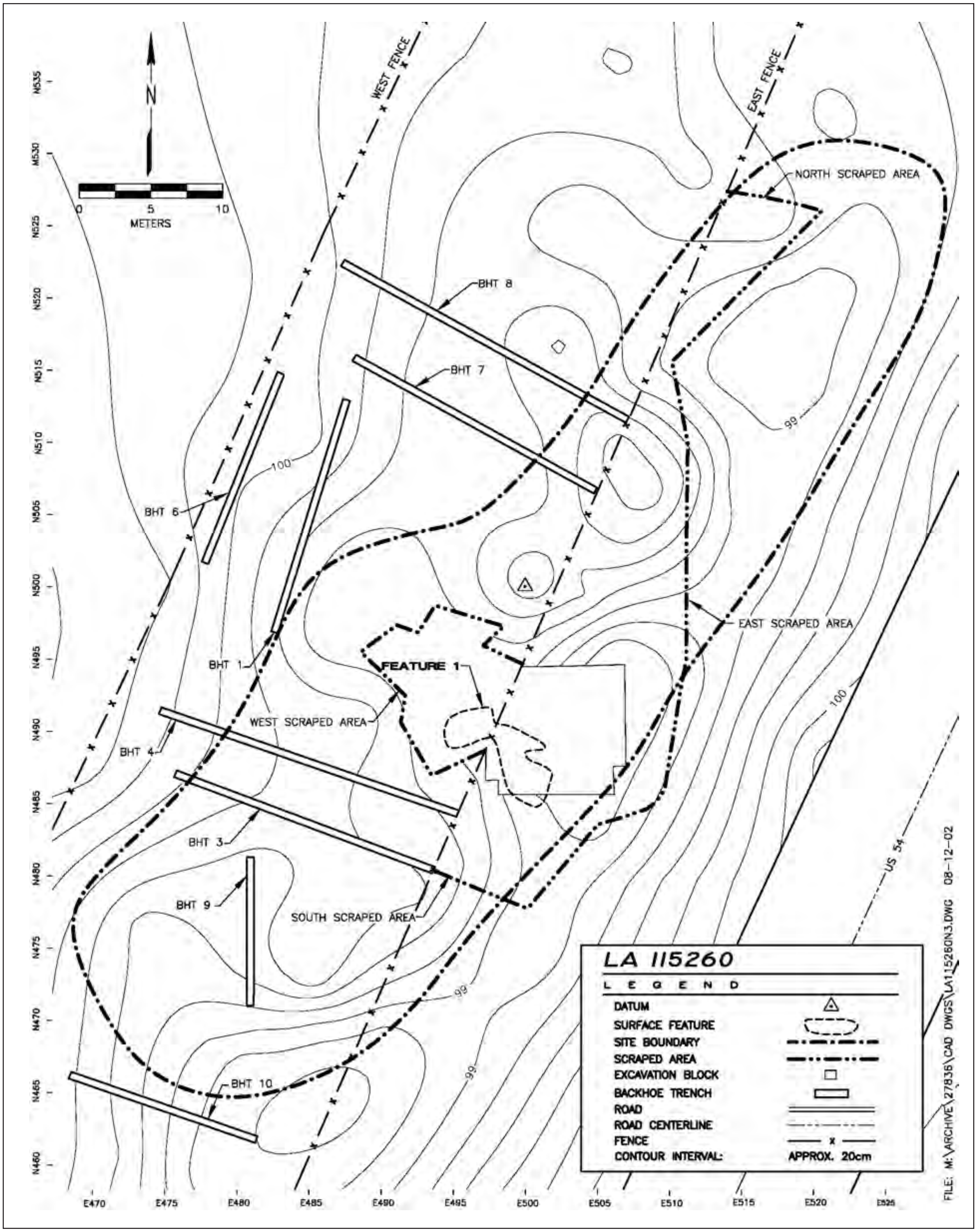

Figure 9.5 LA 115260, data recovery site map.

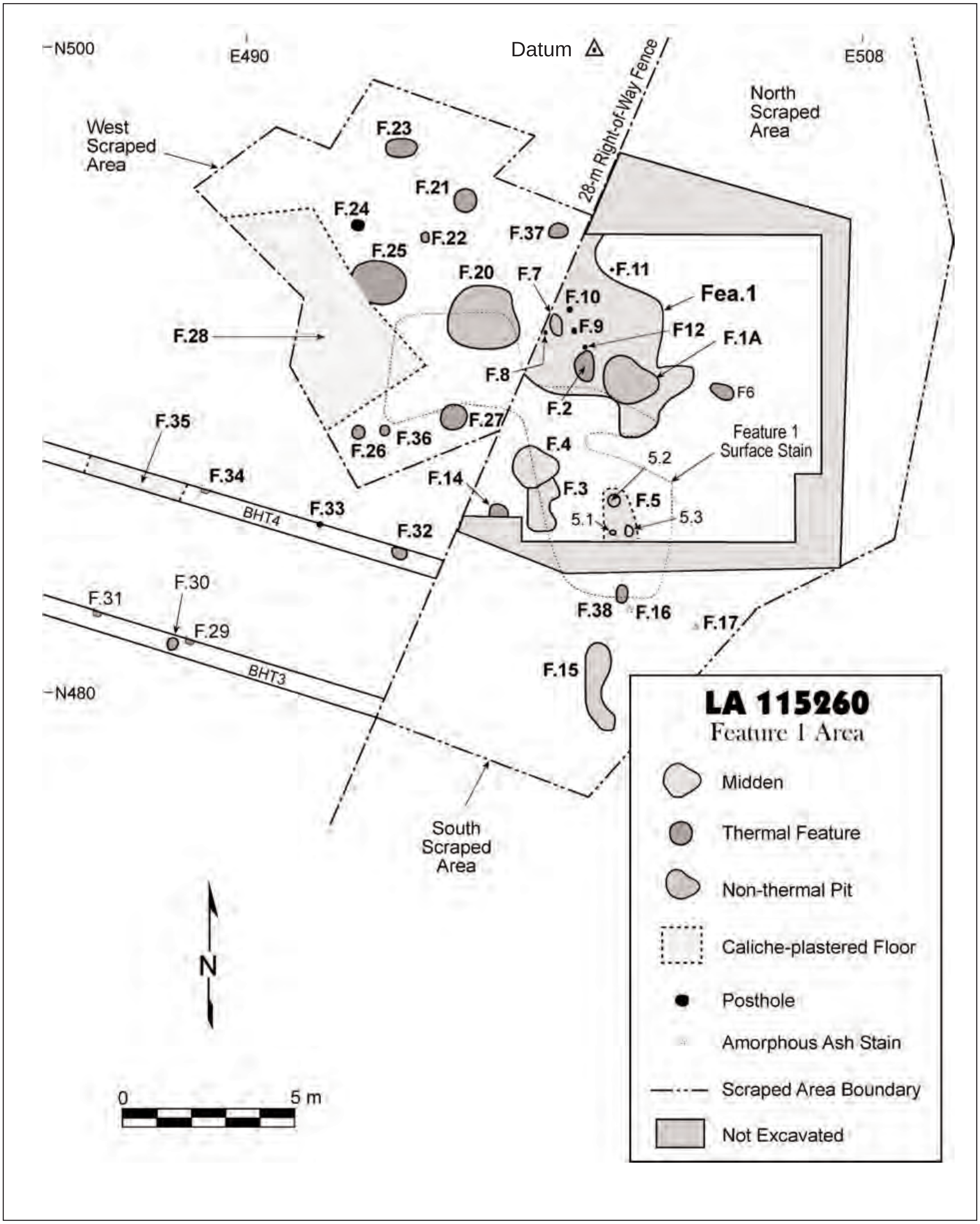

Figure 9.6 LA 115260, Feature 1 area.

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Table 9.2 Features at LA 115260

Feature	North	East	Block	Type	Plan Shape	Morphology	L (m)	W (m)	Depth (m)	Cultural Materials, Comments
1	490	500	1	Midden	Amorphous	Amorphous	12.6	8.66	0.3	Ceramics, lithics, bone
1A	489.4	501.22	1	Non-thermal pit (storage?)	Irregular	Basin/ cylin-drical	2.46	1.8	0.41	Ceramics, lithics, bone
2	489.8	499.95	1	Large thermal feature	Oval	Basin	0.89	0.48	0.1	Ceramics, lithics, bone
3	486.5	498.6	1	Subsurface Midden stain	Amorphous	Amorphous	2.6	1	0.22	Ceramics, lithics, bone
5 (includes 5.1, 5.2, 5.3)	485.5	501	1	Subsurface Midden stain	Amorphous	Amorphous	2	1	0.09	
6	489.66	503.85	1	Large thermal feature	Oval	Basin	0.7	0.45	0.05	Ceramics, lithics, bone, burned caliche
7	491.23	498.93	1	Non-thermal pit	Oval	Basin	0.66	0.38	0.14	Burned bone
8	491.07	498.56	1	Posthole	Circular	Cylindrical	0.13	0.12	0.1	Burned bone, 1 burned caliche
9	491.06	499.48	1	Posthole	Circular	Cylindrical	0.14	0.12	0.12	None
10	491.6	499.36	1	Posthole	Circular	Cylindrical	0.12	0.12	0.1	None
11	492.1	500.82	1	Posthole	Circular	Cylindrical	0.16	0.16	0.13	None
12	490.5	499.75	1	Posthole	Circular	Cylindrical	0.15	0.15	0.04	1 UB ceramic, 1 bone frag-ment
13	490	500.23	1	Rodent burrow	Oval	Basin	0.52	0.3	0.25	Ceramics, lithics, bone; non-cultural feature
14	486	497.5	1	Small thermal feature	Unknown	Basin	0.6	>0.35	0.25	Burned caliche
15	480.71	500.31	South Scraped Area	Subsurface midden stain	Amorphous	Lens	2.6	0.8	0.07	Ceramics, burned caliche

Table 9.2 Features at LA 115260 (continued)

Feature	North	East	Block	Type	Plan Shape	Morphology	L (m)	W (m)	Depth (m)	Cultural Materials, Comments
16	482.68	501.3	South Scraped Area	Amorphous ash stain lens	Amorphous	Lens	2.3	1.4	0.06	Redeposited ash stain surrounding Fea. 38
17	482.34	503.12	South Scraped Area	Amorphous stain	N/A	N/A	?	?	0.01	No feature form
19	491.41	502.04	South Scraped Area	Rodent and insect burrows	Oval	Basin	0.9	0.55	0.11	Non-cultural feature
20	491.51	496.5	West Scraped Area	Storage pit?	Oval	Unknown	1.9	1.4	–	Unknown (Not Excavated)
21	495.09	496.18	West Scraped Area	Thermal feature	Circular	Unknown	0.7	0.7	–	Unknown (Not Excavated)
22	493.2	495.2	West Scraped Area	Thermal feature	Oval	Unknown	0.3	0.2	–	Unknown (Not Excavated)–Posthole?
23	496.46	494.42	West Scraped Area	Thermal feature	Oval	Unknown	0.8	0.6	–	Unknown (Not Excavated)
24	494.17	493.09	West Scraped Area	Posthole	Circular	Unknown	0.18	0.18	–	Posthole (Not Excavated)
25	492.64	493.71	West Scraped Area	Thermal feature	Circular	Unknown	1.1	1.1	–	Unknown (Not Excavated)
26	488.07	493.29	West Scraped Area	Thermal feature	Circular	Unknown	0.4	0.4	–	Unknown (Not Excavated)
27	488.47	495.87	West Scraped Area	Thermal feature	Circular	Unknown	0.6	0.6	–	Unknown (Not Excavated)
28	491.34	491.72	West Scraped Area	Caliche floor	Oval	Unknown	0.8	3.5	–	Structural remains? (Not Excavated)
29	482.46	488.61	BHT 3	Thermal feature	Oval	Unknown	0.2	0.15	–	Unknown (Not Excavated)
30	482.5	488.05	BHT 3	Thermal feature	Circular	Unknown	0.5	0.47	–	Unknown (Not Excavated)
31	483.17	485.67	BHT 3	Thermal feature	Oval	Unknown	0.2	0.02	–	Unknown (Not Excavated)

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Table 9.2 Features at LA 115260 (continued)

Feature	North	East	Block	Type	Plan Shape	Morphology	L (m)	W (m)	Depth (m)	Cultural Materials, Comments
32	484.87	494.58	BHT 4	Thermal feature	Oval	Unknown	0.6	0.4	–	Unknown (Not Excavated)
33	485.71	492	BHT 4	Posthole	Circular	Unknown	0.1	0.1	–	Posthole (Not Excavated)
34	486.79	488.71	BHT 4	Thermal feature	Unknown	Unknown	–	–	–	Gone (Not Excavated)
35	487.61	486.32	BHT 4	Caliche floor	Oval	Unknown	0.7	3	–	Structural remains? (Not Excavated)
36	488.08	493.87	West Scraped Area	Thermal feature	Circular	Unknown	0.2	0.2	–	Unknown (Not Excavated)
37	494.02	498	West Scraped Area	Thermal feature	Circular	Unknown	0.3	0.3	–	Unknown (not excavated)
38	483.2	500.88	South Scraped Area	Small thermal feature	Circular	Basin	0.6	0.5	0.12	Hearth

as an irregular midden stain in a low-lying area between extensive sheet sand deposits. Covering 9 m north-south x 10 m east-west on the surface, it extended on both sides of the 28-m fence. During data recovery, the block excavation uncovered the subsurface portions of Feature 1 (Figure 9.6). Only 5.2 m x 6.4 m of the subsurface midden was within the 28-m right-of-way with the remainder to the west (which was machine stripped to the base of the Feature 1 sheet midden stain). The midden extended 30 cm in maximum depth, below which numerous, discrete features became evident, intruding into the underlying, culturally sterile subsoil (i.e., the Organ I Bk horizon). The base of Feature 1 was highly oxidized in places, indicating intense burning of this locality. A moderate to high density of artifact debris was recovered from Feature 1, including ceramics and lithics, and faunal, floral, and human remains (see below). The presence of bone in the Feature 1 midden reflects the comparatively excellent preservation conditions here as opposed to most of the other US 54 sites.

Feature 1 may mark the remains of one or more structures (especially considering the presence of postholes underlying), but no clear house pit outlines or posthole patterns could be discerned. Insofar as Feature 1 does mark a structure location, burning of one or more such structures is indicated by the oxidized surface underlying portions of the midden stain. It is also possible that Feature 1 represents a refuse area associated with nearby structures, the implication here being that trash was dumped at this locality following abandonment of the various subsurface facilities underlying Feature 1.

Small, Subsurface Midden Stains

Three features were defined as small, subsurface midden stains, including Features 3, 5, and 15. Features 3 and 5 underlay the recorded surface portion of Feature 1, whereas Feature 15 lay south of Feature 1. All three of these were amorphous stains ranging from a few centimeters to a maximum depth of 22 cm. Three small, shallow depressions extended below the base of Feature 5, and these may represent separate pit features, although they appear to be natural undulations on a former ground surface. These features may represent discontinuous, subsurface portions of Feature 1,

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and/or eroded portions of this feature that were redeposited downslope.

Thermal Features

Four thermal features were excavated at LA 115260 (Features 2, 6, 14, and 38). Using the size classification defined for the US 54 project, these are segregated into small thermal features (Features 14 and 38), and large thermal features (Features 2 and 6), the discriminating criteria being a maximum diameter of less or more than 70 cm. One of these, Feature 14, was only partially exposed and it may, in fact, meet or exceed the 70 cm threshold (although its cross-section diameter was only 60 cm and so is treated here as a small thermal feature). These basin-shaped features are all oval or circular in plan, ranging 60–89 cm in maximum observed diameter (average 69.8 cm) and 5–25 cm in depth (average 13 cm). All of these features were characterized by ash-stained fill with variable amounts of charcoal. Burned caliche was noted in the fills of Features 6 and 14.

Feature 2 was located directly below Feature 1, and may mark the remains of a floor hearth within a structure (Figure 9.7, top). The feature was contained within an extremely oxidized stratum that underlay this portion of Feature 1. Feature 6 was located east of the Feature 1 midden, and appears to have been impacted by previous construction of US 54. The surviving portion of this feature suggests the remains of a hearth. Feature 14 was located just southwest of Feature 1. Feature 38 (Figure 9.7, bottom), uncovered in the South Scraped Area, was located below the southern edge of the Feature 1 surface stain and south of the subsurface portion of the large midden.

Non-thermal Pits

Two non-thermal pits were excavated at LA 115260, Features 1A and 7. Feature 1A was an unusual feature with a complex morphology (Figures 9.8 and 9.9). The upper portion of this large feature was irregular in plan with a basin-shaped cross-section. The upper fill consisted mainly of a semi-compact, strong brown (7.5YR5/6), sandy loam fill with scattered cultural materials, some ash-stained soils, and charcoal, which contrasted sharply with the compact, yellowish-red (5YR5/8), sand loam subsoil. Along the walls of this large upper basin, four troughs, or grooves, had been carved into the pit walls and sloped from the upper portion to the base of the feature. These troughs were all fairly regular in shape, ranging 28–30-cm wide and 1–5-cm deep. Their smooth interior surfaces suggest they may have been carved out using a large sherd.

Indented into the base of this feature was a small, oval, cylindrical pit measuring 40 x 30 cm and 14 cm in depth. The base of the pit was excavated into the caliche-dominated substratum. The fill within this lower pit was distinct from the overlying feature fill, consisting of a dark brown (7.5YR4/4), sand loam with ash and a small amount of charcoal.

Feature 1A is an unusual type of pit with no known counterparts in the Jornada Mogollon region, and its function remains unknown. It may be a leaching pit of some sort, or perhaps a *hueco* feature similar in function to those identified at the Jaca site (LA 6829; see Chapter 6). Another possibility considered was that this feature represents a small mine dug to obtain potting clay (see below). Lying directly below the Feature 1 midden, however, this may have been an intramural pit. Diatom analysis of a soil sample from this feature yielded three specimens of the aquatic diatom *Fragilaria tenera*, which was also the most frequent and ubiquitous species encountered in the US 54 samples (see Chapter 27). This species prefers slow-moving, low-conductivity water, although it is not clear if the presence of this diatom species relates to the use of Feature 1A, or to temporary filling of the feature with water following its abandonment. Feature 1A also contained maize phytoliths, which may or may not relate to the function of this feature.

The other non-thermal pit, Feature 7, was a small, oval pit measuring 66 x 38 cm and 14 cm in

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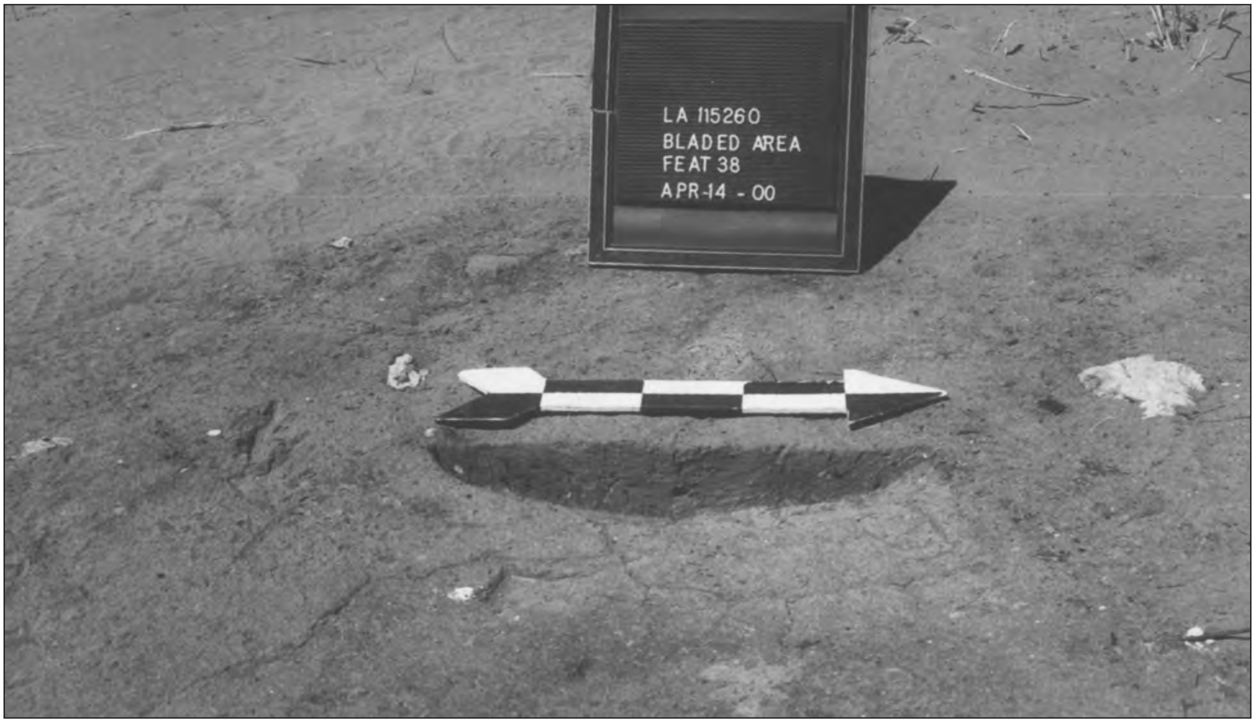

Figure 9.7 Thermal features at LA 115260. Top: Feature 2, located directly below Feature 1; may have been a floor hearth within a structure. Bottom: Feature 38, located beneath the southern edge of the Feature 1 surface stain.

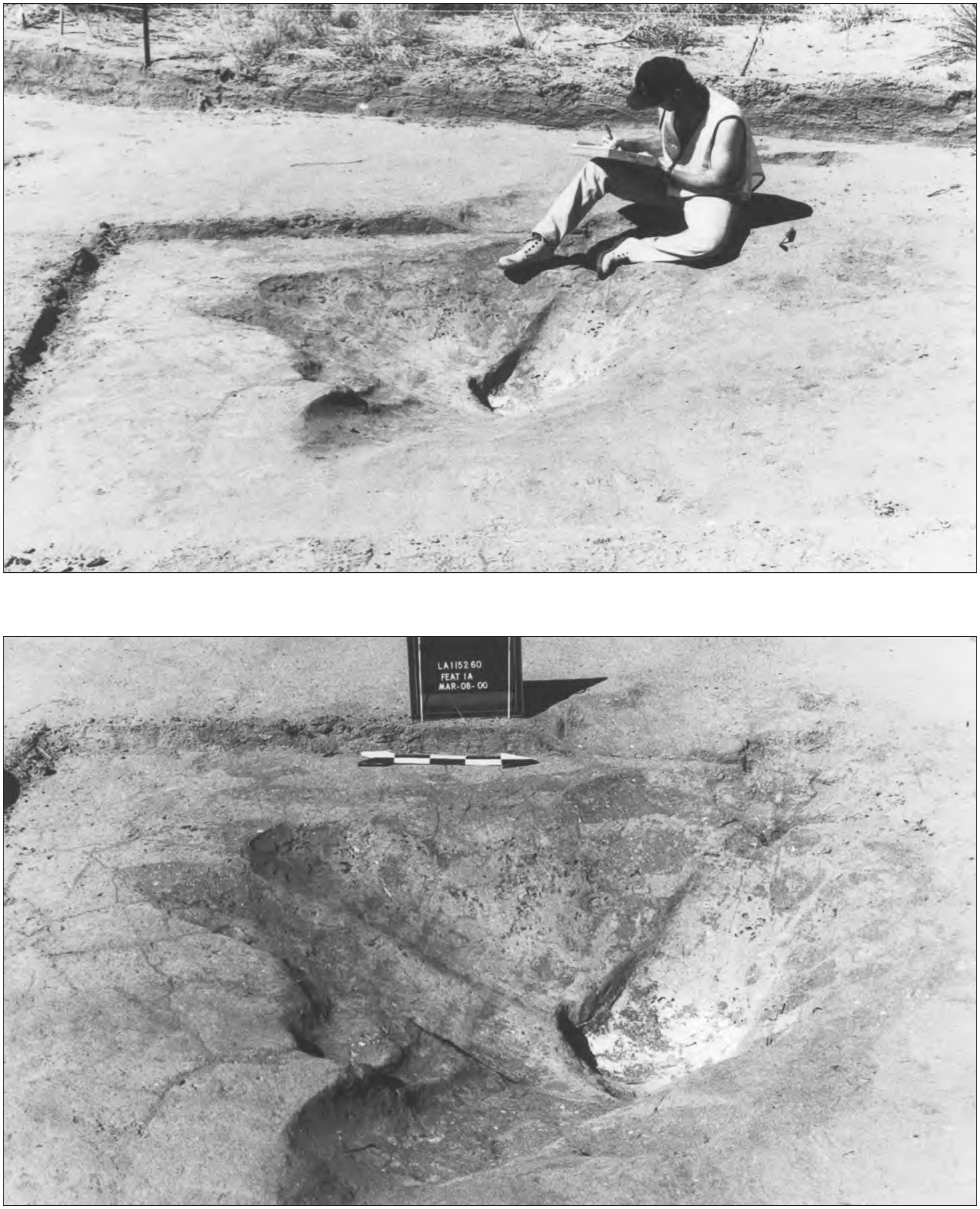

Figure 9.8 Feature 1A at LA 115260.

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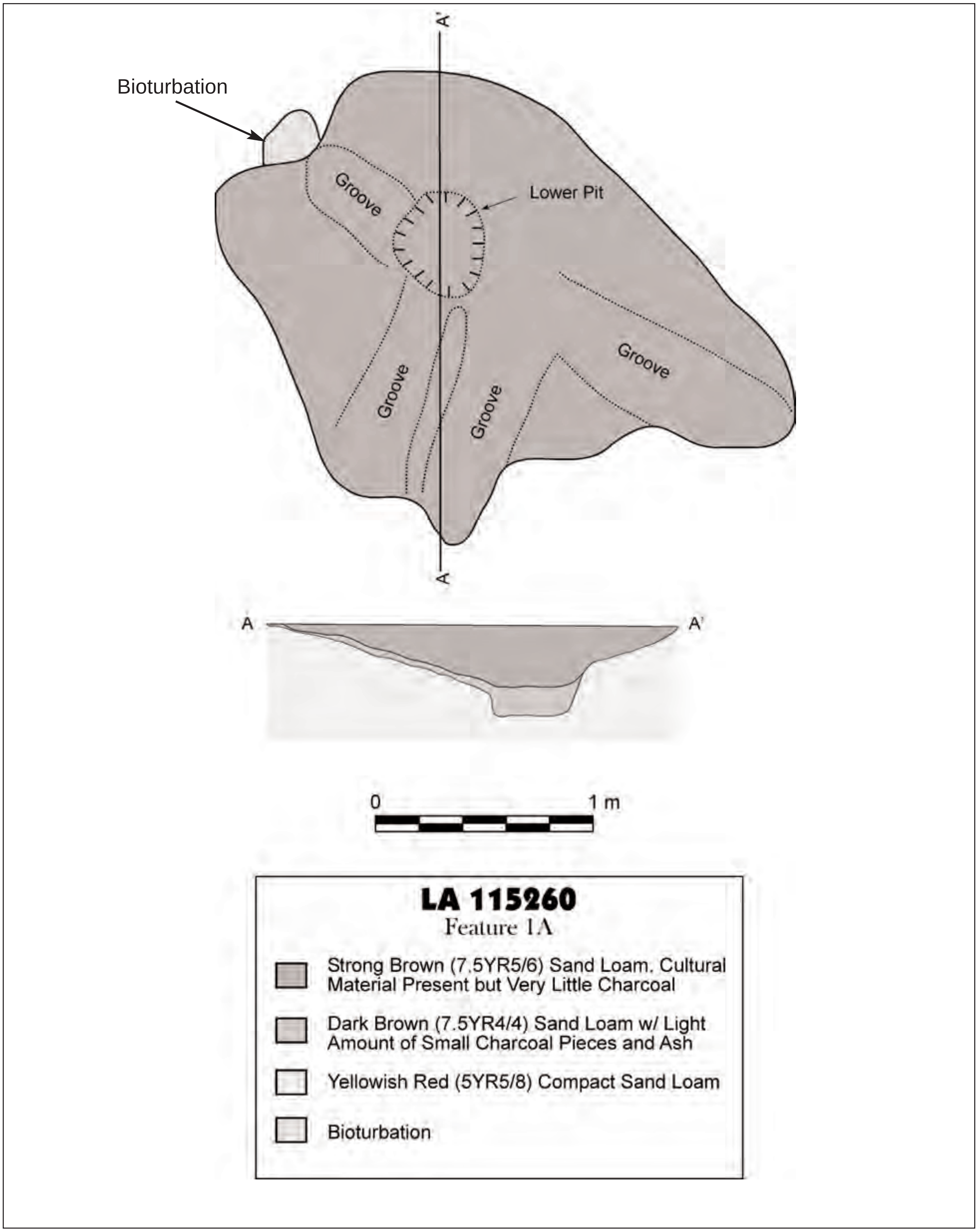

Figure 9.9 Plan and profile of Feature 1A at LA 115260.

depth, with a basin-to-cylindrical cross-section. It was also located directly beneath the Feature 1 midden, and was surrounded by several postholes (Figure 9.10). The feature contained ash-stained deposits with charcoal, similar in character to the Feature 1 midden deposits. It appears to be a small storage bin.

Postholes

Features 8–12 are postholes, all circular in plan with an average diameter of 13.7 cm, and an average depth of 9.8 cm. These posts do not form a recognizable pattern, but rather were arrayed randomly around Feature 7 and northwest of Feature 1A (see Figures 9.6 and 9.10). What sort of superstructure these posts supported (if indeed they are all from a single structure) remains unknown. At any rate, their presence indicates that the Feature 1 midden may mark the remains of one or more structures.

Amorphous Ash Stains

Feature 16 was a shallow, amorphous ash stain surrounding a probable hearth (Feature 38). The feature appears to be ash cleaned out of Feature 38 and redeposited on the surrounding surface. Nearby Feature 17 was apparently a similar, redeposited stain, although no specific record of this feature was present in the field documentation.

Features West of the 28-m Fence

Between the two right-of-way fences, mechanical stripping and trenching uncovered 18 features. These included features both beneath the Feature 1 midden and in areas to the south and southwest of this feature. These included two prepared caliche floors (Features 28 and 35), which are probably remains of structures, a large (probable storage) pit (Feature 20), two small postholes, and 13 thermal features, Including what appears to be a large roasting pit (Feature 25). None of these features were excavated, and only minimal documentation was completed before investigations on the west side of the 28-m fence were discontinued. Prior to backfilling of the stripped area and backhoe trenches, all of these unexcavated features were covered with a breathable membrane.

Northern Site Area

The data recovery plan originally called for a 2 x 2-m unit to be hand excavated in the northern portion of the site to investigate the A horizon exposed by backhoe trenching during the testing phase. However, geomorphological investigation during the data recovery phase revealed that that the A horizon was stratigraphically higher than the archaeological deposits and formed after the occupation of the site. No archaeological remains were identified within this A horizon. For this reason, the additional unit was not excavated here, although this area was uncovered within the northern portion of the North Scraped Area (see Figure 9.5). No subsurface features or buried archaeological remains were encountered in this portion of the site.

Spatial Patterning of Features at LA 115260

Excavations in the Feature 1 area and vicinity revealed a dense concentration subsurface features. The centerpiece of this concentration is Feature 1, the large sheet midden first documented on the surface during the testing phase. Underlying and surrounding Feature 1 is a rich variety of (mostly) smaller features, including hearths, at least one probable roasting pit, storage pits, and the enigmatic Feature 1A. The prepared caliche floors just west of Feature 1 likely mark the location of at least one structure, although the limited exposure of these precludes any clear picture as to what kind of structure(s) they represent (i.e., either detached, single-unit structures or portions of one or more room blocks). Feature 1 itself may mark the location of one or more structures, but the absence of clearly discernable house walls and floors leaves this suggestion tentative. It seems likely that Feature 1 and its smaller underlying features reflect a complex occupational and use history of this locality, possibly including small structures, extramural features, and (finally) a formal trash disposal area. The high concentration of ash within the Feature 1 area enhanced preservation conditions at the site.

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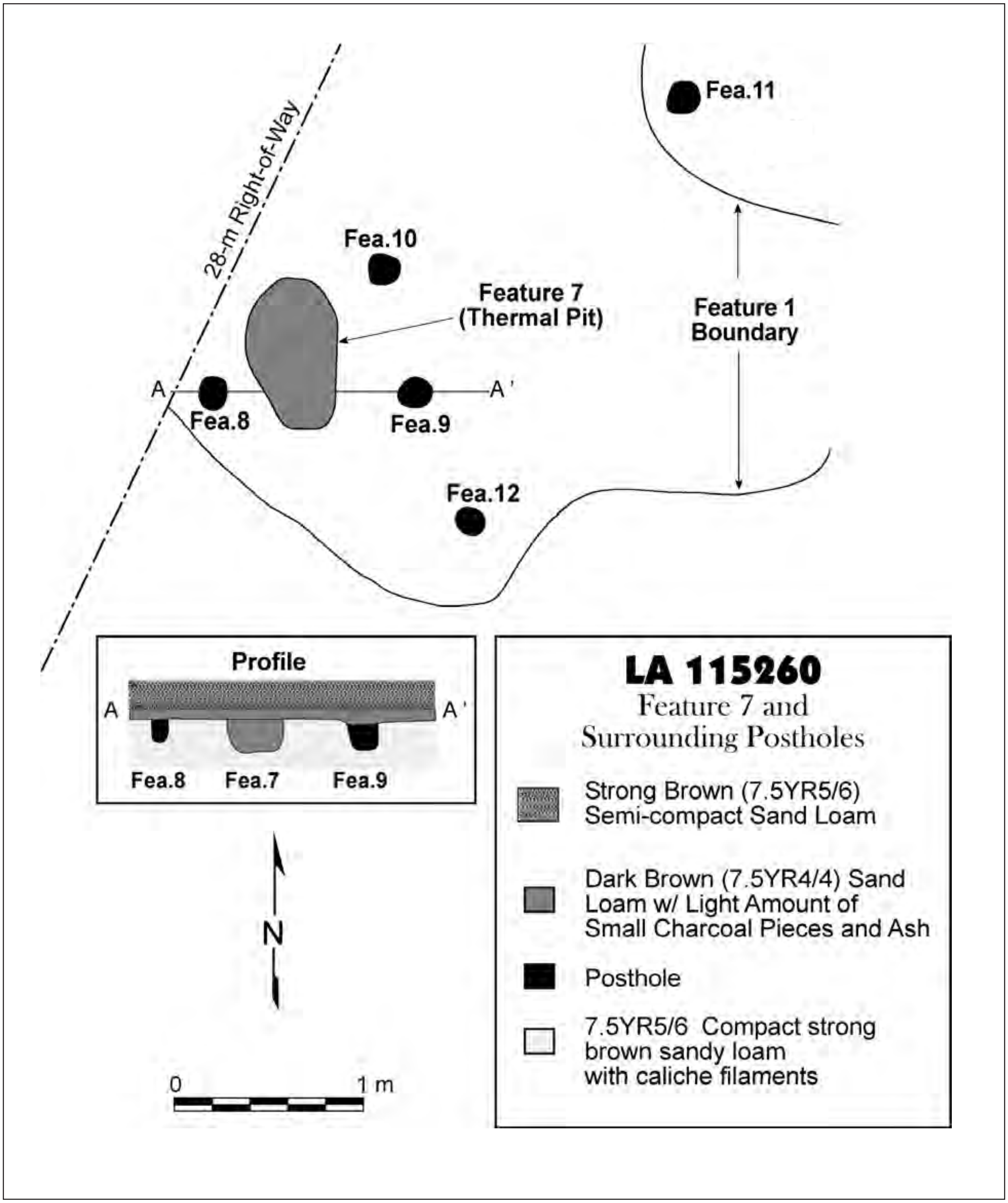

Figure 9.10 Feature 7 and surrounding postholes at LA 115260.

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Artifact Assemblage

A total of 4,317 durable artifacts were recovered from LA 115260, including 2,519 ceramics and 1,798 lithics (including chipped and ground stone and pieces of minerals probably used as pigments). Preservation at LA 115260 was exceptional compared to other US 54 sites, and the investigations recovered an abundance of biological materials including 13,783 faunal specimens and a rich assemblage of botanical remains. In addition, human remains from two individuals were recovered, although these remains had been redeposited in the midden, and no formal graves were present. One soil sample, from Feature 1A, was analyzed for diatoms (see above and Chapter 27). Finally, a small assemblage of historic artifacts was also collected from the site.

The vast majority of materials from this site came from subsurface excavations (including both shovel tests and hand excavations) in and around Feature 1. Surface-collected artifacts (from the testing phase) contributed 125 items to the total site assemblage, including 57 ceramic sherds, 41 faunal specimens, 25 chipped stone artifacts, and two historic metal artifacts.

Ceramic Artifacts

The ceramic assemblage recovered from LA 115260 totals 2,519 sherds, weighing 5,059.5 grams. As shown in Table 9.3, typeable ceramics include El Paso Polychrome, El Paso Bichrome, El Paso Brown, and Jornada Brown. Because the assemblage is relatively large and includes mostly midden deposits, a stratified sampling strategy was employed to target temporally diagnostic artifacts and sample ubiquitous wares and types such as brownware body fragments. Following the standard sampling strategy for the project, all sherds smaller than 2 x 2 cm were counted, weighed, and identified as "too small for analysis." For the targeted portion of the sample, all painted sherds, brownware rims, and special items (e.g., worked sherds, beads, and miniature vessel fragments) were fully analyzed. To obtain an adequate sample of brownware body, neck, and base fragments, 25 percent of the brownware assemblage, excluding rims, were fully analyzed. The remaining 75 percent of brownware body, neck, and base fragments were classified as unspecified brown, counted, and weighed. This approach produced an analyzed sample of 30 percent.

Seventy-three percent of the ceramics (72 percent by sherd weight) from LA 115260 were identified as unspecified brown and El Paso Brown, suggesting that over half of the sherds originated from brownware utility pots, most likely cooking and storage jars. Decorated types include El Paso Polychrome and El Paso Bichrome, comprising 12.5 percent of the assemblage (34 percent by sherd weight). Two Jornada Brown sherds were identified based on temper, paste, and surface characteristics, but the assemblage is primarily an El Paso brownware assemblage. Noticeably absent is Chupadero Black-on-white, which was present in significant numbers at several other US 54 sites, even in some of the smaller assemblages from the project. Despite the absence of Chupadero Black-on-white, the distribution of types within the assemblage minimally indicates a Doña Ana phase affiliation.

El Paso Brown

The majority (n=438) of the utility ware assemblage was identified as El Paso Brown. Temper was identified as either coarse angular granite (n=434) or fine angular granite (n=4). Crushed angular granite is characteristic of El Paso Brown as well as El Paso Bichrome and El Paso Polychrome from the project. The only difference between the utility and decorated pottery is the presence or absence of a mineral paint and/or a red slip.

El Paso Brown sherds had either plain or polished surfaces. Of the 438 sherds, 87 were polished on one or both surfaces, and the remaining 351 sherds had plain interior and exterior surfaces. Thirteen sherds were polished on the interior surface; of these, 11 are from bowls. Two jar sherds had both interior and exterior polish. It is not uncommon

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Table 9.3 Summary of Ceramic Types and Vessel Forms from LA 115260.

Ceramic Type	Vessel Form	Vessel Part	Count		Weight	
			n	%	g	%
El Paso Brown	Bowl	Base	1	0	9.7	0.2
		Body	10	0.4	40.6	0.8
		Rim	1	0	3	0.1
	Ceramic bead	Partial	1	0	3	0.1
	Jar	Base	12	0.5	174.6	3.5
		Body	386	15.3	2063.7	40.8
		Neck	8	0.3	50.9	1
		Rim	17	0.7	38.2	0.8
	Miniature jar	Rim	1	0	5.6	0.1
	Wide-mouthed jar	Rim	1	0	3	0.1
Sub-total			*438*	*17.4*	*2392.3*	*47.3*
El Paso Bichrome	Bowl	Body	18	0.7	53.3	1.1
		Rim	2	0.1	6.4	0.1
	Jar	Body	51	2	131.6	2.6
		Neck	12	0.5	29.5	0.6
		Rim	11	0.4	22.6	0.4
Sub-total			*94*	*3.7*	*243.4*	*4.8*
El Paso Polychrome	Bowl	Base	1	0	3.6	0.1
		Body	18	0.7	56	1.1
		Rim	9	0.4	85.3	1.7
	Jar	Body	92	3.7	262.3	5.2
		Neck	29	1.2	149.4	3
		Partial	35	1.4	177.9	3.5
		Rim	30	1.2	69.9	1.4
	Miniature jar	Body	2	0.1	9.8	0.2
	Miniature bowl	Body	2	0.1	5.5	0.1
		Rim	1	0	2.5	0
	Seed jar	Rim	1	0	8	0.2
	Wide-mouthed jar	Rim	1	0	17.4	0.3
Sub-total			*221*	*8.8*	*847.6*	*16.8*
Jornada Brown	Bowl	Body	1	0	0.7	0
	Jar	Rim	1	0	0.7	0
Unspecified brown	Not analyzed	Not analyzed	1406	55.8	1262	24.9
Indet. unfired vessel	Unfired vessel	Indeterminate	1	0	0.3	0
Too small for analysis	Not analyzed	Not analyzed	357	14.2	312.5	6.2
Total			2519	100	5059.5	100

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for interior portions of a jar to be lightly polished during vessel construction. Vessel use is another possibility for the light polish; handling a pot with hands would deposit oils from the skin on the surfaces of the pot manifesting as polish.

A variety of vessel forms were identified including bowls, jars, a miniature jar, and a bead. Most of the sherds were identified as jar fragments (n=424), and 12 sherds as bowl fragments. Very little use wear was noted in the El Paso Brown assemblage. Use wear was identified on six sherds including sooting and exterior base pitting. The exterior base pitting may be the result of thermal stress and/or placing the vessel on a hard surface. Since the sherd is not associated with a vessel, it cannot be conclusively determined what caused the pitting. The sooting was located on the exterior (n=3) and on both surfaces (n=2) of sherds. Because so little use wear was noted, vessel use can only be surmised. It is likely that the pottery was used for cooking and/or storage purposes.

Rim profiles for El Paso Brown vary from straight and rounded to thickened and rounded (Figure 9.11). For the most part, the rim shapes and forms fit well with a Doña Ana phase assemblage, while the distinctively tapered profiles and pointed rim lips characteristic of Mesilla phase assemblages are absent from the brown ware assemblage (cf. Carmichael 1986; Seaman and Mills 1988; West 1982a, 1982b; Whalen 1993).

Jornada Brown

Two Jornada Brown sherds were recovered from Feature 1 (midden). One sherd is from a bowl and the other is a jar rim fragment. The bowl fragment is lightly polished on both surfaces, while the jar sherd has a plain interior and exterior surface. As expected, both sherds are tempered with fine quartz sand. No use wear or post-firing modifications were noted.

Unspecified Brown

A total of 1,406 sherds, weighing 1,262.0 grams, were identified as unspecified brown ware. These sherds were too small to assign a specific type, but were similar in paste characteristics and surface treatment to suggest that they were unpainted brown ware. None of the standard attributes were recorded for these sherds.

El Paso Bichrome

A total of 94 sherds, weighing 243.4 grams, was identified as El Paso Bichrome pottery. All 94 sherds had coarse angular granite temper and slipped or painted surfaces. Sherds were decorated with either mineral pigment or red clay paint (Figure 9.12). Sherds with designs executed in either mineral or clay paint had polished or plain surfaces. Fifty sherds lacked a painted decoration, but were slipped with red clay. An indeterminate pigment was also noted on three sherds. Because of the small size of the sherds, specific motifs could not be determined. Only bowls (n=20) and jar forms (n=77) were identified including rim, body, and neck fragments. Very little use wear or post-firing modifications were noted in the El Paso Bichrome assemblage. One jar rim sherd displayed rim abrasion possibly from storing the vessel on its rim when not in use. Because the sherd is not associated with a vessel, a complete picture of the use wear cannot be determined. A single indeterminate drill hole was also noted on a jar body sherd. Since only one drill hole was observed, its function cannot be surmised. Some of the more fragmentary sherds classed as El Paso Bichrome are probably from El Paso Polychrome vessels.

El Paso Polychrome

El Paso Polychrome sherds represent the majority of the decorated assemblage. A total of 221 sherds, weighing 847.6 grams, was recovered from all seven proveniences; however, most (n=196) were recovered from Feature 1 (midden). One partial jar (Vessel 1) was identified in the assemblage (Figure 9.13), but because so few sherds could be associated with the vessel, it was not reconstructed. Characteristic of most of the ceramics from LA 115260 (and the US 54 ceramics in general), tempering material in the El Paso

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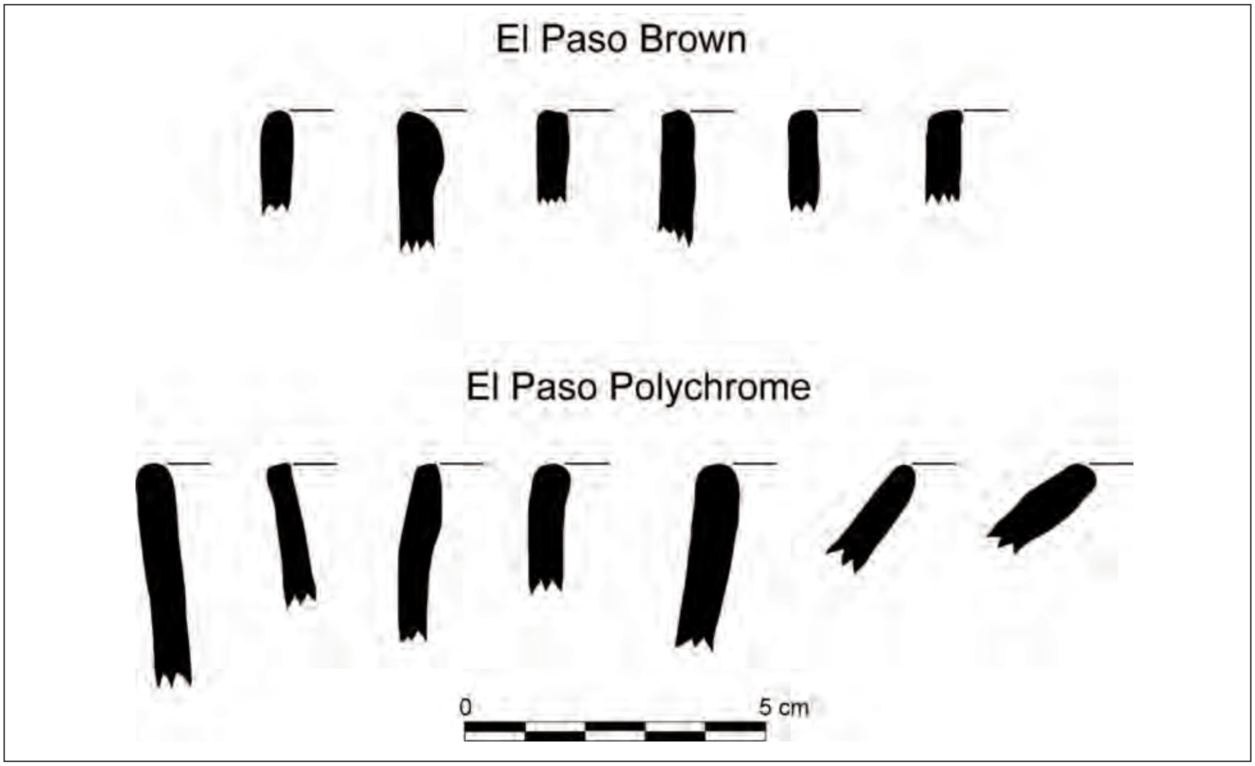

Figure 9.11 Rim profiles for El Paso Brown and El Paso Polychrome sherds from LA 115260.

Polychrome sherds was coarse angular granite. Given the abundance of granite material in the mountain ranges surrounding the project area, most if not all of the polychrome vessels were locally made.

El Paso Polychrome is identified by the presence of three colors on one or both surfaces, including black mineral paint, red clay paint or slip, and the brown color of the sherd surface. Differences in application of the red clay as either paint or slip were identified. For surface indications showing that red clay was applied as a slip and mineral-painted designs were executed over the slip (see Figure 9.12), the surface attributes were classified as slipped and painted. If the red clay did not fully cover the surface and the mineral paint was clearly applied over the original brown surface, the black and red pigments were classified as paints for which surface attributes were classified as plain and painted or polished and painted. Application of the red clay as paint rather than slip appears to be the most common surface treatment in this assemblage. Differences in red clay pigment application were clearly visible on most sherds from LA 115260. Because the sherds were relatively small in size, individual motifs could not be identified; however, most of the designs appear geometric and applied to the upper body, neck, and rim portions.

A variety of vessel forms were identified in the El Paso Polychrome assemblage, including bowls, a miniature jar, a miniature bowl, a ladle, a seed jar, a wide-mouthed jar, and undifferentiated jar body sherds. These latter sherds are most likely associated with either the seed jar or wide-mouthed jars. The majority of El Paso Polychrome sherds (n=186) were identified as undifferentiated jar fragments. Rim, neck, body, and basal fragments were identified. Rim and lip forms are primarily thickened and rounded (see Figure 9.11). No use wear was identified in the assemblage; however, two sherds displayed post-firing modifications. One wide-mouthed jar sherd had an indeterminate drill hole. Since only one drill hole was identi-

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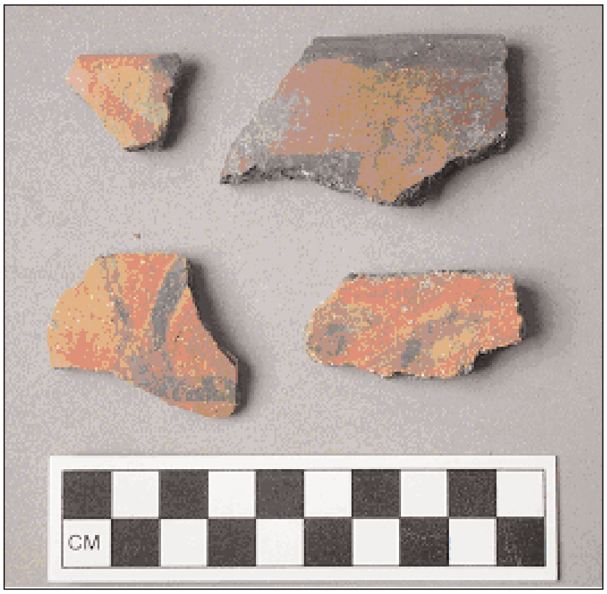

Figure 9.12 **El Paso Bichrome (top left) and El Paso Polychrome sherds; the top right sherd shows red pigment applied as a slip and the bottom two examples show the red and black pigments used as paints.**

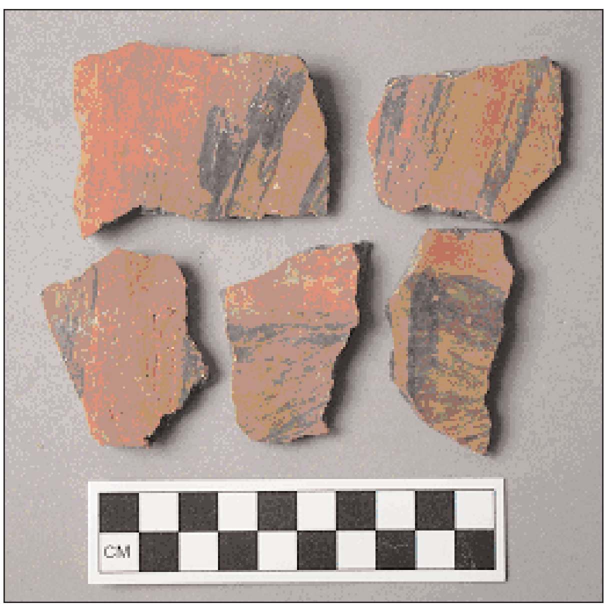

Figure 9.13 **Neck fragments from Vessel 1, an El Paso Polychrome jar.**

fied, its function could not be determined. The second post-firing modification consisted of a shaped edge on the seed jar fragment. Because so little of the shaped edge was present, its function could not be surmised.

Spatial Distribution and Ceramic Chronometry

As indicated in Table 9.4, 91 percent of the ceramic artifacts were recovered from Feature 1, a large midden. All of the identified types occur in Strata 1, 2, and 3, indicating there is no clear temporal segregation between these strata based on ceramics, and that these sediments all likely accumulated during the Doña Ana phase. Feature 1 shows the greatest variability in ceramic type and vessel form; all miniature vessel fragments, the ceramic bead, the unfired vessel fragment, and the two Jornada Brown sherds were recovered. Vessel 1, a partial El Paso Polychrome jar, was identified in the assemblage from Feature 1 in Strata 2, Level 3. Ceramic types from Feature 1 include El Paso Brown, El Paso Bichrome, El Paso Polychrome, and Jornada Brown. Two radiocarbon dates, calibrated to A.D. 1000–1170 and A.D. 970–1160, obtained from Feature 1 deposits support the ceramic interpretation of a Doña Ana phase occupation.

Feature 1A, a non-thermal pit possibly used for obtaining clay, yielded 75 sherds including El Paso Brown, Bichrome, and Polychrome. Two smaller middens, Features 3 and 5, produced a small number of sherds including El Paso Brown, Bichrome, and Polychrome. Although these features were not dated by radiocarbon assessments, the ceramic types indicate the middens are probably contemporaneous with Feature 1, dating to the Doña Ana phase.

In summary, both utility and decorated ceramics were identified from LA 115260 indicating that the pottery was used for cooking, storage, and/or serving purposes. The majority of the ceramics were recovered from midden deposits, precluding an accurate assessment of vessel counts. Based on ceramic type and rim form data, a minimum of 10 vessels is present in the assemblage. A group of El Paso Polychrome sherds, identified as

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Table 9.4 Ceramic Distributions by Provenience from LA 115262.

Feature	Feature Type	Ceramic Type	Vessel Form	Count	
				n	%
1A	Pit	El Paso Bichrome	Jar	3	0.1
		El Paso Brown	Bowl	1	<0.1
			Jar	9	0.4
		El Paso Polychrome	Bowl	1	<0.1
			Jar	6	0.2
			Wide-mouthed jar	1	<0.1
		Too small for analysis	Not analyzed	54	2.1
	Sub-total			*75*	*3*
1	Midden	El Paso Bichrome	Bowl	15	0.6
			Jar	69	2.7
		El Paso Brown	Bowl	10	0.4
			Ceramic bead	1	<0.1
			Jar	385	15.3
			Miniature	1	<0.1
			Wide-mouthed jar	1	<0.1
		El Paso Polychrome	Bowl	26	1
			Jar	167	6.6
			Miniature	2	0.1
			Miniature bowl	3	0.1
			Seed jar	1	<0.1
		Indeterminate brown	Not analyzed	1326	52.6
		Indeterminate unfired vessel	Unfired vessel	1	<0.1
		Jornada Brown	Bowl	1	<0.1
			Jar	1	<0.1
		Too small for analysis	Not analyzed	274	10.9
	Sub-total			*2284*	*90.7*
3	Small Midden Stain	El Paso Bichrome	Bowl	1	<0.1
		El Paso Brown	Jar	5	0.2
		El Paso Polychrome	Jar	1	<0.1
		Too small for analysis	Not analyzed	19	0.8
	Sub-total			*26*	*1*
5	Small Midden Stain	El Paso Brown	Jar	3	0.1
		El Paso Polychrome	Jar	3	0.1
	Sub-total			*6*	*0.2*
15	Small Midden Stain	El Paso Brown	Jar	3	0.1
		Too small for analysis	Not analyzed	1	<0.1
	Sub-total			*4*	*0.2*
4	Small Midden Stain (part of Fea. 3)	El Paso Brown	Jar	1	<0.1
		El Paso Polychrome	Jar	1	<0.1
		Too small for analysis	Not analyzed	9	0.4
	Sub-total			*11*	*0.4*

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Table 9.4 Ceramic Distributions by Provenience from LA 115262 (continued)

Feature	Feature Type	Ceramic Type	Vessel Form	Count	
				n	%
Non-feature	Non-feature	El Paso Bichrome	Bowl	4	0.2
			Jar	2	0.1
		El Paso Brown	Bowl	1	<0.1
			Jar	17	0.7
		El Paso Polychrome	Bowl	1	<0.1
			Jar	8	0.3
		Indeterminate brown	Not analyzed	80	3.2
	Sub-total			*113*	*4.5*
	Total			2519	100

Vessel 1, was the only distinctive partial vessel recognized in the midden assemblage. The ceramic data suggest a Doña Ana phase assemblage, which is potentially supported by radiocarbon dates from Features 1 and 1A (see below).

Lithic Artifacts

LA 115260 yielded a wide variety of lithic artifacts. This assemblage includes 1,785 chipped stone items, 10 ground stone artifacts, and three pieces of minerals probably used as pigments. See Chapter 21 for more information on the lithics from this site and how they compare to other sites in the study area.

Chipped Stone

Material distribution for chipped stone artifacts is presented in Table 9.5. In keeping with the pattern at LA 6829, also a large Late Formative site, the assemblage is dominated by silicified shale, a local material of highly variable quality. While cores, debitage, and the more expedient tools are mostly of this material, all but one of the formal tools are made of chert, suggesting possible preferential use of higher-quality material for these tools. Most of these are points consistent with Late Archaic types and may thus indicate scavenging of older artifacts by LA 115260's inhabitants, or the presence of a small Late Archaic component at the site (although there was no other evidence for a Late Archaic presence here).

Projectile Points and Bifaces

All five projectile points are of fine-grained, highly workable materials. Despite the site's identification as a Late Formative occupation, all but one of these artifacts are morphologically consistent with dart points of Late Archaic or Early Formative age (Table 9.6). One point was only a medial fragment and thus could not be typed, but is interpreted as a dart point based on its thickness (6 mm). Two points are consistent with the San Pedro type initially identified by Sayles and Antevs (1941) and found throughout the Southwest during the Late Archaic (Huckell 1988, 1995; Mabry 1998; Sliva 1999; Van Hoose 2000a). One of these is also similar to the Martindale type (Seaman *et al.* 1988:310). An additional point is consistent with the Cienega type, originally grouped with San Pedro but distinguished by Huckell (1988) by its narrower, more steeply angled notches. In Arizona, this type overlaps with San Pedro but is generally somewhat later, extending into the Early Agricultural period; this same trend is also seen in southwest New Mexico (Van Hoose 2000a).

The arrow point is a small side-notched Scallorn point, a Late Formative type (Seaman *et al.* 1988:324; Carmichael 1986:99).

In addition to these points, a nearly complete small chert biface and a medial fragment of a second chert biface were recovered. One biface is classified as Stage V, indicating advanced reduction with regular margins and pressure flaking. Asymmetrical retouch creates a slightly beveled appearance in cross-section. In addition, a small Stage VI chert biface is likely a highly reworked

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Table 9.5 Chipped Stone Artifacts from LA 115260 by Material

Materials	Bifaces	Cores	Debitage	Projectile points	Retouched tools	*Total*
Calcite			1			*1*
Chert	2		200	4	2	*208*
Granite			1			*1*
Igneous			3			*3*
Limestone			109			*109*
Obsidian			2			*2*
Quartzite			63			*63*
Rhyolite			9	1		*10*
Rancheria chert			6			*6*
Sandstone			9		1	*10*
Silicified shale		8	1356		9	*1373*
Total	*2*	*8*	*1759*	*5*	*12*	*1786*

Table 9.6 Projectile Points Recovered from LA 115260

Specimen Number	Tool Type	Point Type	Material
34	Dart	Unidentified	Chert
146	Dart	Cienega	Chert
154	Arrow	Scallorn	Chert
230	Dart	San Pedro or Martindale	Chert
233	Dart	San Pedro	Rhyolite

fragment of a larger piece, possible a projectile point fragment. Its asymmetrical margins have been retouched.

Retouched Tools

Twelve retouched tools include relatively formal scrapers (n=8), more expedient generalized retouched pieces (n=3), and a chopper (Table 9.7). The majority of these artifacts are silicified shale (n=9). Two whole scrapers show extensive continuous marginal retouch; one is retouched on all margins but maintains an intact flake platform (three-edged scraper), while the ovoid scraper shows retouch on all margins as well as the platform. The remaining five scrapers are fragmentary. The chopper is a bifacially retouched large flake with battering wear along the bifacial edge; this artifact was not classified as a formal biface due to the marginal nature of the flaking.

Cores and Core Tools

Core data are presented in Table 9.8. All eight cores recovered from LA 115260 are silicified shale. One of these is too fragmentary to determine the directionality of flaking, but the remaining seven cores are dominated by multidirectional flaking patterns (n=4), followed by unidirectional (n=2) and bi-directional (n=1). This suggests a relatively opportunistic flake removal strategy. Two cores show longitudinal battering wear suggesting later use as hammerstones.

Debitage

A total of 1,759 pieces of lithic debitage were analyzed. Only one percent of the debitage was collected from the surface (n=22), while the majority (n=1,737) was collected from subsurface contexts. Almost 80 percent of the material analyzed is silicified shale (n=1,356) followed by 12 percent chert (n=208, combining Rancheria chert with all other cherts), six percent limestone (n=109), and four percent quartzite (n=63). The remaining one percent of material types includes rhyolite, sandstone, indeterminate igneous material, obsidian, calcite, and granite. As with the

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Table 9.7 Retouched Tools Recovered from LA 115260

Tool Type	Chert	Sandstone	Silicified shale	Total
Chopper	1			1
Ovoid scraper		1		1
Retouched piece, miscellaneous			3	3
Scraper, three margins			1	1
Scraper, general	1		5	6
Total	*2*	*1*	*9*	*12*

Table 9.8 Cores Collected from LA 115260

Tool Type	Unknown directionality	Bidirectional	Multidirectional	Unidirectional	Total
Hammerstone			1	1	2
No use as tool	1	1	3	1	6
Total	1	1	4	2	8

other large formative-period site in the study area (LA 6829), the main difference between this site and others is the reliance on silicified shale, a low-quality lithic material (compared to less than 20 percent for other sites). In general, small flake sizes and weights from locally derived materials are consistent with tool manufacture.

Ground Stone, Battered Stone, and Pigments

The 10 ground and battered stone artifacts recovered from LA 115260 include hammerstones, manos or hand stones, and metates or grinding slabs (Table 9.9). All ground stone artifacts in the assemblage are sandstone. Both manos are fragmentary. One is a parallel-face one-hand mano with two parallel grinding surfaces; the other is too fragmentary for morphological assessment. Also present are five small grinding slab fragments, including metate (n=3) and nether stone (n=2) pieces. Nether stones are distinguished from metates in this analysis by their extreme thinness; these are usually thin, tabular pieces of sandstone. This thinness makes them unlikely to have been used for intensive grinding tasks associated with food preparation, and as such they may be associated with grinding things like minerals or pigment, or for grinding very small amounts of food material. A single piece of ground stone is too small to assign to any more specific artifact class.

In addition to the two silicified shale cores used as hammerstones described above, two additional hammerstones were recovered. One of these is a piece of indurated limestone exhibiting a longitudinal battering wear pattern, and the other is a piece of silicified shale with generalized battering wear across the entire rock surface.

Three pieces of material probably used as pigment were recovered. This includes one piece of yellow ochre and a piece of hematite (red ochre), both showing striated facets due to grinding. An additional piece of soft black rock with a waxy luster shows similar facets and was probably used for pigment as well.

Biological Remains

A variety of samples were collected for analysis. These included four pollen analysis samples, three phytolith, and five flotation analysis samples. In addition, three charcoal samples were identified prior to radiocarbon processing. The results follow.

Archaeobotanical

The good preservation conditions at LA 115260 are reflected in the rich archaeobotanical assemblage recovered. Maize remains were recovered

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Table 9.9 Ground Stone Artifacts from LA 115260

Materials	Hammerstone	Mano/ Hand stone	Metate/ Grinding slab	Unknown ground stone	Total
Limestone	1				1
Sandstone		2	5	1	8
Silicified shale	1				1
Total	*2*	*2*	*5*	*1*	*10*

as both macrobotanicals and phytoliths, although no maize pollen was recovered. The lack of maize pollen may indicate that maize was not grown on or near the site, although this may be fortuitous, especially considering the presence of maize phytoliths in the Feature 1 sediments. Other plant species identified in the analyses include most locally occurring weeds and wood fuels, although some species of potential economic significance were identified in the pollen samples, including Asteraceae, Brassicaceae, *Eriogonum*, and *Rhus*. Along with the maize remains, potential subsistence species identified in the macrobotanical assemblage include one *Cheno-Am* seed, one *Portulaca* sp. seed, two *Echinocereus* sp. seeds, 74 *Prosopis glandulosa* seeds and four pods, 40 *Yucca baccata* seeds, three cf *Apodanthera undulata* seeds, 21 *Helianthus petiolaris* seeds, and one cf *Oryzopsis hymenoides* seed.

The above information suggests that the residents of LA 115260 were utilizing a range of domesticated and wild plant resources. The presence of maize is not surprising given the Doña Ana-phase affiliation for this site. The abundance and variety of plant remains underscores the intensity and duration of occupation at this residential site, which obviously involved an extended seasonal occupation and diverse range of activities. See Chapters 24–27

Faunal Remains

Enhanced preservation conditions at LA 115260 produced the largest faunal assemblage recovered from the US 54 sites, consisting of 13,783 specimens. Lagomorphs overwhelmingly dominate the identifiable assemblage (beyond class). The vast majority of the remains are jackrabbit, with cottontail rabbit running a distant second, and all other species represented by only very small quantities. Jackrabbits are abundant on the desert floor, whereas cottontails were perhaps less so. There is little or no evidence that animal species (or portions thereof) from the mountain or riverine zones were procured and transported to the site. This suggests that the inhabitants of LA 115260 either did not directly exploit animals from these zones (which includes deer), or if they did, they consumed the meat elsewhere and/or processed it into food products (such as jerkey or pemmican) that were then transported back to the site and did not leave any durable archaeological remains. Alternatively, such non-durable meat products may have been acquired through trade and consumed on site. The assemblage suggests the inhabitants of LA 115260 were heavily focused on communal hunting of jackrabbit for the meat portion of their diet, perhaps even more so than the inhabitants of Jaca (LA 6829), the only other US 54 site to produce a substantial faunal assemblage (and which yielded slightly higher frequencies and proportions of cottontail and artiodactyls). The focus on such a lean meat source underscores the marginal conditions of the desert floor environment and may have encouraged a more intensive focus on plant food, including both wild and domesticated species. See Chapter 23 for a fuller presentation and discussion of the faunal remains from this site and how they compare with those from LA 6829 and other faunal assemblages from the surrounding region.

Site Chronology

Both chronometric data and chronologically sensitive artifacts date the archaeological remains

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from LA 115260. Three charcoal samples, including two from the Feature 1 midden and one from Feature 1A, were submitted for radiocarbon analysis. These yielded two-sigma calibrated dates of A.D. 650–1000 (Beta-156960), A.D. 970–1160 (Beta-161836), and A.D. 1000–1170 (Beta-161833). The earliest of the three dates came from Feature 1A. The dates themselves span the middle Mesilla to early Doña Ana phase. The ceramic assemblage suggest this range should be narrowed to the Doña Ana phase. Specifically, the assemblage yielded both El Paso Polychrome and El Paso Bichrome, both of which occur in the Doña Ana phase, with the latter type being a marker of this phase. These types were found throughout the archaeological deposits at the site, with no stratigraphic or spatial segregation evident. The radiocarbon dates display a common intercept at A.D. 1000 (Figure 9.14), which is slightly earlier than the beginning of the Doña Ana phase, although the "old wood" problem may be at play here. The site may date from the early portion of the Doña Ana phase, and if so the curious absence of Chupadero Black-on-white may prove to be a time-sensitive marker within the phase. The few projectile points recovered from the site are all morphologically consistent with types pre-dating the Doña Ana phase, although there is no other evidence for earlier occupations at the site, and it is likely that these items were scavenged by the site's occupants and re-deposited in the archaeological sediments here. At any rate, from the excavated portion of the site at least, the occupation of LA 115260 appears to cover a rather brief span of time, probably less than a century, and insofar as this is true it underscores the intensity of the site's occupation, which resulted in an appreciable accumulation of organic midden in the Feature 1 locality.

Site Interpretation and Summary

Data recovery excavations at LA 115260 uncovered the remains of an intensive occupation dating from the Doña Ana phase. A sheet midden (Feature 1) overlay, and was partially surrounded by, a variety and high density of smaller subsurface features. Within the right-of-way, these features were contained within a discrete, tightly clustered concentration and included thermal features, postholes, and two non-thermal pits. One of the non-thermal pits (Feature 1A) had a very unusual morphology and a function that remains unknown. Outside the right-of-way, where aborted investigations uncovered but did not fully excavate subsurface remains, a similar density of features also was uncovered. Along with the usual thermal features (including what appeared to be a large roasting pit), non-thermal pits, and postholes, the investigations west of the 28-m fence also uncovered portions of two prepared caliche floors that probably mark the locations of structures. The presence of postholes beneath Feature 1 indicate that at least a portion of this midden may include the remains of one or more structures as well, but the excavations did not uncover any discernable house pits or prepared floors.

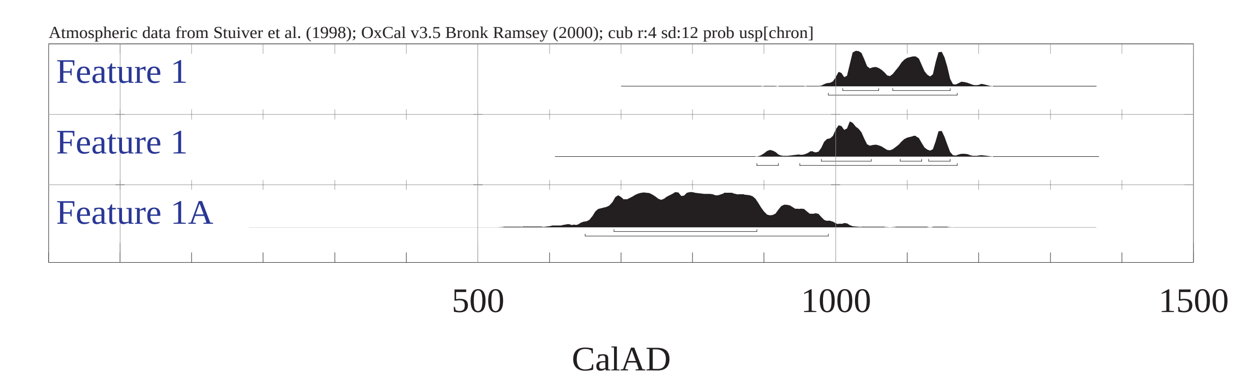

Figure 9.14 Radiocarbon dates from LA 115260.

LA 115260 had the best preservation conditions encountered at the US 54 sites and yielded abundant botanical and faunal remains. The botanical remains included maize (both macrobotanical specimens and phytoliths), indicating the site's occupants were processing and consuming maize at the site, although they may or may not have been growing it here (no maize was identified in the pollen samples). This finding is not surprising given the site's Doña Ana affiliation, however it is nonetheless important in light of investigations elsewhere that demonstrated maize was not present at some Doña Ana sites (e.g., Miller 1989; Shafer *et al.* 1999). The faunal remains a hunting strategy focused almost exclusively on jackrabbit, probably involving communal drives.

Although the archaeological remains at LA 115260 appear to be a small, discrete occupation, it may have been but one locus within a dispersed community of Doña Ana-phase household clusters. If so, this site may have been occupied at the same time as nearby site LA 115265, another Doña Ana-phase locality located on the east side of US 54 (see Chapter 12). LA 115265 was heavily impacted and deflated by past construction along US 54, but the surviving features and artifact concentrations suggest structures were once present on this site as well.

LA 115260 and LA 115265 are of special interest because they are located out on the desert floor. This is an unusual location for Late Formative sites (especially ones with structures), the vast majority of which are concentrated along the basin edges and bases of alluvial fans (see Chapter 3). LA 115260 and LA 115265 are both located within a small playa, one of hundreds of such depressions that pock the floor of the southern Tularosa Basin. This small playa was probably the main attraction to this locality, because it would have held some water following summer downpours (at least briefly), and retains moisture better than higher surfaces on the desert floor. As such, the small playa provided not only a water source (however tenuous) for the sites' occupants, but also a possible locus for farming of maize and other crops. Insofar as this is true, the LA 115260 and LA 115265 may indicate, to some extent, a continuation of Mesilla-phase settlement patterns, which included extensive occupation of the interior basin floors, probably involving small, scattered agricultural plots (see Chapter 3). The apparent *early* Doña Ana-phase affiliation of LA 115260 (and perhaps LA 115265 as well, although this site could not be as precisely dated) may thus be especially significant in light of this finding.

Recommendations

Data recovery investigations demonstrated the data potential and significance of LA 115260 and underscored the findings of the testing project, which recommended this site as eligible for inclusion in the NRHP. The investigations fulfilled the goals outlined in the data recovery plan, and construction activities will not adversely affect any cultural resources. The maintenance of the fences at this site is recommended to protect known features that were documented, but not excavated, between the two fences. Should any future construction activities be proposed that will impact features west of the 28-m fence, a data recovery plan for this part of the site should be formulated and carried out.

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Chapter 10

LA 115262

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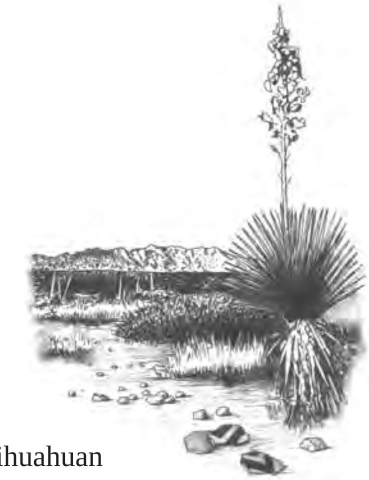

Introduction

LA 115262 is a prehistoric, multicomponent camp/residential site located on a desert floor ridge at the southern end of the Tularosa Valley (Figure 10.1). The ridge overlooks three desert floor depressions to the north, southwest, and east of the site. Across the site surface are 2–3 m high, mesquite-stabilized coppice dunes with broad, uneven interdune areas that slope off the ridge crest to the south, north, and west. Gullies run off the southwestern edge of the site into one of desert floor depressions below the ridge. The gullies are 12-m wide and shallow, ranging from a few cm to as much as 30-cm deep. The site locality is within the Chihuahuan biotic zone. Flora in the area includes mesquite, fourwing saltbush, creosote, broom snakeweed, dropseed grass, narrow leaf yucca, and prickly pear. Surface visibility is approximately 70 percent.

The site is on the western side of US 54 and includes remains both inside and outside of the right-of-way. Planned construction activities will take place from the centerline of the existing road to the right-of-way edge, located 40 m to the west. The site is located on private land and right-of-way obtained from private sources.

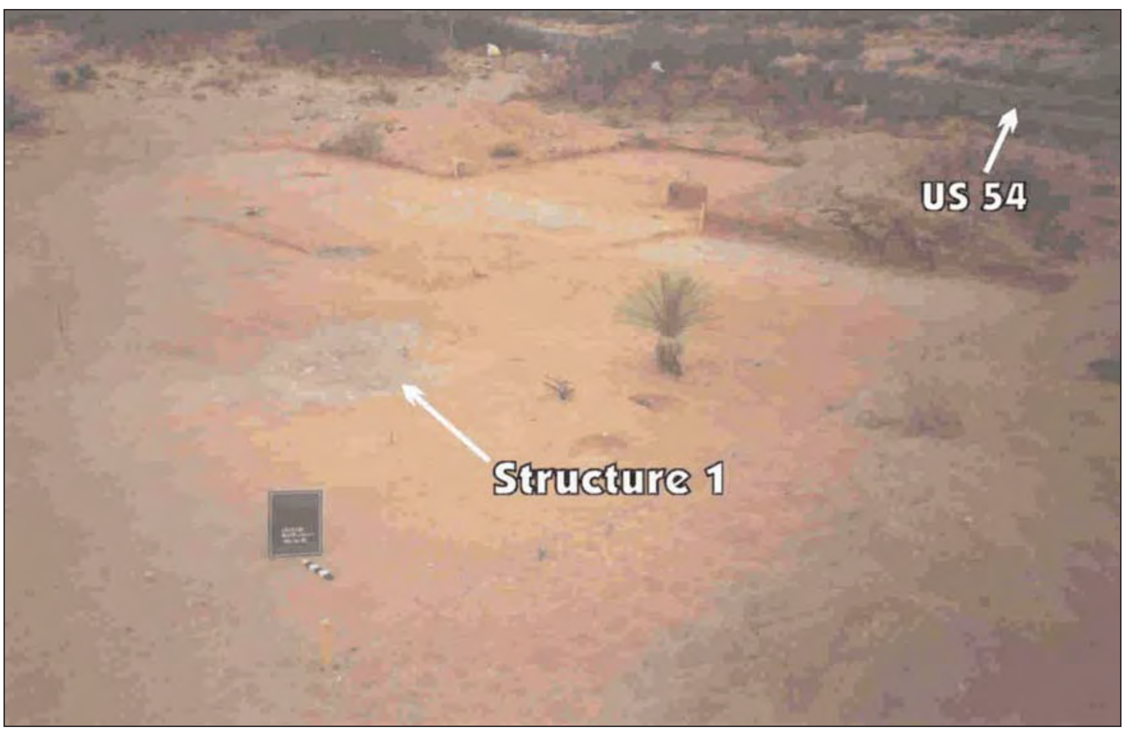

Figure 10.1 Overview of LA 115262, showing the Block 2–7 excavations at the southern end of the site.

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The major land modifications to the site include the US 54 roadbed, construction of which had previously removed an undetermined portion of the site's eastern edge beneath and adjacent to the present highway. The road cuts as deep as 3 m into the site surface. In addition, several two-track dirt roads extend over the surface of the site and these have been used for trash dumping in recent times.

Previous Investigations

Marshall and Marshall (1998) originally recorded the site. They documented three surface hearths and a light scatter of chipped stone, ground stone, and ceramic artifacts in a 70 x 40-m area. The three hearth features were marked by charcoal-stained soil and ranged in size from 2–3 m in diameter, with estimated depths of 0.1–0.2 m. A light scatter of burned rock was associated with the features. A sample of artifacts recorded during survey included 10 sherds, 11 pieces of chipped stone, one sandstone abrader, and 10 fire-cracked rock fragments. The ceramics were El Paso brownware sherds, probably from a single vessel. Chipped stone artifacts included one core and 10 flakes. Material types included rhyolite, black chert, obsidian, limestone, gray chert, and basalt.

Testing Investigations

TRC crews conducted site testing in the fall of 1999 (Acklen *et al.* 1999). During testing, the surface was carefully inspected and mapped with a total station instrument. Artifacts and features within the right-of-way were mapped, and a small sample of artifacts was collected. Shovel and auger tests were used to investigate the subsurface, mostly in the vicinity of features. Features were described and trowel tested to determine depth potential.

Surface Investigations

Surface inspection at LA 115262 documented a low-density scatter of lithic and ceramic artifacts with several features, including potential structure remains. Based on the results of testing, the site proved to be larger than the dimensions recorded during the previous survey, measuring 144 m north-south x 86 m east-west. The portion of the site within the right-of-way measures 144 m north-south x 20 m east-west. Total site area was calculated as 9,298 m^2, including 2,763 m^2 within the right-of-way, or nearly 30 percent of the total site area (Figure 10.2). Surface documentation during testing also discovered new features not previously recorded at the site.

Artifacts and features are concentrated in the east-central to southeast portions of the site, with a few materials and features scattered elsewhere. Within the right-of-way, only 20 artifacts were observed, and these occurred in or near the documented features. These artifacts included three ceramic body sherds, 11 chipped stone artifacts, and six ground stone fragments. The ceramics included two pieces of Alma Plain and one undifferentiated brownware body sherd (probably El Paso Brown). The observed chipped stone artifacts included four marginally retouched lithic tools, four pieces of lithic debitage, two lithic cores, and one hammerstone. Only four surface artifacts were collected within the right-of-way during testing. These included a chipped stone tool, two pieces of ground stone, and an Alma Plain body ceramic.

The density of surface cultural materials was extremely low, with only a few items per 100 m^2 area. Clustering of artifacts (other than burned rock and caliche) was only noted outside of the right-of-way in the northwest portion of the site, where clusters of more than 20 plain brownware ceramics are located. Within the right-of-way, burned rock and caliche were clustered around some of the observed thermal features and otherwise were scattered over the site area in extremely low densities.

Seventeen features were documented including nine (Features 1–7, 16, and 17) within the highway right-of-way and eight (Features 8–15) outside of the right-of-way on private land. These included four large ash stains that represent middens or structural remains and 13 thermal features. Other than five features located just to the

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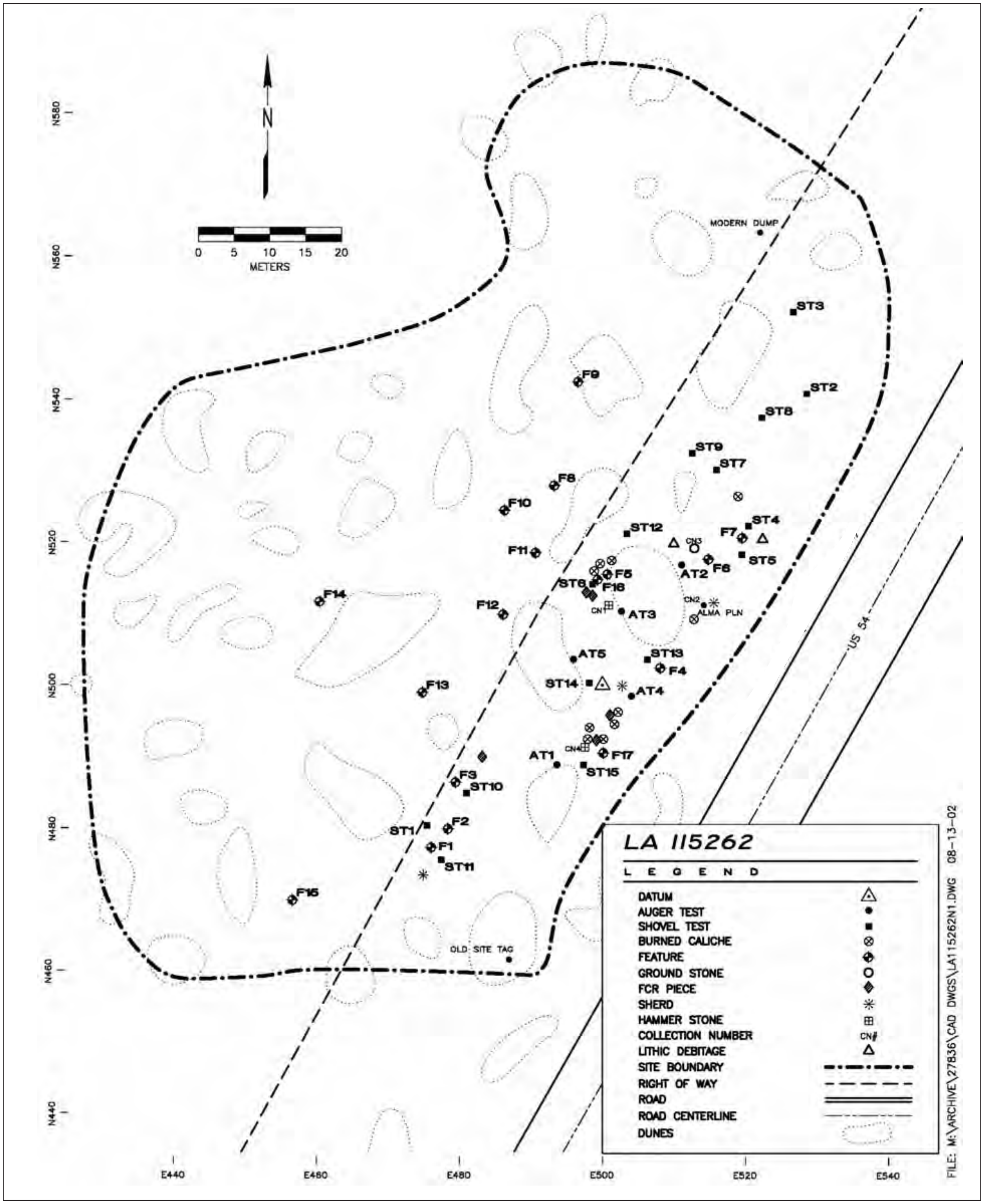

Figure 10.2 LA 115262, testing phase site map.

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west of the right-of-way, nearly all the features observed during testing were located in the central and southern portions of the site within the right-of-way. The thermal features included eight small ash stains, two small ash stains with FCR/BC, and three concentrations of FCR/BC that lacked ash stains. The nine features within the right-of-way included one of the potential structural remains and eight thermal features. Characteristics of the features from the testing phase are presented in Table 10.1.

Subsurface Testing

Subsurface testing LA 115262 involved excavation of 15 shovel tests (each 0.5 x 0.5 m) and five 10-cm diameter auger tests within the right-of-way (see Figure 10.2). In addition, features were trowel tested to investigate their subsurface poten-

Table 10.1 LA 115262, Feature Data Recorded during the Testing Results

Feature No.	Location	Right-of-way Location	Type	Plan Shape	L (m)	W (m)	Trowel Test Depth	Cultural Materials
1	Southeast	Inside	Thermal feature	Circular	1	1	>0.10	Ash-stained soils
2	Southeast	Inside	Possible Structure	Oval	3	>1.0	>0.10	Large ash stain
3	Southeast	Inside	FCR/BC concentration	Circular	1	1	Surface	10 BC, 1 rhyolite metate fragment, 1 granite mano fragment, 2 granite ground stone fragments
4	East-Central	Inside	Thermal feature	Circular	1	1	> 0.10	Ash-stained soils
5	East-Central	Inside	FCR/BC concentration	Oval	1	>0.25	Surface	8 Burned caliche (BC) and 2 granite fire-cracked rock (FCR) eroding out of west edge of dune
6	East-Central	Inside	Thermal feature	Circular	0.5	0.5	0.1	Large charcoal chunks present in ash-stained soils, several lithic artifacts to northwest and Alma plainware to the south
7	East-Central	Inside	Thermal feature	Circular	0.5	0.5	>0.10	More than 50 pieces of BC centered over ash-stained soils over a 2.0 m diameter area
8	North-Central	Outside	Structure	Oval	4	>2.0	>0.10	Large ash stain with more than 25 BC and several lithic artifacts against west edge of dune
9	North-Central	Outside	Thermal feature	Circular	1	1	0.1	Ash-stained soils with one chert flake to immediate north
10	Central	Outside	Thermal feature	Circular	1.5	1.5	>0.10	Ash-stained soils with a limestone core, a sandstone basin metate, and an undifferentiated brownware ceramic
11	East-Central	Outside	Thermal feature	Circular	1.5	1.5	>0.05	Ash-stained soils exposed in a two-track dirt road and 3 BC on surface
12	East-Central	Outside	Structure/ Midden	Oval	3	2	>0.10	Large ash stain eroding out of northwest edge of a dune with more than 60 pieces of BC/FCR
13	Southeast	Outside	FCR/BC concentration	Circular	1.5	1.5	Surface	>100 pieces of BC, 3 limestone FCR, and a sandstone ground stone fragment

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Table 10.1 LA 115262, Feature Data Recording during the Testing Results (continued)

Feature No.	Location	Right-of-way Location	Type	Plan Shape	L (m)	W (m)	Trowel Test Depth	Cultural Materials
14	West-Central	Outside	Thermal feature	Circular	1	1	>0.10	Ash-stained soils with a limestone hammerstone, 10 undifferentiated brownware ceramics, 5 ground stone fragments, and a chert flake nearby
15	South-Central	Outside	Structure	Circular	2	1.5	>0.10	Large ash stain with a large limestone flake/hammerstone fragment and 3 BC within the stain
16	East-Central	Inside	Thermal feature	Circular	0.5	0.5	>0.05	Ash-stained soils partially exposed subsurface within Shovel test 1 12 cm bgs.
17	East-Central	Inside	Thermal feature	Circular	0.5	0.5	> 0.10	Ash-stained soils

tial. Eight of the shovel tests were placed adjacent to features to investigate their natural stratigraphic context. The remaining seven shovel tests and most of the auger tests were placed in non-feature areas (mostly in the northern portion of the right-of-way) to document stratigraphy across the site and explore for subsurface cultural remains.

Table 10.2 summarizes the findings of all the shovel and auger tests. Three shovel tests produced evidence of subsurface materials or deposits. The results of ST 1 indicated that Feature 2 was perhaps considerably larger than its surface expression and identified this feature as a structure candidate. ST 6 encountered a subsurface ash stain, which was subsequently designated as Feature 16. A single ground stone fragment was recovered from ST 15. Auger tests were all negative. The auger tests did reveal caliche at depths ranging 0.5–1.2 m bgs.

Site Stratigraphy and Geomorphology

Geomorphic investigations at the site documented three stratigraphic units. The uppermost deposit at the site consists of 10–100+ cm of historic eolian sand. This includes both coppice dunes and sheet sands that cover some of the interdunal surfaces (Figure 10.3). These sediments are light brown (7.5YR6/4, d) and have a loamy sand texture. The general lack of soil formation and the surface position of this unit suggest that it is historic in age and, thus, has very limited archaeological potential. Cultural materials observed on the site typically occur in areas where the historic alluvium is thin or absent.

Underlying the historic sands in much of the site is an approximately 10-cm thick, humate-enriched unit that appears to be a soil Ab horizon. It is composed of a brown (7.5YR5/3, d), loamy sand, a distinct color difference from the surrounding sediments. Based on its stratigraphic position this unit could correlate with any of the Organ eolian units (7,000–100 B.P.). Without an accompanying B horizon or other stratigraphic units, further refinement of this unit's age based on stratigraphy cannot be made. Radiocarbon dates from the cultural features (see below) are probably the best source of information regarding age. What is unusual about this A horizon is that it directly overlies the Late Pleistocene/Early Holocene Isaack's Ranch deposit, which is the basal unit exposed at LA 115262. This position indicates that the A horizon developed in a thin mantle of eolian sand that had been deposited on the eroded surface of the Isaack's Ranch sediments. Some of the organic matter in this A horizon may also be cultural in origin considering its proximity to the site, but the unit is too widespread to be from a discernable feature. Many interdune surfaces have had the approximately 10-cm-thick A hori-

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Table 10.2 Shovel and Auger Test Results for LA 115262

Test No.	Location	Depth	Surface Soils	Cultural Evidence	Stratum 1	Cultural Evidence	Stratum 2	Cultural Evidence
ST 1	South-central, west of Feature 2	0.2 m	Friable, reddish-yellow sand (5YR7/8), surface to 0.11 m	None	Semi-compact, reddish-yellow, sandy loam (5YR7/8) with low density of caliche nodules, 0.11–0.2+ m	None	Semi-compact, strong brown, ash-stained, sandy loam w/some caliche 0.05–0.2+ m	Feature 2 fill (7.5YR5/3)
ST 2	Northeast portion of site	0.5 m	Friable, reddish-yellow sand with caliche nodules (5YR7/8), surface to 0.27 m	None	Semi-compact, strong brown, sandy loam (5YR6/6) with caliche nodules, 0.27–0.5 m	None	Calcrete or caliche, reddish-yellow to white (5YR7/6), 0.5+ m	None
ST 3	Northern end of site	0.4 m	Friable, reddish-yellow sand with caliche nodules (5YR7/8), surface to 0.1 m	None	Semi-compact, reddish-yellow sand with caliche nodules (5YR7/8), 0.1–0.3 m	None	Calcrete or caliche, reddish-yellow to white (5YR7/6), 0.3–0.4+ m	None
ST 4	East-central, north of Feature 7	0.33 m	Friable, reddish-yellow sand with caliche nodules (5YR6/8), surface to 0.15 m	None	Semi-compact, reddish-yellow, sandy loam with caliche filaments (5YR6/8), 0.15–0.27 m	None	Compact, reddish-yellow, sandy loam with caliche nodules (5YR6/8), 0.27–0.33 m on top of caliche	None
ST 5	East-central, 2.5 m south Feature 7, 2 m north Feature 6	0.4 m	Friable, reddish-yellow sand with caliche nodules (5YR7/8), surface to 0.1 m	None	Semi-compact, reddish-yellow, sandy loam with caliche filaments (5YR7/8), 0.1–0.22 m	None	Compact, reddish-yellow, sandy loam with caliche nodules (5YR7/8), 0.22–0.4 m on top of caliche	None
ST 6	Central, 5 m southwest of Feature 5	0.15 m	Friable, reddish-yellow sand with caliche nodules (5YR7/8), surface to 0.15 m	None	Gray, ash-stained sands (7.5 YR5/3), 0.11–0.15+ m	Feature 16	N/A	N/A
ST 7	North-central portion of site	0.5 m	Friable, reddish-yellow sand with caliche nodules (5YR7/8), surface to 0.12 m	None	Semi-compact, reddish-yellow, sandy loam with caliche filaments (5YR7/8), 0.12–0.25 m	None	Compact, reddish-yellow, sandy loam with caliche nodules (5YR7/8), 0.25–0.5 m down on top of caliche	None
ST 8	Northeast portion of site	0.42 m	Friable, reddish-yellow sand with caliche nodules (5YR7/8), surface to 0.06 m	None	Semi-compact, reddish-yellow, sandy loam with caliche filaments (5YR7/8), 0.06–0.17 m	None	Compact, strong brown, sandy loam with caliche nodules (5YR6/6), 0.17—0.30–0.42 m on top of caliche	None
ST 9	North-central portion of site	0.5 m	Friable, reddish-yellow sand with caliche nodules (5YR7/8), surface to 0.17 m	None	Semi-compact, reddish-yellow, sandy loam (7.5YR4/6), 0.17–0.23 m	None	Compact, reddish-yellow, sandy loam with caliche nodules (5YR7/8), 0.23–0.5+ m	None
ST 10	South-central, 2 m east of Feature 3	0.3 m	Friable, reddish-yellow sand with caliche nodules (5YR7/8), surface to 0.05 m	None	Semi-compact, reddish-yellow, sandy loam with caliche filaments (5YR7/8), 0.05—0.23–0.3 m	None	Calcrete or caliche contacted at 0.23–0.3 m	None

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Table 10.2 Shovel and Auger Test Results for LA 115262 (continued)

Test No.	Location	Depth	Surface Soils	Cultural Evidence	Stratum 1	Cultural Evidence	Stratum 2	Cultural Evidence
ST 11	South-central, 2 m southeast of Feature 1	0.35 m	Friable, reddish-yellow sand with caliche nodules (5YR7/8), surface to 0.1 m	None	Semi-compact sandy loam (7.5YR4/6), northeast and southeast corners of unit 0.1–0.35 m contacting caliche	None	Semi-compact reddish-yellow sandy loam with caliche nodules (5YR7/8), 0.1–0.35 m contacting caliche	None
ST 12	North-central portion of site	0.5 m	Friable, reddish-yellow sand with caliche nodules (5YR7/8), surface to 0.04 m	None	Semi-compact, reddish-yellow, sandy loam with caliche filaments (5YR7/8), 0.04–0.2 m	None	Compact, reddish-yellow, sandy loam with moderate caliche (5YR7/8), 0.2–0.5 m contact caliche	None
ST 13	East-central portion of site	0.4 m	Friable, reddish-yellow sand with caliche nodules (5YR7/8), surface to 0.08–0.13 m	None	Semi-compact, strong brown, sandy loam (A horizon) (7.5YR4/6), 0.08–0.13—0.12–0.15 m	None	Compact, reddish-yellow, sandy loam with moderate caliche (5YR7/8), 0.12–0.15—0.4 m contact caliche	None
ST 14	Central portion of site	0.4 m	Friable, reddish-yellow sand with caliche nodules (5YR7/8), surface to 0.05 m	None	Semi-compact, reddish-yellow, sandy loam with caliche filaments (5YR7/8), 0.04–0.2 m	None	Compact, brownish-yellow, sandy loam with moderate caliche (5YR6/6), 0.12–0.2—0.4 m contact caliche	None
ST 15	Southeast portion of site	0.35 m	Friable, reddish-yellow sand with caliche nodules (5YR7/8), surface to 0.1 m	1 ground stone fragment	Semi-compact, strong brown, sandy loam (7.5YR4/6), 0.1—0.15–0.35 m contact caliche	None	Compact, strong brown, sandy loam with caliche nodules (7.5YR4/6), 0.15–0.35 m contact caliche	None
AT 1	Southeast portion of site, edge of dune	0.68 m	Friable to semi-compact, reddish-yellow, sand/sandy loam with caliche nodules (5YR7/8), surface to 0.68 m	None	Calcrete or caliche at 0.68+ m	None	N/A	N/A
AT 2	Central portion of site, edge of dune	0.67 m	Friable to semi-compact, reddish-yellow, sand/sandy loam with caliche nodules (5YR7/8), surface to 0.6 m	None	Calcrete or caliche at 0.60–0.67+ m	None	N/A	N/A
AT 3	East-central portion of site, edge of dune	0.5 m	Friable to semi-compact, reddish-yellow, sand/sandy loam with caliche nodules (5YR7/8), Surface to 0.4 m	None	Calcrete to compact, reddish-yellow, sandy loam (5YR7/8) with high density of caliche	None	N/A	N/A
AT 4	East-central portion of site, edge of dune	0.53 m	Friable to semi-compact, reddish-yellow, sand/sandy loam with caliche nodules (5YR7/8), surface to 0.53 m	None	Calcrete or caliche at 0.53+ m	None	N/A	N/A
AT 5	Central portion of site, edge of dune	1.2 m	Friable to semi-compact, reddish-yellow, sand/sandy loam with caliche nodules (5YR7/8), surface to 1 m	None	Compact, reddish-yellow, sandy loam with moderate to high caliche (5YR7/8), 1.0–1.2 m	None	Calcrete or caliche 1.2+ m	None

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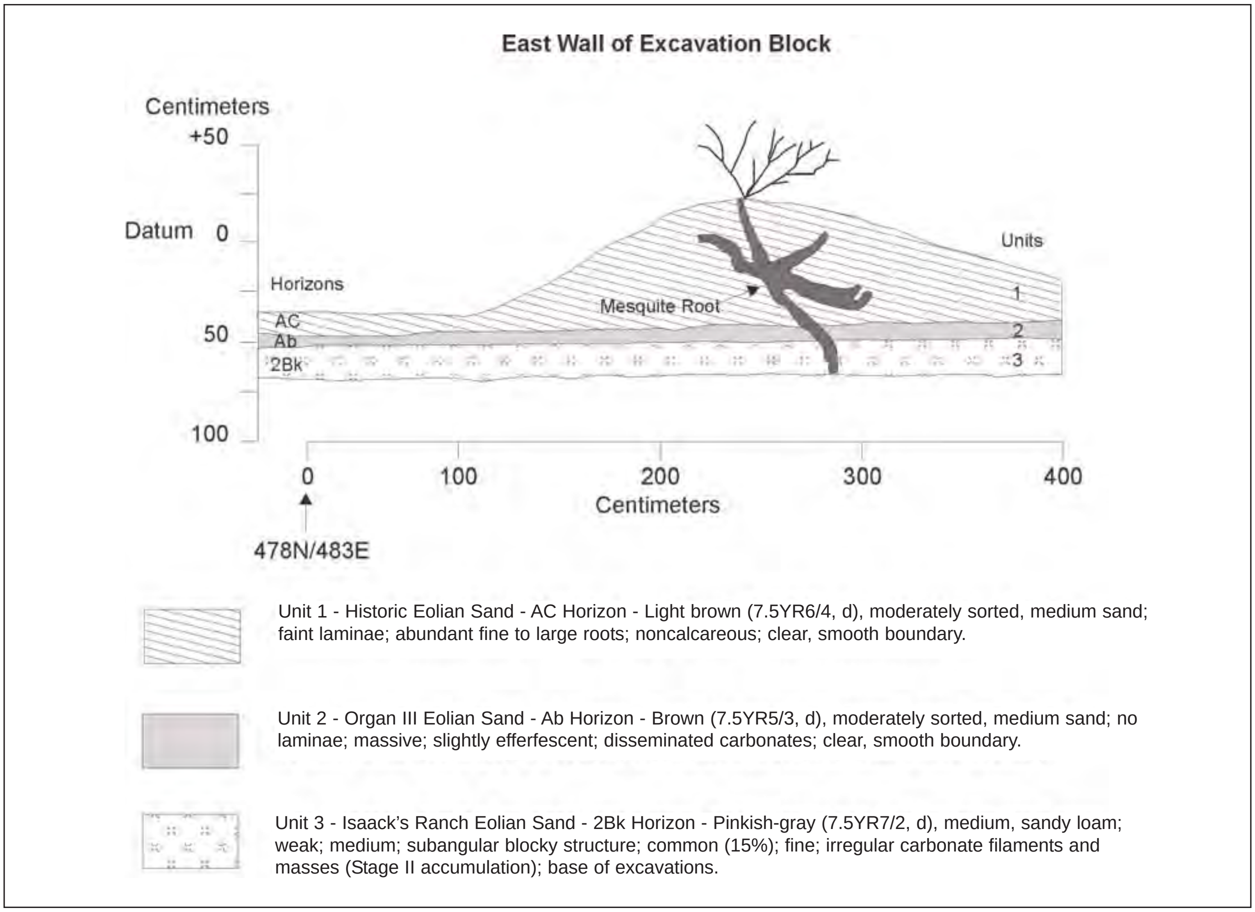

Figure 10.3 Stratigraphy in the east wall of Excavation Block 3 at LA115262.

zon removed by erosion and exhibit Formative features intruding into the underlying Isaack's Ranch unit.

The basal unit was exposed at the surface in highly eroded interdunal areas. This unit was a pinkish-gray (7.5YR7/2, d) paleosol that exhibited a Stage II calcium carbonate accumulation. Based on these carbonates, the unit is considered a 2Bk horizon. Though the texture was still considered a sandy loam, it had noticeably higher clay content than the overlying horizons. This higher clay content may indicate that the horizon experienced illuviation of pedogenic clays. These characteristics are typically associated with the Isaack's Ranch alluvium in the region, a soil/sediment unit dated to the 8,000–15,000 B.P. time frame (Gile *et al.* 1981; Monger 1993). As a result, the potential of these sediments is limited to Paleoindian components. No such materials were observed during our studies.

Although not documented during the geomorphological investigations, auger testing and some of the data recovery hand excavations at the site exposed caliche at depths ranging 0.5–1.2 m bgs. The caliche layer apparently corresponds to the La Mesa calcrete, which predates the generally accepted time frame for human occupation in the New World.

Data Recovery Strategy

Data recovery investigations at LA 115262 were carried out in the spring of 2000. A site datum had been established in the east-central portion of the site within the right-of-way. During data

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recovery, the existing datum was assigned the grid provenience of N500/E500, with an arbitrary elevation of 100 m. The remaining surface artifacts within the right-of-way were collected, and in the process a map of the site was produced showing artifact locations and topographic contours (Figure 10.4).

The data recovery plan called for block excavation units to be established around all features with subsurface potential. A 10 x 10-m block was proposed for Feature 2, which following testing was suspected to be the remains of a pithouse (upon excavation, however, it proved to be a thermal feature). Other smaller thermal features (Features 4, 6, 7, and 17) would be excavated using 5 x 5-m block excavation units. Subsequent mechanical stripping of the feature areas would be performed. Any additional features would be mapped and sectioned. Important features would be fully excavated.

These steps were all carried out with only slight modification. During data recovery, 12 excavation blocks, ranging in size from 2 x 2–7 x 6 m, were established over the features identified during site testing and data recovery (see Figure 10.4). A total of 258.5 m^2 was excavated during data recovery within the block excavations. Block excavations covered five of the 15 shovel tests excavated during the testing phase; the other 10 shovel tests exposed an additional 2.5 m^2, and so the total area hand excavated at the site was 260.5 m^2, or just over nine percent of the site area within the right-of-way. In terms of volume, a total of 36.4 m^3 was excavated within the blocks and an additional 1.07 m^3 in shovel tests for a total of 37.47 m^3.

After hand excavations were completed, two areas totaling more than 1,095 m^2 were machine stripped (North and South Scraped Areas; see Figure 10.4). The stripping uncovered an additional 40 percent of the site area within the right-of-way. Six features were uncovered by the scraping, and these were plotted within the site grid, recorded, and excavated. A block excavation was established over one of the uncovered features, Feature 40. Altogether, mechanical scraping and hand excavations uncovered nearly 50 percent of the site area within the right-of-way. Areas not scraped were to the south and north, where surfaces were deflated down to the caliche stratum and few cultural materials (and no features) were present on the surface.

Features

Data recovery investigations uncovered and excavated 42 features within the right-of-way (Table 10.3; see Figure 10.4). The eight features outside the right-of-way were not investigated during data recovery. Thirty-five features were uncovered by hand, within nine of the 12 excavation blocks. Two of these (Blocks 3 and 7) lacked features. Two of the investigated features proved to be non-cultural; one was a rodent burrow (Feature 21), while the other (Feature 42) was a lens of the A soil horizon. Machine stripping exposed an additional six cultural features, over one of which was placed an excavation block. One of the machine-exposed features (Feature 40) proved to be a natural organic lens. The 40 excavated cultural features included one pithouse, one possible pithouse (inferred from a tight clustering of features), 31 thermal features, four non-thermal pits, and three postholes.

Structures

Up to two structures were identified at LA 115262. Structure 1 (Feature 1) was a relatively intact pithouse basin, while Structure 2 (Feature 37) was inferred from a tight clustering of features, which were assumed to be the sub-floor remains of a pithouse that had been destroyed by natural deflation.

Structure 1: Feature 1

The location of Structure 1 was first detected as a small ash stain observed on the surface during the testing phase. Excavation of Block 2 revealed this stain to be much larger than its surface exposure indicated, and it was quickly recognized as a small pithouse measuring 2.1 m north-south x 1.9 m

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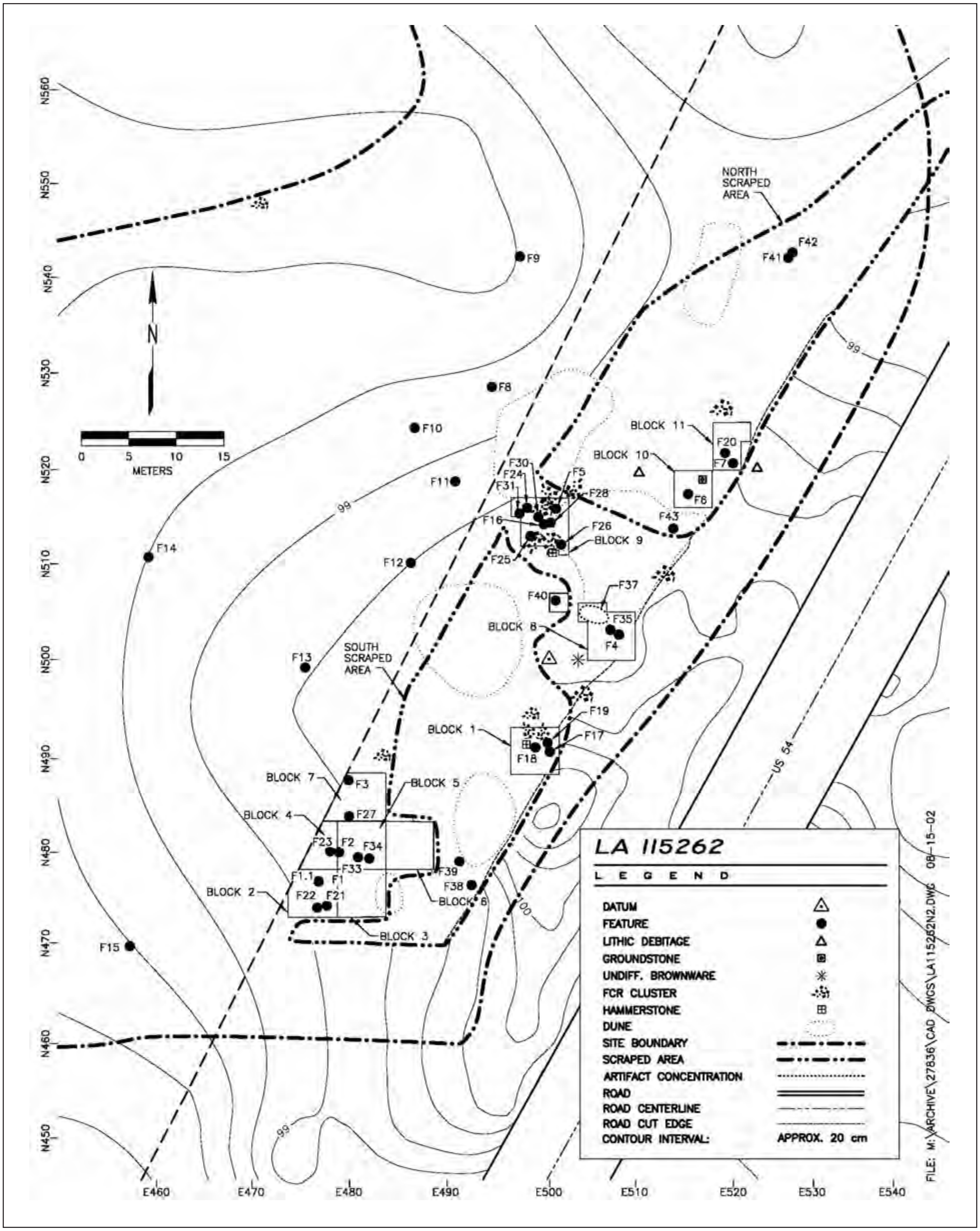

Figure 10.4 LA 115262, data recovery site map.

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Table 10.3 LA 115262, All Features

Fea	East	North	Block	Loc	Profile	Plan	Type	% Excav	Length (m)	Width (m)	Depth (m)	Thermal Materials	All Fea Soil Coll	Comments
1	476.05	476.79	2	External	Basin	Circular	Structure	100	2.1	1.9	0.17	Nominal (N)-BC	no	
1.1	476.08	477.08	2	1	Basin	Oval	Thermal feature	100	0.52	0.44	0.09	N-BC	yes	Root disturb is minimal
2	478.35	479.85	5	External	Basin	Circular	Thermal feature	100	0.73	0.68	0.12	BC/FCR	no	
3	479.2	487.4	7	External	Basin	Oval	Thermal feature	100	0.4	0.33	0.07	BC/FCR	yes	Good integrity
4	507.55	502.55	8	External	Basin	Oval	Thermal feature	100	1.32	1.19	0.37	N-BC	no	Roasting pit
5	500.68	515.58	9	External	Lens	Circular	FCR concentration	100	0.75	0.75	0.09	BC/FCR	no	Deflated thermal feature or discard pile, likely discard pile
6	514.8	517.68	10	External	Basin	Circular	Thermal feature	100	0.55	0.5	0.06	None	no	Modern party hearth
7	519.43	520.56	11	External	Basin	Irregular	Thermal feature	100	0.52	0.47	0.04	BC	yes	Animal burrow present
8	493.69	528.78	out of ROW	External	Unknown	Oval	Structure	0	4	2	0.1	BC/FCR	no	Depth determined with trowel test and exceeds 10 cm bgs
9	496.58	542.68	out of ROW	External	Unknown	Circular	Thermal feature	0	1	1	0.1	BC	no	Depth determined with trowel test and exceeds 10 cm bgs
10	486.15	524.47	out of ROW	External	Unknown	Circular	Thermal feature	0	1.5	1.5	0.1	BC	no	Depth determined with trowel test and exceeds 10 cm bgs
11	490.43	518.75	out of ROW	External	Unknown	Circular	Thermal feature	0	1.5	1.5	0.1	BC	no	Depth determined with trowel test and exceeds 10 cm bgs
12	485.92	510.02	out of ROW	External	Unknown	Oval	Structure	0	3	2	0.1	BC	no	Depth determined with trowel test and exceeds 10 cm bgs
13	474.82	499.19	out of ROW	External	Unknown	Circular	FCR concentration	0	1.5	1.5		BC/FCR	no	FCR concentration
14	458.54	510.69	out of ROW	External	Basin	Circular	Thermal feature	0	1	1	0.1	BC	no	Depth determined with trowel test and exceeds 10 cm bgs
15	456.5	469.91	out of ROW	External	Basin	Oval	Structure	0	2	1.5	0.1	BC	no	Depth determined with trowel test and exceeds 10 cm bgs

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Table 10.3 LA 115262, All Features (continued)

Fea	East	North	Block	Loc	Profile	Plan	Type	% Excav	Length (m)	Width (m)	Depth (m)	Thermal Materials	All Fea Soil Coll	Comments
16	499.47	514.27	9	External	Basin	Oval	Thermal feature	100	0.23	0.2	0.05	None	yes	Deflated remains of a thermal feature
17	499.85	490.27	1	External	Basin	Circular	Thermal feature	100	0.62	0.61	0.1	BC	yes	Deflated; rodent disturb
18	498.58	490.68	1	External	Basin	Oval	Thermal feature	100	0.8	0.67	0.1	BC	yes	Deflated
19	500.01	491	1	External	Basin	Oval	Thermal feature	100	0.32	0.28	0.06	BC	yes	Deflated
20	518.4	521.7	11	External	Basin	Oval	Thermal feature	100	0.36	0.29	0.1	BC	yes	Deflated
21	477.08	474.11	2	External	Basin	Oval	Rodent burrow	100	0.43	0.38	0.05	BC	no	
22	476.05	473.95	2	External	Basin	Oval	Thermal feature	100	0.45	0.35	0.1	N-BC	yes	Deflated
23	477.02	479.63	4	External	Basin	Oval	Thermal feature	100	0.54	0.36	0.05	None	yes	Deflated
24	497.8	516.08	9	External	Basin	Oval	Thermal feature	100	1.3	1.08	0.24	BC/FCR	no	Root & rodent dis-burb
25	498.25	513.02	9	External	Cylindrical	Oval	Thermal feature	100	0.8	0.7	0.08	BC/FCR	no	
26	501.23	511.88	9	External	Basin	Oval	Thermal feature	100	1.1	0.68	0.1	BC	no	Roots/surface burned
27	479.3	483.65	7	External	Basin	Oval	Thermal feature	100	0.45	0.27	0.03	None	yes	Root & rodent dis-turb; deflated
28	500.4	514.44	9	External	Basin	Oval	Thermal feature	100	0.71	0.64	0.13	BC	no	Dense caliche
29	500.99	513.18	9	External	Basin	Circular	Thermal feature	100	0.44	0.4	0.07	N-BC	yes	Roots
30	499.08	515	9	External	Basin	Circular	Thermal feature	100	0.4	0.38	0.08	BC	yes	
31	497.08	515.5	9	External	Conical	Circular	Thermal feature	100	0.42	0.4	0.15	BC	no	

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Table 10.3 LA 115262, All Features (continued)

Fea	East	North	Block	Loc	Profile	Plan	Type	% Excav	Length (m)	Width (m)	Depth (m)	Thermal Materials	All Fea Soil Coll	Comments
32	505.38	504.41	8	37	Basin	Oval	Thermal feature/entry	100	1.38	0.74	0.2	BC/FCR	no	BC/FCR in north portion of Feature-root disturb
33	480.22	479.22	5	External	Basin	Circular	Thermal feature	100	0.52	0.5	0.07	N-BC	yes	Root & insect disturb
34	481.38	479.18	5	External	Basin	Oval	Thermal feature	100	0.28	0.23	0.05	None	yes	
35	506.78	503.24	8	External	Basin	Circular	Thermal feature	100	0.47	0.44	0.14	None	no	
36	504.82	505.26	8	37	Basin	Circular	Pit	100	0.22	0.2	0.04	None	yes	Root disturb; sm fea (~0.75l)
37	504.7	504.85	8	External	Basin	Oval	Structure	100	2.75	2.06	0.2	N-BC/FCR	no	Eroded; deflated
37.1	503.88	505.3	8	37	Basin	Circular	Pit	100	0.2	0.2	0.07	None	yes	Badly eroded
37.2	503.56	504.7	8	37	Basin	Circular	Pit	100	0.2	0.2	0.09	None	yes	Eroded
37.3	503.61	505.22	8	37	Basin	Oval	Posthole	100	0.1	0.08	0.06	None	yes	
37.4	504.88	505.6	8	37	Basin	Circular	Pit	100	0.24	0.22	0.07	None	yes	
37.5	504.44	505.54	8	37	Basin	Oval	Posthole	100	0.08	0.07	0.04	None	yes	
37.6	504.03	504.64	9	37	Basin	Circular	Posthole	100	0.06	0.06	0.06	None	yes	
38	491.85	476.51	Surface scrape	External	Lens	Amorphous	Thermal feature	100	0.79	0.6	0.1	None	yes	
39	490.63	478.74	Surface scrape	External	Basin	Oval	Thermal feature	100	0.7	0.64	0.11	BC	yes	
40	500.91	506.2	12	External	Basin	Oval	Thermal feature	100	0.44	0.25	0.05	BC/FCR	yes	
41	525.27	541.08	Surface scrape	External	Lens	Circular	Thermal feature	100	0.2	0.18	0.02	None	yes	
42	525.5	542.02	Surface scrape	External	Lens	Amorphous	Natural	100	1	0.25	0.02	None	no	Natural organic lens
43	513.05	512.96	Surface scrape	External	Basin	Oval	Thermal feature	100	0.77	0.25	0.08	BC	yes	

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east-west, with an extant floor area of 3.62 m^2 (Figure 10.5). Excavation revealed a simple basin cross-section, with a maximum preserved depth of 17 cm (Figure 10.6). The floor area of this structure is smaller than the average floor area (4.4 m^2) of Archaic period and (7.5 m^2) Mesilla phase hut type structures in the desert floor zone of the Jornada Mogollon (Graves *et al.* 1996). The depth of the structure (17 cm) is also shallower than the average depth (20 cm) of Archaic period and (33 cm) Mesilla phase structures.

Dating

A radiocarbon sample (composed of *Proposis gladulosa* wood fragments), obtained from the floor hearth (Feature 1.1), yielded a calibrated, two-sigma date of A.D. 230–550 (Beta-156962). This places the structure within the early Mesilla phase. Although no diagnostic artifacts were present in Structure 1, undecorated brownware sherds were recovered from its vicinity, and these potentially support the radiocarbon date.

Internal Stratigraphy

The fill within the structure consisted of a uniform, dark grayish-brown, sand loam (10YR4/2), containing a small amount of charcoal flecks, burned caliche, and a moderate density of lithic debitage. The structure was excavated into a strong brown, sand loam (7.5YR5/8), which con-

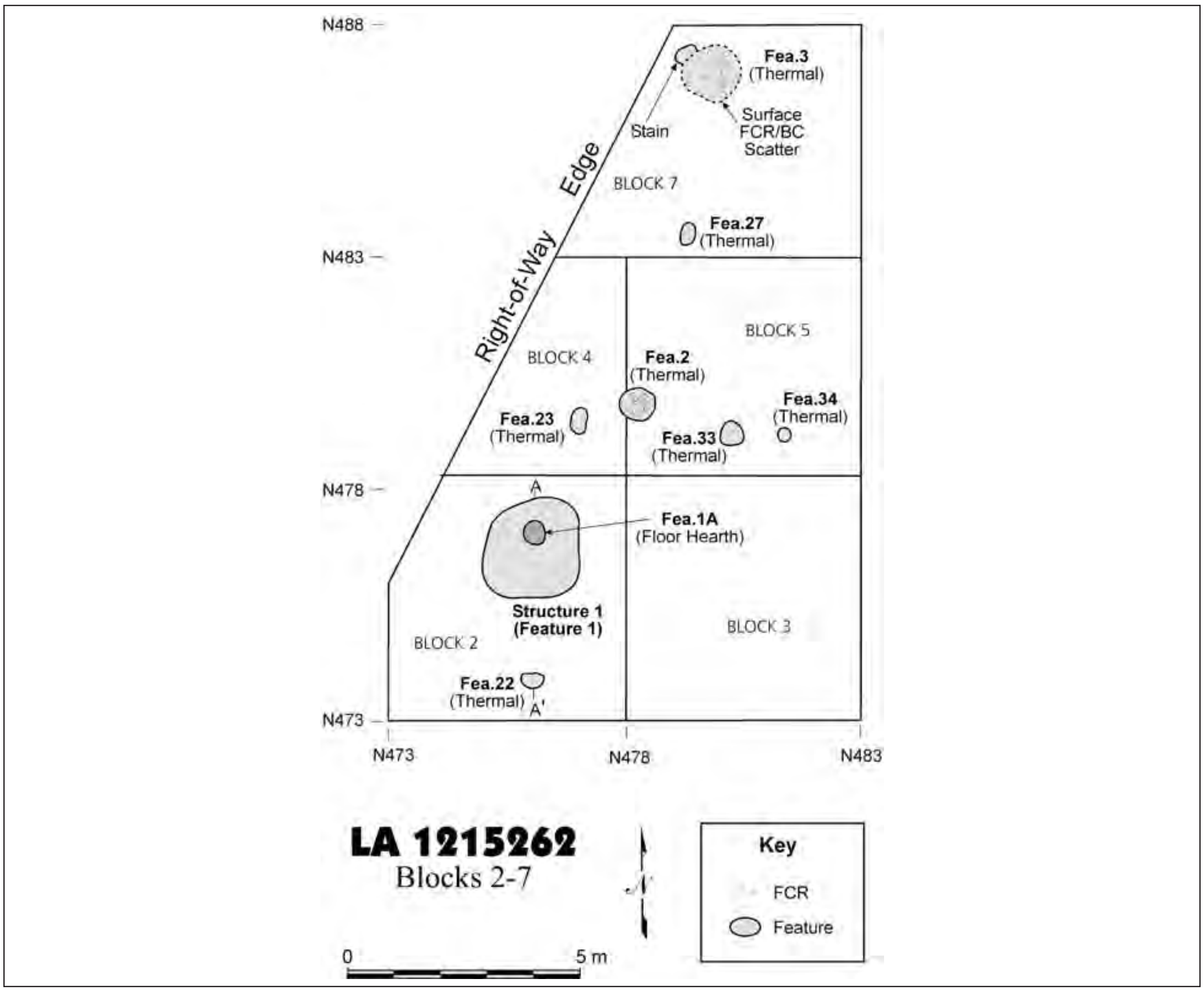

Figure 10.5 **LA 115262, Blocks 2–7, showing location of Structure 1 and surrounding thermal features. See Figure 10.6 for A-A' Profile.**

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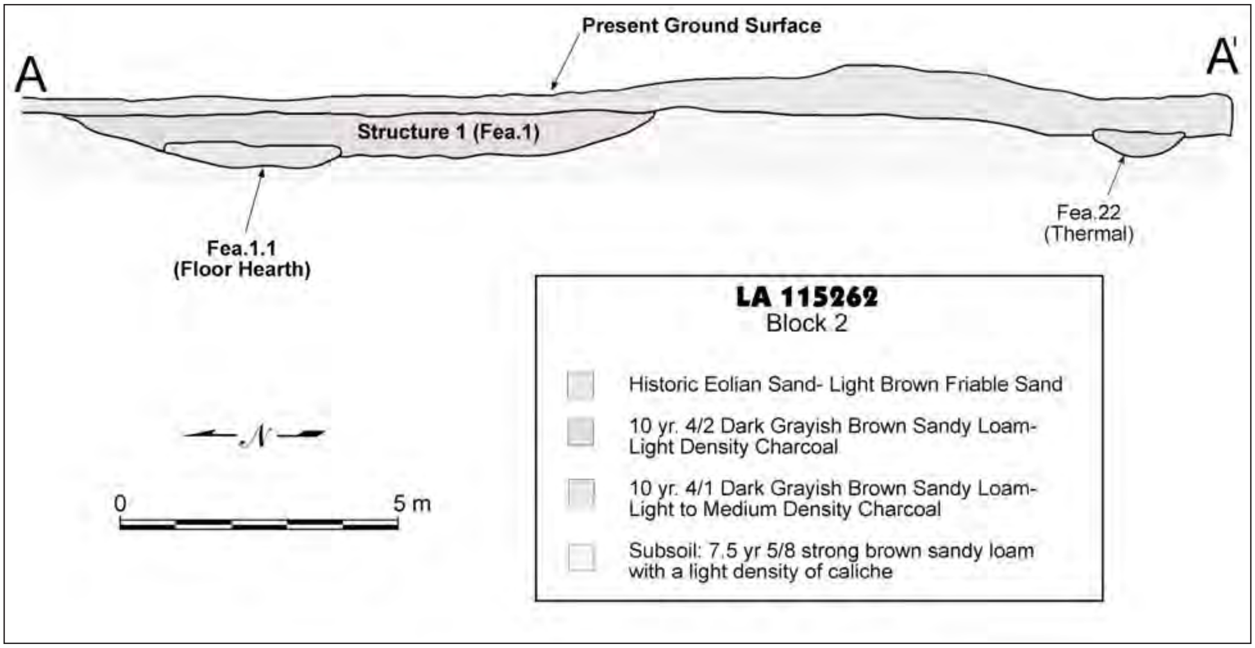

Figure 10.6 LA 115262, profile through center of Block 2, showing cross-sections of Structure 1 and Feature 22 (a small thermal feature). See Figure 10.5 for profile location.

tained an increasing density of caliche nodules and gravel inclusions with depth (see Figure 10.6). No *in situ* artifacts were encountered on the floor of the structure. The structure fill contained 18 lithic flakes of Franklin Mountain rhyolite. Debitage of this material type were also recovered to the west and north of the structure and were likely associated with the pithouse occupation. Note that high-counts of specific lithic debitage material types have been previously recorded within two other structures excavated on the desert floor not far from LA 115262 (Mauldin *et al.* 1998; O'Laughlin *et al.* 1988). Both were Late Archaic period structures and one contained a high count of Franklin rhyolite similar to Structure 1. Other cultural materials recovered from Structure 1 included 86 very small pieces of burned caliche and were likely coincidental.

Floor Features
An interior floor hearth (Feature 1.1) was located in the north-central portion of the house pit. This hearth measured 52 cm x 44 cm (18 cm^2, or just less than 5 percent of Structure 1's floor area), and was 9-cm deep. The fill of Feature 1.1, the floor hearth, was a dark grayish-brown, sand loam (10YR4/1) with small charcoal chunks and only one piece of burned caliche. The structure lacked any visible postholes, although it is possible that posts were located along the exterior margins of the house pit, but had been previously destroyed by erosion. On the other hand, it may be that this small structure did not require posts, or at least not any that would have left discernable traces.

Construction and Remodeling Evidence
The builders of Structure 1 dug a simple, shallow house pit that was likely more than 20 cm in its original depth. The house pit was a simple basin with walls that sloped gradually to a floor that was nearly level. No evidence of an entryway was located and daub was not observed. The superstructure was likely made from locally available brush (mesquite, narrow leaf yucca, and fourwing saltbush).

Abandonment Evidence
Structure 1 appears to have not been hastily abandoned. The lack of cultural materials on the floor indicates a planned departure. The presence of charcoal in the house pit fill (albeit a small amount) suggests the structure may have burned

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upon or after abandonment, although the charcoal may also be simply a fortuitous inclusion of the feature fill.

Structure 2: Feature 37

Structure 2 (Feature 37) was not a physical feature itself, but rather was inferred from a tight clustering of features assumed to be sub-floor facilities within a pithouse that had been completely deflated (Figure 10.7). Excavation of Block 8 (placed over nearby Feature 4, which had been documented on the surface during the testing phase) exposed an ash stain (Feature 32) in the northwest corner of the block, just below the surface. Upon excavation, Feature 32 proved to be an elongated stain that appeared to be a possible entryway, or perhaps the remains of an entry and a floor hearth. The block was then extended to the northwest, where the excavation uncovered a tight, discrete cluster of features. A similar concentration of features had been encountered within a Mesilla phase pit structure on site FB 12100 (see Chapter 3; Mauldin *et al.* 1998:51), and it was therefore assumed that this feature cluster at LA 115262 also marked sub-floor facilities of a pithouse. In LA 115262 Block 8, however, no trace of the pithouse itself was encountered, and it was thus inferred that deflation had previously destroyed the house pit, leaving only the sub-floor features. The deflated surface at the Structure 2 locality also contained a comparatively high density of artifact debris, and this discrete artifact concentration, along with the presence of possible postholes among the sub-floor features, further indicated the former presence of a large, now-deflated feature.

Insofar as this inference is true, the configuration of the sub-floor features suggests Structure 2 consisted of an oval pithouse, with the long axis of the structure oriented southeast to northwest. The inferred dimensions are approximately 2.75 m in length x 2.06 m in width, with a floor area of ± 4.3 m^2. Note that this is slightly smaller than the average floor area of simple-basin, desert-floor pithouses dating from the Late Archaic period (4.4 m^2) and, especially, the Mesilla phase (7.5 m^2) (see Chapter 3). Depth of any original house basin here is unknown, of course, although comparative evidence suggests it was probably 10–30-cm deep. Given the apparent small size of Structure 2, house pit depth was probably toward the shallow end of this range, which if true might have left the feature especially vulnerable to destruction by erosion.

Dating

Structure 2 was not chronometrically dated; however, ceramics were recovered from this locality (see below). All but one of the analyzed sherds are El Paso Brown, including one each recovered from two of the sub-floor features (Features 32 and 37.1). The single exception was a Playas Red Incised sherd, which dates after ca. A.D. 1060. This sherd implies a late Formative affiliation; however, given that the sherd was not recovered from one of the sub-floor pits, but rather lies on the deflated surface from which these features originate, it seems just as likely that this sherd was deposited sometime following the abandonment of Structure 2. Accordingly, Structure 2 is tentatively dated to the Mesilla phase, although a more specific time frame within this phase cannot be postulated.

Internal Stratigraphy

Because no house pit or floor was present, there is no fill to describe. Overlying the deflated surface were recent sands, while the underlying matrix (into which the sub-floor features were excavated) consisted of a strong brown, sandy loam (7.5YR5/6) with a few caliche nodule and gravel inclusions. The fill within the sub-floor features was a consistent dark yellowish-brown (10YR4/4), ash-stained, sand loam with some charcoal flecking. The only exception here was Feature 32 (the possible entry/floor hearth), which was filled with a dark grayish-brown (10YR4/2), sand loam with some small charcoal chunks and caliche nodules. The only artifacts collected directly from the floor features were El Paso Brown body sherds, including one each from Features 32 and 37.1. The only other cultural debris from the floor features consisted of a small amount of burned caliche and fire-cracked rock from the northwest portion of Feature 32 (hence its possible function as a hearth). Materials

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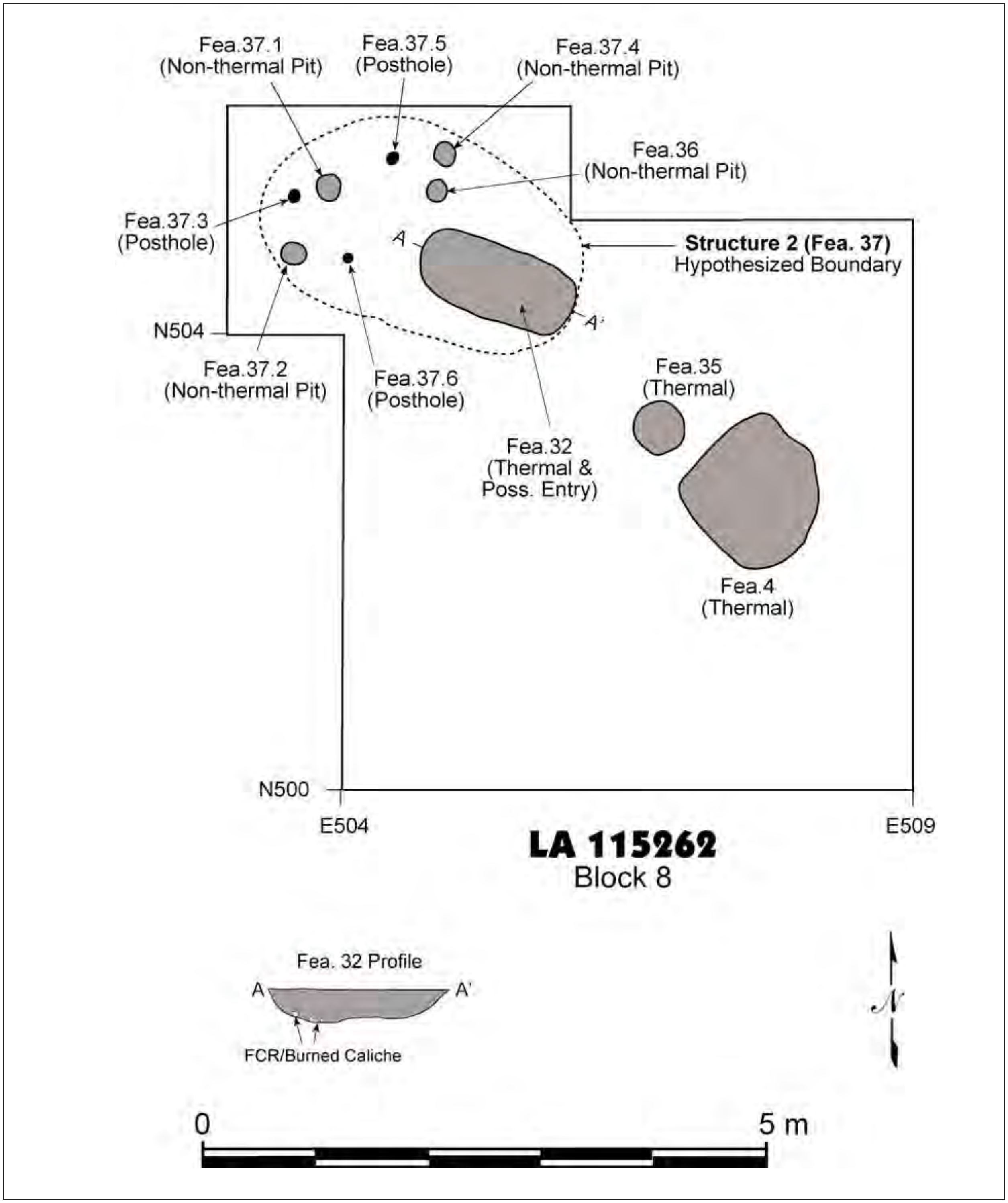

Figure 10.7 Block 8 at LA 115262. Structure 2 (Feature 37) was inferred from the tight cluster of features assumed to be sub-floor facilities within a completely deflated pithouse. Feature 4 is an early Fresnal-phase roasting pit.

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recovered on the deflated surface immediately above the floor features include 18 ceramic sherds, one red chert hammerstone, 14 lithic flakes, two ground stone fragments, one hammerstone, 91 very small pieces of burned caliche, and two pieces of fire-cracked rock. The density of subsurface cultural materials was notably higher in the Structure 2 locality than in the surrounding vicinity.

Floor and Internal Features

The Structure 2 sub-floor features included three possible postholes, four non-thermal pits, and the aforementioned Feature 32 (Figure 10.7). Feature 32 encompasses 0.84 m^2, and likely represents an entry and/or floor hearth associated with the structure. All other features encompassed an additional 0.15 m^2 or an estimated total of 1.0 m^2, or 23 percent of the total estimated floor area.

The three postholes (Features 37.3, 37.5, and 37.6) ranged 6–9 cm in diameter and were 4–6-cm deep. These were all located in the western portion of the inferred structure floor. The four non-thermal pit features (Features 36, 37.1, 37.2, and 37.4) were also randomly distributed within the Structure 2 area. Each was circular in plan view and basin shaped, ranging 20–24 cm in diameter and 4–9 cm in depth. All contained an ashy, dark yellowish-brown fill (see above). These four features may all represent the lower portions of small storage pits. Feature 32 extended 1.38 m in length x 0.74 m in width, and reached a maximum depth of 20 cm. As noted above, Feature 32 likely represents a portion of an entry into the structure from the southeast sloping from the southeast to the northwest along the long axis of the structure. Judging from the small concentration of burned rock and caliche at the northwest end of this feature, its documented boundaries may also include a small, basin-shaped interior floor hearth near the center of the structure. No oxidization was observed within Feature 32, however, so if this portion of the feature was a hearth, it did not involve intensive burning.

Construction and Abandonment Evidence

Given the absence of a preserved house pit, little can be said concerning the construction and abandonment of Structure 2. Most likely, a simple-basin house pit was dug 10 cm or more into the sand loam substrate. Assuming that Feature 32 indeed represents an entry ramp, then a doorway was located at the southeastern end of the structure. No daub was observed in the Structure 2 locality, suggesting an expedient superstructure made from locally available brush (mesquite, narrow leaf yucca, and fourwing saltbush). Interior postholes may represent attempts to prop up and maintain the superstructure.

Discussion

The two structures at LA 115262 appear to represent two, somewhat different occupation modes (cf. Whalen 1994). The small floor area, small hearth, and paucity of internal pit features in Structure 1 indicate that this pithouse was occupied for a relatively short duration, possibly less than a season. This inference is supported by the paucity of artifact debris within Structure 1. In contrast, Structure 2, although also small (approximately 4.3 m^2 floor area), contains multiple internal pit features, possibly including an entry ramp, a hearth, several postholes, and up to four small storage pits. The presence of the internal storage features indicates a greater investment in this structure and, consequently, a longer-term use, perhaps including winter occupancy. The higher density of artifacts at the Structure 2 locality relative to Structure 1, supports this scenario.

Thermal Features

Thirty-one thermal features were excavated at LA 115262 (see Table 10.3). Of these, 29 were extramural and two were intramural (one each in Structures 1 and 2). Thermal features were classified as such by concentrations of ash and charcoal in their fill. In addition, some of these features contained burned rock and/or caliche. The thermal features were classified as small (< 70 cm maximum diameter) or large ($\geq$ 70 cm maximum diameter). In most cases, small thermal features are likely the remains of hearths, while large ther-

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mal features were used as roasting pits (see Chapter 30). One thermal feature consisted of a concentration of deflated burned rock and caliche and is treated separately from the small and large thermal features.

Small Thermal Features

Nineteen small thermal features were identified (Figures 10.8 and 10.9). All but one of these were extramural, the sole exception being Feature 1.1 inside Structure 1. Feature 1.1 was oval in plan with a basin-shaped cross-section. Of the 18 extramural, small thermal features, one (Feature 6) was a modern hearth, while the remaining 17 were prehistoric. In terms of plan morphology, nine of these were oval, seven were circular, and one was irregular in shape (the irregular shape of the latter feature [Feature 7] was likely due to its severely deflated condition). The 19 small thermal features ranged 19–62 cm in maximum diameter (average 42.8 cm). Profile shapes included 16 basin, one conical, and one lens. The lens-shaped hearth (Feature 41) was probably the highly deflated remains of a once basin-shaped feature. The small thermal features range 2–15 cm in depth from (average 7.2 cm), and their very shallow remains are symptomatic of the generally deflated conditions on this site.

Only six of the 18 prehistoric small thermal features lacked burned rock and/or caliche. These included Features 16, 23, 27, 34, 35, and 41 (see Figure 10.9). Three of these were only very shallow remnants of thermal features (Feature 16, 34, and 41) and each may have once contained burned rock in their now-destroyed portions. The other three were better preserved, yet still lacked burned rock. The floor hearth in Structure 1 contained only a small amount of burned rock/caliche. Very small amounts of burned rock/caliche were present in three of the small, extramural thermal features (Features 22, 29, and 33). The remaining 12 small thermal features all contained higher densities of burned rock and/or caliche, most of which was burned caliche, with only four of these also containing pieces of fire-cracked rock. The high incidence of burned caliche, as opposed to burned rock, is probably symptomatic of this site's position in the middle of the desert floor, some 20 km or so from the nearest mountains with rocky outcrops (see Chapter 30).

Large Thermal Features

Eleven large thermal features were excavated at LA 115262 (Figures 10.10 and 10.11). At least most of these were probably roasting pits. All but one was extramural, the lone exception being Feature 32 in Structure 2.[1] The 10 extramural, large thermal features ranged 0.70–1.32 m in maximum diameter (average 0.90 m) and 8–37 cm in depth (average 14.3 cm). The majority of these features ranged 70–80 cm in maximum diameter, with only three larger than this (Features 4, 24, and 26). Eight of the large thermal features were oval, with one circular (Feature 2) and one amorphous (Feature 38). All but two had basin-shaped profiles, the exceptions being Feature 25 (cylindrical) and Feature 38 (a thin lens). In terms of depth, the large thermal features ranged 8–37 cm, with an average depth of 14.3 cm. The variation in depth probably relates in part to degree of deflation.

The only roasting pit without burned rock and/or caliche was Feature 38. All remaining roasting pits contained a large quantity of burned rock/caliche, with the exception of Feature 4, which contained a small amount of these materials. As in the small thermal features at this site, most of the burned "rock" in the large thermal features was actually caliche. Fire-cracked rock was present in only three of these features.

FCR Concentration

One of the features within the right-of-way, Feature 13, was a completely deflated concentra-

[1] Only a portion of Feature 32 may have been a thermal facility, marked by a small concentration of burned rock and caliche. Because there was no discernable break in the feature matrix between the area containing this concentration and remaining portion of this pit, it is classified as a large thermal feature based on the maximum diameter of the entire feature. The thermal portion of this feature, however, may have been a hearth that was less than 70 cm in maximum diameter. Accordingly, Feature 32 is excluded from the remaining discussion of large thermal features.

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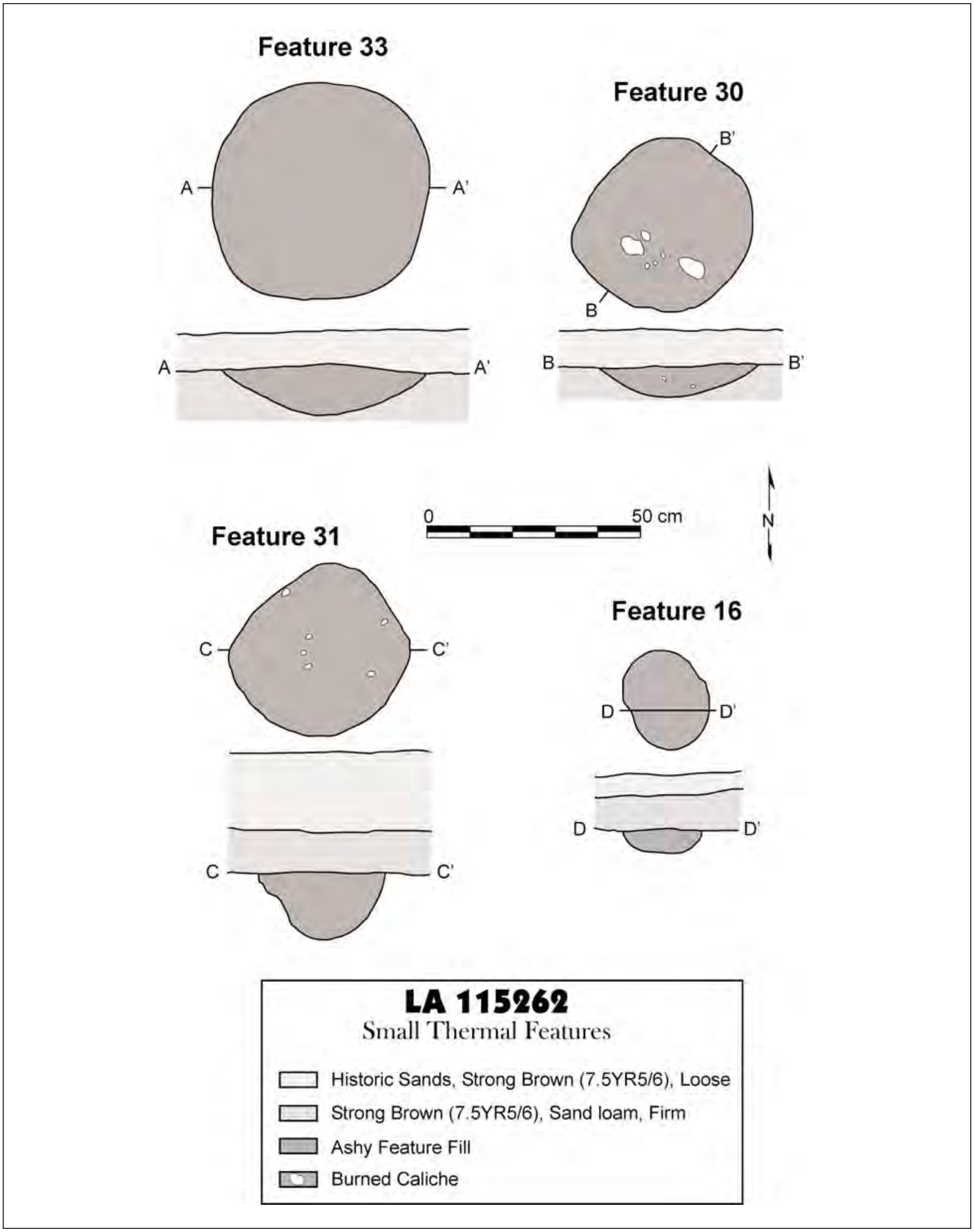

Figure 10.8 Selected small thermal features at LA 115262.

Figure 10.9 Feature 35 at LA 115262. Top: before excavation. Bottom: profile.

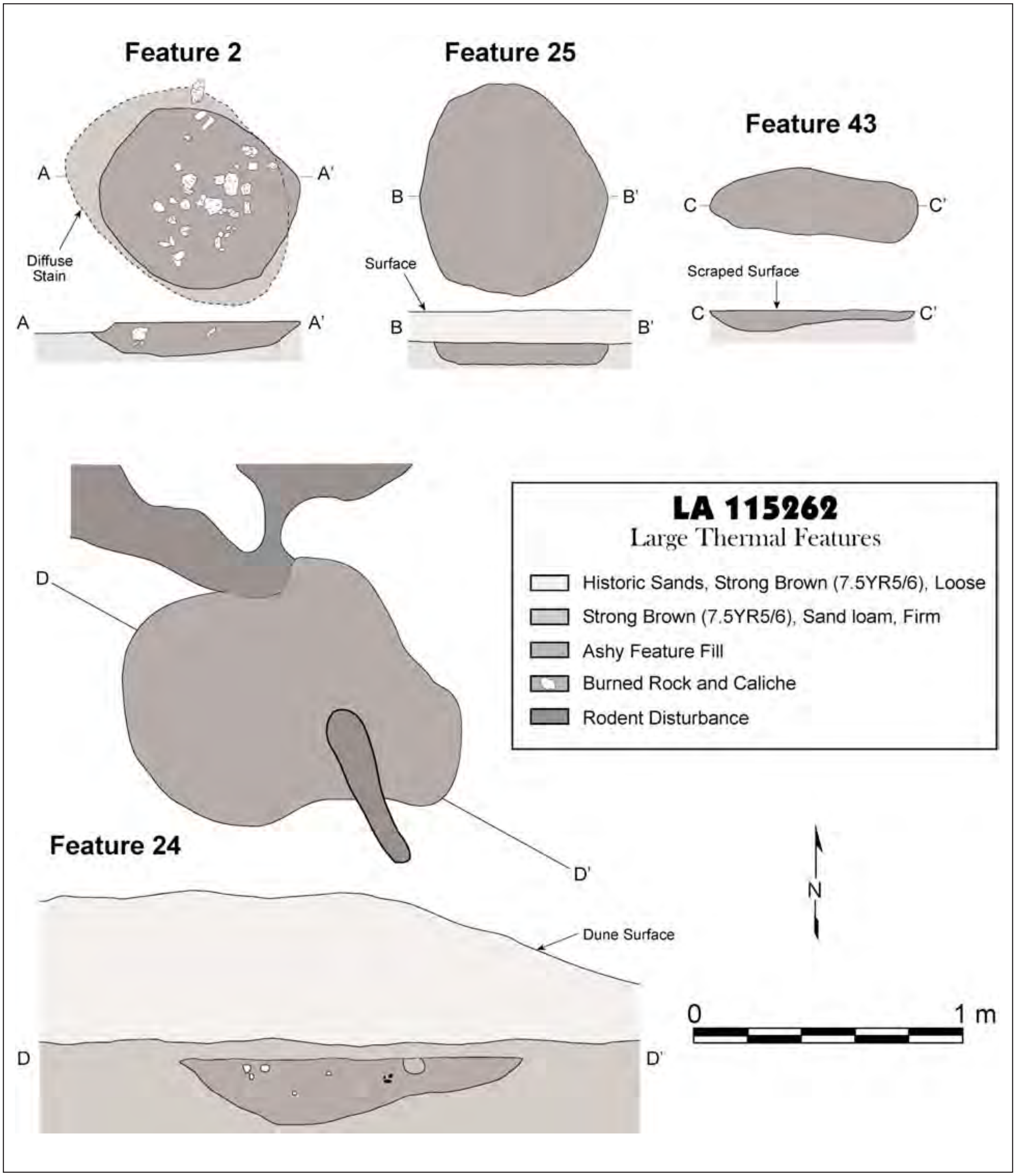

Figure 10.10 Selected large thermal features at LA 115262.

Figure 10.11 Feature 2, a roasting pit at LA 115262. Note the concentration of burned caliche in the pit fill.

tion of burned rock and caliche. This feature lacked any associated ash-stained soil. This circular feature measured 75 cm in diameter, and contained a dense concentration of more than 100 small pieces of burned caliche, along with a few pieces of fire-cracked quartzite and rhyolite. The burned rock/caliche was all contained within the upper few cm of the surface. This feature likely represents the deflated remains of a roasting pit or hearth.

Non-thermal Pits and Postholes

Four features were categorized as non-thermal pits and three as postholes. These were all classified as non-thermal features based on their size, contents, and lack of oxidization. All of these were located within the postulated Structure 2, and are discussed above in the structures section.

Spatial and Temporal Relationships of Site Features

Features within the right-of-way exhibit some clustering in certain areas of the site (see Figures 10.4 and 10.5), and the proximity of some of these features to nearby structures, or to one another, may indicate contemporaneous activity areas and/or household clusters. Structure 1 is surrounded by a cluster of thermal features (Features 2, 21, 23, 33, and 34), some of which may have been used during the occupation of this small pithouse. At least Feature 2 (a large roasting pit), however, appears to pre-date Structure 1; this is indicated by a radiocarbon determination of 370 B.C.–A.D. 220, whereas the floor hearth in Structure 1 yielded a date of A.D. 230–550 (both dates are two-sigma, calibrated). These date ranges nearly overlap, however, and so possible contemporaneity between Structure 1 and Feature 2 cannot be ruled out. This possibility is underscored by the recovery of an El Paso Brown sherd from Feature 2, which suggests Feature 2 probably dates A.D. 200 or later, and that this roasting pit is an early Mesilla-phase feature (as is nearby Structure 1). The features surrounding Structure 1 may thus represent a household cluster, with a small pithouse surrounded by extramural hearths and roasting pits.

Spatial proximity alone cannot always justify temporal feature associations, however. For example, the excavators presumed a temporal affiliation (concurrent use) between Structure 2 and nearby Features 4, 35, and 40. Subsequent analysis, however, demonstrated that Features 32 and 37.1 (which are presumed to have been inside the postulated Structure 2) contained El Paso Brown sherds, indicating a Mesilla-phase affiliation, while Feature 4 yielded a radiocarbon date of 2340–2010 B.C. (two-sigma, calibrated), which falls in the early Fresnal phase. A temporal gap of as much as two millennia thus separates these spatially proximal features.

An especially dense concentration of thermal features was uncovered in Block 9 (Figure 10.12). One of these, Feature 24, yielded a radiocarbon date of 520–200 B.C., which falls in the middle Hueco phase of the terminal Late Archaic. None of the features in Block 9 yielded ceramics (and only one sherd came from a non-feature context in this block), which leaves open the possibility that these thermal features represent a temporally and spatially discrete cluster, possibly associated with one or more structures that either did not

leave archaeological traces or were obliterated by erosion. The same scenario may hold for the smaller feature concentrations at LA 115262 (i.e., Features 17–19 in Block 1, Features 7 and 20 in Block 11, and Features 38 and 39 in the southeast portion of the site). But, again, contemporaneity of features within these clusters cannot be demonstrated, as the recurring, intermittent use of the site by Late Archaic and Early Formative groups has resulted in a palimpsest of features and other archaeological remains on a deflated surface.

Artifact Assemblage

A total of 264 durable artifacts were recovered and analyzed from LA 115262. These include 67 ceramic sherds and 197 lithic artifacts. In addition, botanical remains were recovered from flotation and pollen samples, and a very small quantity of animal bone fragments were collected and analyzed as well. Also, surface-collected artifacts include 19 items (including 16 lithics and 3 ceramic sherds), recovered during both the testing and data recovery phases.

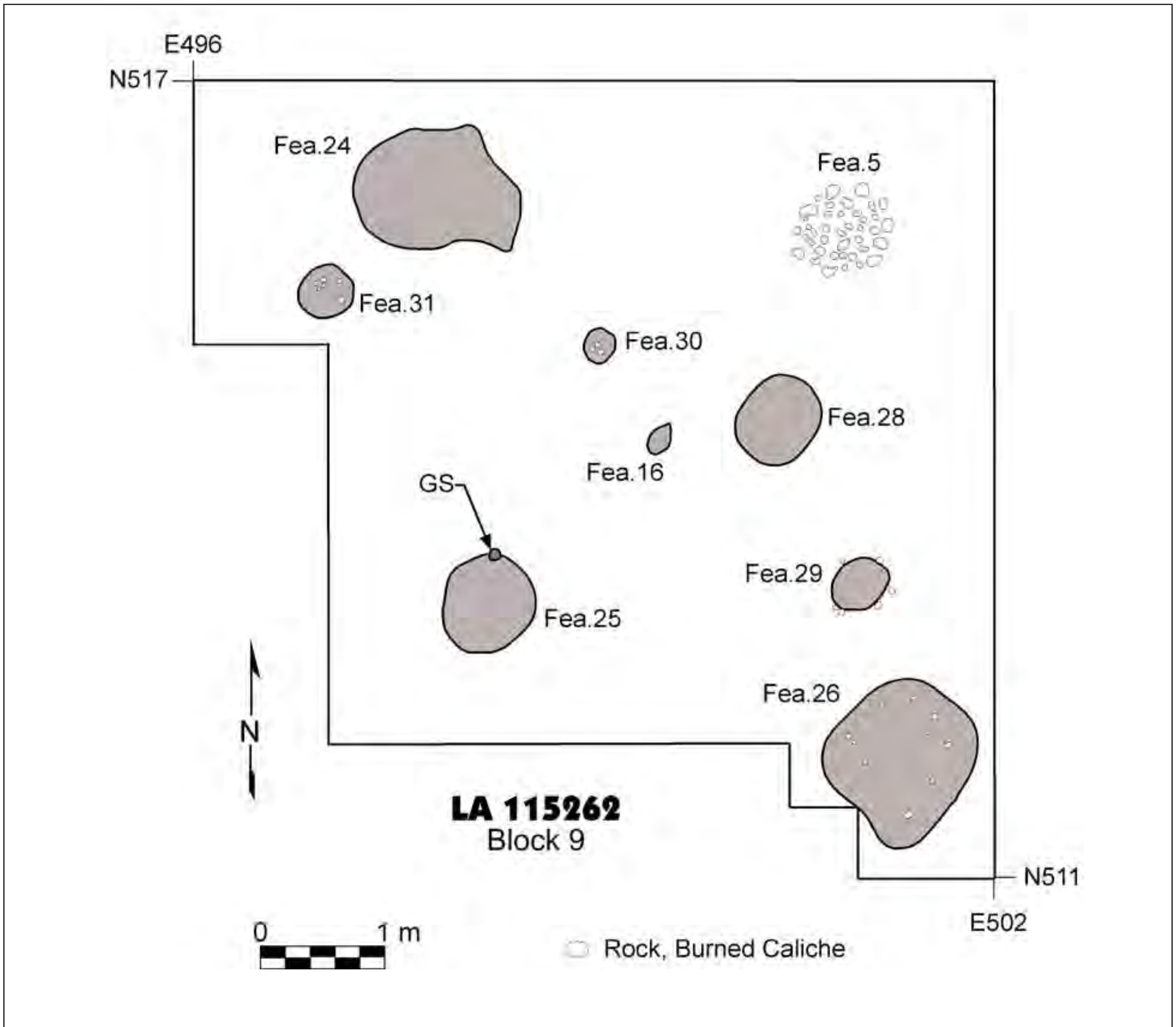

Figure 10.12 Block 9 at LA 115262.

Ceramic Artifacts

A total of 69 sherds, weighing 280.5 grams, was recovered from LA 115262. These include El Paso Brown, Jornada Brown, Alma Plain, and Playas Red Incised. As shown in Table 10.4, 7.5 percent of the assemblage was identified as too small for analysis. These sherds were counted and weighed, but no further analysis was conducted. Given that these small sherds probably are all undecorated brownwares, 72 percent (58 percent by weight) of the total assemblage may represent brownware utility pots. The lack of painted brownware further suggests that all of the brownware sherds are from El Paso Brown jars. A significant number of Alma Plain sherds were identified, comprising 24 percent (by weight and count) of the assemblage. Based on temper and paste characteristics, the Alma Plain sherds represent one vessel that was probably produced in the Mimbres region to the west. With the Jornada Brown and Playas Red Incised sherds, the small assemblage represents a minimum of four vessels. Each of the ceramic type designations is described in detail below along with spatial and temporal interpretations of the assemblage.

El Paso Brown

The majority of sherds from this site were identified as El Paso Brown. All of the El Paso Brown sherds had temper consisting of coarse granitic fragments typical of the type. One of the fragments had flecks of mica, a frequent inclusion of granite. The observed variation in this assemblage is well within the published description for El Paso Brown (Runyan and Hedrick 1987) and falls in line with the other assemblages from the project. Both plain and polished surfaces were identified; 40 sherds have plain interior and exterior surface and three have polished exterior and plain interior surfaces. Only jars sherds were identified, including body and basal fragments. The absence of rims precludes further evaluation of the temporal placement based on rim and lip morphology.

No use-wear or residues were noted in the El Paso Brown assemblage; however, a single body sherd was shaped along one edge (Figure 10.13, left center). Because the shaping modification was incomplete, its function could not be determined. Since no use-wear attrition was noted, vessel use can only be surmised. It is likely that the pottery was used for cooking and/or storage purposes. Without rim fragments, an estimate of vessel numbers is problematic; however, a rough estimate of 1–3 jars is proposed. Vessels often can be distinguished based on paste and surface characteristics. Paste colors varied from dark gray to brownish-orange to reddish-orange. Surfaces were plain on both sides or with a light polish on

Table 10.4 Summary of Ceramic Types and Vessel Data from LA 115262

Type	Vessel Form	Vessel Part	Count		Weight	
			n	%	n	%
El Paso Brown	Jar	Base	1	1.5		1.8
		Body	42	62.7		54.8
Sub-total			*43*	*64.2*	*158.6*	*56.5*
Jornada Brown	Jar	Base	1	1.5		14.3
		Body	1	1.5		4
Sub-total			*2*	*3*	*51.1*	*18.2*
Alma Plain	Jar	Base	1	1.5	13	4.6
		Body	15	22.4		19.2
Sub-total			*20*	*23.9*	*66.9*	*23.9*
Playas Red Incised	Bowl	Body	1	1.5		0.3
Too small for analysis	Not analyzed	Not analyzed	5	7.5		1.1
Total			*69*	*100*	*280.5*	*100*

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the exterior; however, most were eroded on one surface. These differences in paste and surface characteristics might be explained as differential firing of the same vessel; however, sherds were not concentrated in any one given feature. The sherds were recovered from six of the eight proveniences from varying levels. This suggests that the sherds may represent more than one vessel. Since no rim fragments were identified, specific jar forms could not be determined.

Alma Plain

Sixteen sherds having polished exterior surfaces and temper/paste characteristics indicative of residual granitic clay were identified as Alma Plain (Figure 10.13, bottom row). All of the Alma Plain sherds are from a single jar, represented by body fragments. No use-wear, residues, or post-firing modifications were noted. The paste color is light brown and the texture is semi-friable. Although the temper is granitic, the composition of the granite and the paste texture is significantly different from the local El Paso Brown and Jornada Brown ceramics. Because the granitic fragments vary in size and appear to blend into the paste rather than contrasting with the paste, it is likely that the clay source was a residual clay originating from a decomposing granitic outcrop. Prehistoric potters in the Mimbres area commonly used residual clays for ceramic production (see Wilson 1994). Sourcing data from the NM 90 Project (Reed *et al.* 2000), in the Big Burro Mountains of the Mimbres area, indicate that residual granitic clays were used in the area to produce utility ware pots. Although it is unclear from where the Alma Plain jar originated, the Big Burro Mountains is one possibility.

Jornada Brown

Two Jornada Brown jar sherds, weighing 51.1 grams, were recovered. The sherds are tempered with medium quartz sand, have a brownish-orange paste, plain interior surfaces, and polished exterior surfaces (Figure 10.13). One sherd is from the basal portion of a vessel, thus accounting for its inordinate thickness. No use-wear, residues, or post-firing modifications were noted on the sherds.

Playas Red Incised

A single small redware bowl body sherd, weighing 0.8 grams, was recovered from the area of Feature 37 (Structure 2). The sherd is tempered with angular quartz sand and has a brown, semi-friable paste. It is polished on the interior and is slipped with red clay on the exterior. Short linear incised lines are present on the exterior surface. Because the slip does not fill in the incised lines, the decoration was placed on the sherd after it was slipped. Based on Runyan and Hedrick's (1987) description, the sherd most closely resembles Playas Red Incised; however, because the sherd is small the type designation is tentative.

Spatial Distribution and Ceramic Chronometry

Thirty-four percent of the ceramics are from feature contexts including both thermal features and structures (Table 10.5). The lack of an assortment of decorated types, and in one case, the erosion of a structural feature, has made the evaluation of ceramic components and temporal site placement difficult. For example, the ceramics that were spatially associated with Structure 2 (Feature 37), a presumed deflated pit structure, include El Paso Brown and the small fragment of Playas Red Incised. The presence of a Playas Red Incised sherd suggests that this structure was built sometime after A.D. 1060 (Runyan and Hedrick 1987); however, Structure 2 is only an inferred feature, and if there was indeed a structure at this locality its house pit and floor were completely destroyed by erosion, leaving no *in-situ* feature fill (see above). Thus, the Playas Red Incised sherd may have been deposited on the deflated surface following abandonment of the structure. Features 37.1 and 32, which represent internal pits of the presumed Structure 2, did contain *in-situ* feature fill with El Paso Brown sherds and indicate a probable Mesilla-phase affiliation for this structure.

The remaining ceramic-bearing features contained only El Paso Brown sherds, making assignment of ceramic dates difficult as well. Examination of radiocarbon dates for the site does provide some assistance in narrowing the ceramic date range.

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Figure 10.13 El Paso Brown (left top and center), Jornada Brown (top right corner), and Alma Plain (bottom row) sherds from LA 115262.

The radiocarbon date for Feature 2 (370 B.C.–A.D. 220; two-sigma, calibrated) suggests a late Hueco- or very early Mesilla-phase affiliation. Given that the fill from this feature contained an El Paso Brown jar sherd, a very early Mesilla-phase date is more likely. Alma Plain is present in surface and non-feature excavation units, but is not associated with any of the radiocarbon dates. Alma Plain was the most common utility ware in the Mimbres area from A.D. 200–850, but was produced in smaller amounts through the end of the Classic Mimbres period (Haury 1936b; LeBlanc 1982a, 1982b). Although none of the Alma Plain sherds were recovered from dated contexts, the radiocarbon age (A.D. 230–550) from thermal Feature 1.1 falls within the period of production for Alma Plain. Considering the lack of decorated sherds, an early Mesilla phase-component at the site fits best with the ceramic data.

Lithic Artifacts

Lithic artifacts recovered from LA 115262 include 18 chipped stone tools, four cores, one hammerstone, and 16 pieces of ground stone. A single fragmentary biface represents stage one reduction, indicating only preliminary flaking with no thinning; this artifact does show some rounding wear along one margin. The hammerstone recovered is a small nodule of chert with less than 30 percent cortical cover and exhibits longitudinal battering. Seventeen retouched tools were recovered and analyzed (Table 10.6). Most of these (n=9) are expediently retouched pieces of indeterminate or generalized function, and scrapers of various configurations (n=5) are also present.

Four multidirectional cores were recovered, consisting of limestone (n=3) and chert (n=1). Three of these show subsequent longitudinal battering consistent with possible use as hammerstones.

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Table 10.5 Ceramics Identified by Provenience at LA 115262

Feature Number	Feature Type	Series	Type	Vessel Form	Count	
					n	%
Surface	Surface	Mogollon	El Paso Brown	Jar	1	1.5
			Alma Plain	Jar	2	3
2	Thermal feature	Mogollon	El Paso Brown	Jar	1	1.5
3	Thermal feature	Mogollon	El Paso Brown	Jar	1	1.5
32	Pit	Mogollon	El Paso Brown	Jar	1	1.5
33	Thermal feature	Mogollon	El Paso Brown	Jar	1	1.5
37	Inferred Structure	Indeterminate	Too small for analysis	Not analyzed	4	6
		Mogollon	El Paso Brown	Jar	13	19.4
			Playas Red Incised	Bowl	1	1.5
37.1	Pit inside poss. Structure	Mogollon	El Paso Brown	Jar	1	1.5
Non-feature areas		Indeterminate	Too small for analysis	Not analyzed	1	1.5
		Mogollon	El Paso Brown	Jar	24	35.8
			Alma Plain	Jar	14	20.9
			Jornada Brown	Jar	2	3
Total					67	100

A total of 155 pieces of lithic debitage were recovered and analyzed. Only 5 percent of the debitage was collected from the surface (n=5), while the majority (n=150) came from subsurface contexts. Material types are divided as follows: roughly one-third is chert (n=51), one-third is limestone (n=48), 20 percent is rhyolite (n=30), 10 percent is quartzite (n=16), and 5 percent is obsidian (n=8). General igneous material (n=4) and a piece of silicified shale form less than three percent of the remaining material. A high percentage of multi-faceted flake platforms is consistent with tool manufacture and the Late Archaic occupations at the site (which are also indicated by radiocarbon dating, see below). However, the large amount of limestone flaking debris is probably associated primarily with the site's Formative-period component. A spatial examination of ceramics and different material types did not indicate any clear spatial separation of these two components; rather, it appears that the ceramic and aceramic occupations overlap within at least the excavated portion of the site. See Chapter 21 for more information on this site's lithics and how they compare to the other sites in the study area.

Sixteen ground stone artifacts were recovered and analyzed. These include five mano or handstone fragments, and 11 metate fragments. Mano fragments include sandstone (n=4) and granite (n=1), while metate fragments include sandstone (n=7), granite (n=1), quartzite (n=1), rhyolite (n=1), and an unidentified igneous material (n=1). All metate fragments are very incomplete (less than 30 percent of the estimated original artifact is present); weights range from 10.9 grams to 260.7 grams, with an average of 109.1 grams. Seven pieces are complete enough to indicate that the original piece had a single grinding surface; these include five sandstone pieces, one rhyolite, and one quartzite fragment. All four manos are also less than 30 percent complete; four of these are sandstone and one is granite.

Table 10.6 Retouched tools from LA 115262

Tool Type	Chert	Granite	Limestone	Quartzite	Rhyolite	Silicified shale	*Total*
Chopper				1			*1*
Possible digging tool		1					*1*
Projection						1	*1*
Retouched piece, miscellaneous	3		1	2	2	1	*9*
Side scraper, single edge			1				*1*
Side scraper, double edge	1						*1*
Scraper, three working edges	1						*1*
Scraper, ovoid (retouch on all margins and platform)	1						*1*
Scraper, indeterminate			1				*1*
Total	*6*	*1*	*3*	*3*	*2*	*2*	*17*

Biological Remains

Biological remains were not well preserved at LA 115262, but include both plant and faunal materials. Botanicals were derived from one pollen sample and 12 flotation samples. The single pollen sample came from Feature 35, a large thermal feature. Preservation was poor, with a low concentration value of 1,818 grains/ml of sediment. The sample yielded mostly pollen from the area's naturally occurring plants. The only potentially notable trend in this sample involved the very high frequency of Cheno-Am pollen, which may signal use of this important plant by the site's occupants. See Chapter 25 for more details on the pollen remains from this site.

The flotation samples yielded only four possible taxa, including: *Prosopis glandulosa, Atriplex canescens, Gramineae,* and *Amaranthus* sp. *Prosopsis* and *Atriplex* are generally indicative of locally available wood/fuel sources, but otherwise these samples were of limited interpretative value. See Chapter 24 for more details on the macrobotanical remains from this site.

Only seven animal bone fragments were recovered from LA 115262 (Table 10.7, Figure 10.14), weighing a grand total of 0.4 g. None of these small fragments were identified taxonomically beyond the level of bird/small mammal. Five of the seven bone fragments were burned, suggesting they represent remains from meals by the site's prehistoric inhabitants.

Site Chronology

A combination of radiocarbon dates, ceramics, and lithic artifacts indicate LA 115262 was occupied intermittently from the early Late Archaic to the Late Formative period. The Late Archaic component includes both Fresnal and Hueco phase occupations. Feature 4, a large roasting pit, dates from the early Fresnal phase and yielded one of the earliest radiocarbon determinations from the US 54 project. The ceramic assemblage indicates a Formative-period occupation that dates primarily from the Mesilla phase. Radiocarbon dates from Structure 1 and nearby Feature 2 indicate at least part of the Mesilla phase occupation dates from very early in this time frame. The presence of a possible Playas Red Incised sherd suggests a very late Mesilla- or Doña Ana-phase presence at the site, although if so, this was an extremely small-scale, ephemeral occupation.

Further temporal differentiation of features and occupations at this site is problematic owing to severe deflation. Even where the Organ III Ab horizon was present, geomorphological investigations suggested this humic layer had developed on a surface that had been deflated in prehistory (see above). It appears that most or all of the features on the site have been deflated to one extent or

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another, and stratigraphy cannot be confidently used to help segregate features into different components.

Site Interpretation and Summary

LA 115262 hosted intermittent, small-scale occupations ranging from the early Fresnal phase to the late Formative period, with most of the archaeological remains probably dating from the Late Archaic period and Mesilla phase. During these periods, local groups in the central Jornada Mogollon region were still highly mobile, and made regular seasonal forays into the interior basin floor (see Chapter 3). This environmental zone was exploited primarily during the warmer months of the year, when summer monsoons produced a proliferation of plant resources on the desert floor, and playa depressions filled at least temporarily with water. The three desert floor depressions surrounding LA 115262 probably provided such temporary water sources for the site's inhabitants, and undoubtedly was a major attraction drawing small, mobile groups to this locality. The adjacent playas may also have been suitable for growing small plots of maize, which Late Archaic and Mesilla phase peoples probably distributed across large areas to take advantage of the hit-and-miss pattern of summer rainfall and the higher soil moisture content within the playas. The occupations at this site nevertheless appear to be fairly small-scale and short-term for the most part, as indicated by the low artifact densities

Table 10.7 Radiocarbon dates from LA 115262

Feature	Beta #	Date type	Conventional Radiocarbon Age (B.P.)	Calibrated (2-Sigma)
1.1	156962	standard	1,660 ± 70	A.D. 230–550
2	156963	extended count	2,040 ± 110	370 B.C.–A.D. 220
24	156961	standard	2,310 ± 70	520–200 B.C.
4	156964	standard	3,760 ± 60	2340–2010 B.C.

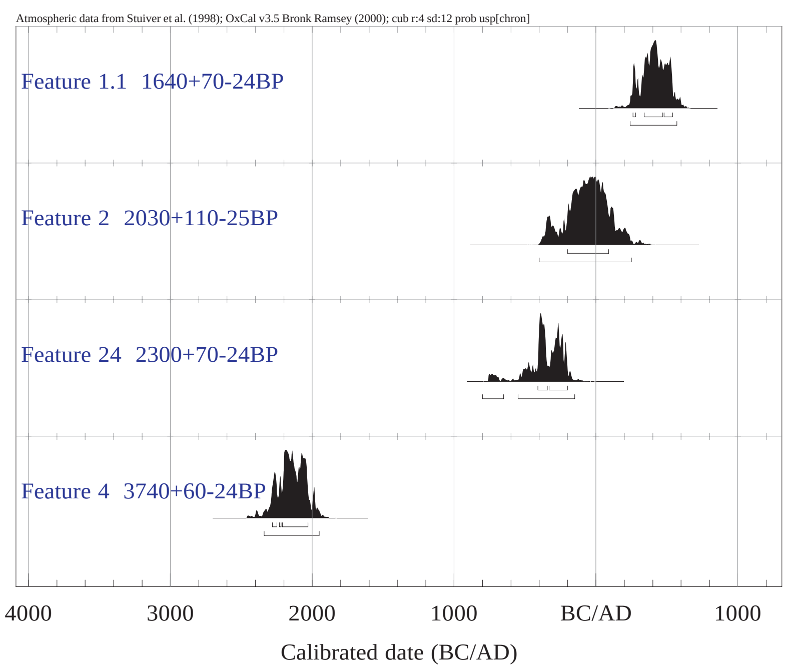

Figure 10.14 Radiocarbon dates from LA 115262.

across the site, the low diversity of tool types, and lack of midden accumulation.

Still, while camped at this locality, Late Archaic- and Mesilla-phase peoples made investments in site architecture that suggest this site was used for more than just ephermeral camps. They excavated pits for use as hearths and roasting ovens, and the Mesilla-phase inhabitants, at least, built small pithouses. The two structures documented at this site are somewhat different in character; while Structure 1 contains only a simple, interior hearth, Structure 2 (if indeed this inferred structure actually existed) contained a dense concentration of sub-floor features including possible storage pits, postholes, an entry ramp, and an interior hearth. Such a concentration of interior features is unusual for small, desert-floor pithouses dating from either the Late Archaic or Mesilla phase. There were probably more small structures built at this site than are preserved in the archaeological record, centuries of deflation having taken a serious toll on the site's remains. Moreover, many small structures at this site may have been of an expedient type that left no archaeological traces to begin with.

Given the distance of this site from natural sources of stone, the site's occupants relied primarily on the locally occurring caliche for use in pit cooking and for lining their hearths. Some burned rock was noted in features at the site, however, and at least some of this reflects re-use of broken and discarded ground stone milling implements. Such implements were transported to the site (see Chapter 30), and their presence further underscores a notable level of investment in site occupation and anticipated returns to the site by at least some of its occupants. Over time, the accumulation of ground stone fragments would have provided an added bonus for later groups encamped at the site, as igneous and metamorphic rocks tend to work well as heating elements in pit ovens, and thus would have been preferable to the less efficient caliche for cooking food in the roasting pits. Accumulated chipped stone debris could also have been re-used by later occupants for the fabrication and use of expedient tools.

Other than a single, possible Playas Red Incised sherd, there is no evidence for occupation at the site following the Mesilla phase. This is consistent with our current understanding of Doña Ana- and El Paso-phase settlement patterns, which involved substantially reduced mobility and less frequent forays out onto the interior desert floors.

Recommendations

Investigations at LA 115262 have fulfilled the goals outlined in the data recovery plan, and the proposed construction activities will have no effect on cultural resources at this site. Fencing along the right-of-way edge is recommended to ensure that sensitive features documented immediately to the west of the right-of-way are not disturbed during construction. Some of these features outside the right-of-way probably contain significant, subsurface remains that could shed additional light on this site's occupational history. Accordingly, any future ground-disturbing activities in the site west of the right-of-way, which fall under appropriate federal or state regulations, should be preceded by further testing and, if necessary, a data recovery plan.

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Chapter 11

LA 115263

Timothy B. Graves, Grant D. Smith, Joell Goff, Lance Lundquist, Jonathan E. Van Hoose, Jim A. Railey, and John C. Acklen

Introduction

LA 115263 is a small, prehistoric, fire-cracked rock and ground stone scatter of unknown affiliation. The site lies in the central Tularosa Valley, within a shallow desert floor depression with low ridges to the north and south. Within this small site are two areas of sheet sands and large, mesquite-stabilized coppice dunes standing 1–2.5 m high. On the interdune surfaces, little or no caliche and gravels are exposed, and some areas are blanketed with sheet sands. The sparse prehistoric debris on the surface was concentrated in interdunal areas immediately to the east of the old US 54 roadbed (Figure 11.1). The site locality is within the Chihuahuan biotic zone, with vegetation at this locality dominated by mesquite (on dunes) and fourwing saltbush, along with narrowleaf yucca, broom snakeweed, and various grasses. Vegetation and dunal sands cover nearly 40 percent of the site's surface.

The site is located on BLM land on the eastern side of US 54. Approximately half the site extends outside the right-of-way. The major land modifications to the site are associated with the construction of historic US 54, which runs along the western edge of the site, and placement of a modern right-of-way fence line through the eastern portion of LA 115263. The historic road completely removed an unknown portion of the western edge of this site. Planned construction activities will take place from the centerline of the existing road to the new right-of-way edge located 63 m to the east.

Previous Investigations

Cibola Research Consultants (CRC) performed the initial survey and described the site as a 2-m-diameter charcoal stain (Feature 1) with an estimated depth of 0.2 m (Marshall and Marshall 1998). The investigators noted that FCR was scattered over a 25 x 15-m area. Other than the FCR, they did not locate any artifacts on the site, but considered the presence of buried features to be a distinct possibility and accordingly recommended the site as potentially eligible to the NRHP.

Testing Investigations

TRC conducted testing investigations at LA 115263 in the fall of 1999 (Acklen *et al.* 1999). During testing, the surface was carefully inspected and mapped with a total station instrument, all surface artifacts were point provenienced, and those within the right-of-way were collected. This was followed by excavation of shovel tests.

Surface Investigations

As a result of the surface inspection conducted at the beginning of the testing phase, the site dimensions were expanded to 53 x 38 m (see Figure 11.1), with the site encompassing roughly 1,900 m^2. Within the right-of-way, the site measured 23 m in width x 37 m in length to the east of US 54. This area encompasses 848 m^2, or just over 45 percent of the total site area.

The testing investigations determined that Feature 1, the "ash stain" identified during the initial survey, was actually part of a prehistoric, charcoal-enriched trample zone (see below). Also, the "FCR" scatter mentioned in the initial survey report proved to be road gravels. Only a very light scatter of genuine FCR/BC was documented on the site's surface, with most of the surface rock consisting of cobbles from the old US 54 grade.

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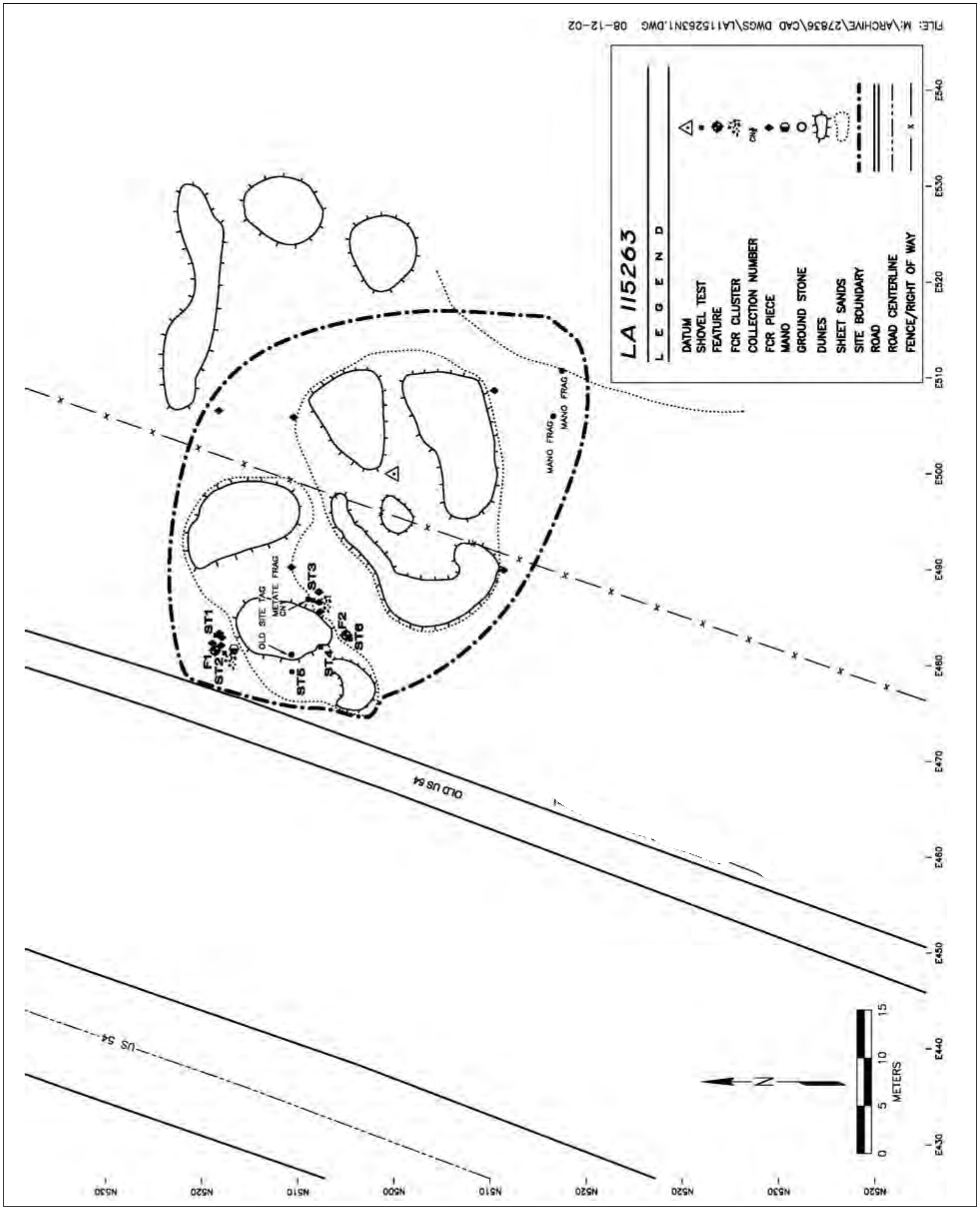

Figure 11.1 Topographic Map of LA 115263, showing artifacts, features, and shovel tests documented during the testing phase.

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Approximately 10 m to the southeast of the reported location of Feature 1, however, a metate fragment was observed, along with two pieces each of FCR and BC. Three additional pieces of FCR and two mano fragments were documented in the far southeastern portion of the site, outside of the right-of-way (see Figure 11.1).

Subsurface Testing Results

The subsurface testing strategy for LA 115263 involved manual excavation of six 0.5 x 0.5-m shovel tests (Figure 11.1). Two of the shovel tests (ST 1 and 2) were placed in the reported location of Feature 1. The remaining tests were distributed around a coppice dune to the south and southeast. ST 3 was located adjacent to the metate fragment and associated FCR/BC. ST 4 was placed in an area covered by sheet sands to check for any subsurface deposits that these sands might have concealed. This shovel test uncovered a thin, dark stratum that proved to be a probable trampled zone associated with prehistoric occupation of the site (see Site Stratigraphy and Geomorphology section, below). ST 5 was located along the western edge of the site in the area containing the concentration of what appeared to be road gravels. ST 6 was placed south of the above-mentioned coppice dune, where recent sands obscured the more stable surface below. Data on the individual shovel test are presented in Table 11.1.

Shovel Test 6 uncovered the intact remains of a thermal feature, marked by a 0.5-m-diameter ash stain with charcoal flecking. This hearth was designated Feature 2. The feature was trowel tested to determine its depth potential and revealed intact deposits to a depth of 0.10 m bgs.

Site Stratigraphy and Geomorphology

Surface examinations and shovel tests in this area suggest the site is slightly eroded in many portions, but also exhibits isolated areas that contain a relatively intact paleosol that includes buried cultural materials. Areas near the old highway roadbed appear to have been severely impacted by previous construction as gravel and carbonate nodules are relatively abundant. In areas further away from the road, the sediments appear to have avoided mechanical impacts, but have suffered from natural deflation. Coppice dunes scattered around the site are composed of historic, laminated sands. A thin veneer of recent sands also blankets much of the interdunal areas.

These historic sands are typically light reddish-brown (5YR6/4, d) and have a loamy texture (Figure 11.2). The general lack of soil formation and the surface position of this unit suggest that it is historic in age and, thus, has limited archaeological potential. Cultural materials observed on the site typically occur in areas where the historic sands are thin or absent.

Underlying the historic sands is an approximately 20-cm-thick unit of light brown (5YR6/6, d), loamy sand. This unit lacks stratification or significant pedogenic accumulations, but the high chroma of the sediment suggests that it was subject to minor pedogenic alteration. For this reason, Unit 2 is considered a cambic Bw horizon and is tentatively correlated with the Organ III (1,100–100 B.P.) sediments (Gile *et al*. 1981; Monger 1993). Cultural materials appear to be associated with lower portions of Unit 2 and its contact with the underlying sediments. Based on this position, it is expected that cultural materials on the site are Late Archaic to Early Formative in age.

The contact between the Bw horizon and the underlying Bk horizon is unusual in that it contains an approximately 3–4-cm thick, dark, platy zone. During the testing phase, it was thought that this was an A horizon. However, further exposure of this unit during data recovery clarified its likely origin. This zone is too thin to be an A horizon unless it is highly eroded. Instead, this zone appears to be the result of compaction by foot traffic during the prehistoric occupation. In previous studies, Nials (1983) noted that foot traffic or vehicular traffic frequently caused the formation of a coarse, platy structure similar to what we observed at this contact. This structure and the association of cultural features with the

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Table 11.1 Shovel Test Results, LA 115263

Test No.	North	East	Location	Depth	Surface Soil	Cultural Evidence	Stratum 1	Cultural Evidence	Stratum 2	Cultural Evidence
ST 1	518.37	482.95	NW–Feature 1 Area	0.30 m	Friable, reddish-yellow (7.5YR6/8) sand, surface to 0.2 m	None	Compact, reddish-yellow, (7.5YR6/8) sandy loam with small caliche inclusions, 0.2–0.3 m	None	N/A	N/A
ST 2	517.69	481.29	NW–Feature 1 Area	0.30 m	Friable, reddish-yellow (7.5YR6/8) sand, surface to 0.2 m	None	Compact, reddish-yellow, (7.5YR6/8) sandy loam with small caliche inclusions, 0.2–0.3 m	None	N/A	N/A
ST 3	508.58	486.78	West-central; southeast edge of dune	0.30 m	Friable, reddish-yellow (7.5YR6/8) sand, surface to 0.2 m	None	Compact, reddish-yellow, (7.5YR6/8) sandy loam with small caliche inclusions, 0.2–0.3 m	None	N/A	N/A
ST 4	507.7	481.88	West-central; Between two dunes	0.5 m	Friable, reddish-yellow (7.5YR6/8) sand, surface to 0.3 m	None	Strong brown (7.5YR5/6), sandy loam–“A” Horizon, 0.3–0.32 m	None	Compact, reddish-yellow, (7.5YR6/8) sandy loam with small caliche inclusions, 0.32–0.5 m	None
ST 5	510.67	479.3	West-Central–Area of survey reported FCR	0.30 m	Friable, reddish-yellow (7.5YR6/8) sand, surface to 0.2 m	None	Compact, reddish-yellow, (7.5YR6/8) sandy loam with small caliche inclusions, 0.2–0.3 m	None	N/A	N/A
ST 6	507.3	485.46	West-central; southeast edge of dune	0.30 m	Friable, reddish-yellow (7.5YR6/8) sand, surface to 0.02 m	None	Feature 2–dark gray, (7.5YR3/1) ash-stained soils within reddish-yellow, (7.5YR6/8) sandy loam	Feature 2	N/A	N/A

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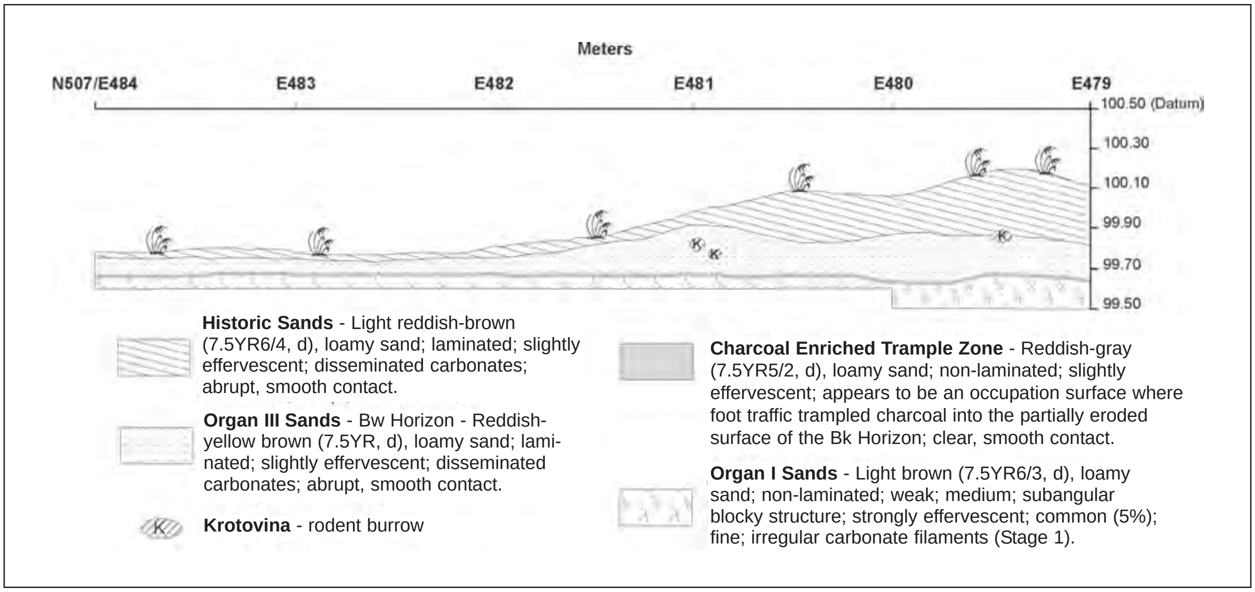

Figure 11.2 Representative Stratigraphy Observed at LA 115263.

contact between the Bw and Bk horizons suggests that foot traffic during the occupation may have trampled charcoal or other organics into the surface of the Bk horizon. This association also suggests that the Bk horizon was eroded and exposed at the surface during the time of the occupation. Another consideration is that the foot traffic may have caused the vertical displacement of artifacts within the stratigraphic profile. In previous studies of sandy sediments, vertical displacements of up to 10 cm (Schiffer 1987) were typically observed. As a result, materials originally deposited on the surface of the Bk horizon may have been displaced downward in the profile.

The basal unit observed at the site was a calcareous Bk horizon that is light reddish-brown (5YR6/3, d) and has a loamy sand texture. It also exhibits common (7 percent), fine, irregular calcium carbonate filaments that are a Stage I pedogenic carbonate accumulation. Based on the carbonate accumulations in the Bk horizon, this paleosol is correlated with the Organ I eolian unit (2,100–7,000 B.P.) described by Monger (1993). Thus, the archaeological potential of this unit is limited to Archaic components. Feature 2, the prehistoric hearth, was excavated into this Bk horizon.

Based on these interpretations of soil/sediment units, some conclusions about the cultural deposits may be made. The trample zone probably represents a prehistoric occupation surface, dating from either Early Formative or Late Archaic times. Other Formative period remains would likely have been concentrated on or near the present ground surface following partial erosion of the Organ III unit.

Data Recovery Strategy

Data recovery investigations at LA 115263 were initiated in the spring of 2000 and carried out by SWCA. These investigations began with relocation of the site datum (established during the testing phase) and designation of the datum as N500/E500, with its elevation arbitrarily set at 100 m. Excavations commenced with the placement of a 5 x 5 m block over Feature 2 (Figure 11.3). An adjacent 1 x 5-m excavation trench extended off the west of this block between two dunes where ST 4 had uncovered the thin, dark stratum that proved to be the probable foot-trampled zone, which is also the stratum in which Feature 2 originated. Although mechanical stripping was proposed in the data recovery plan, this was not carried out due to the absence of any additional evidence of subsurface cultural remains

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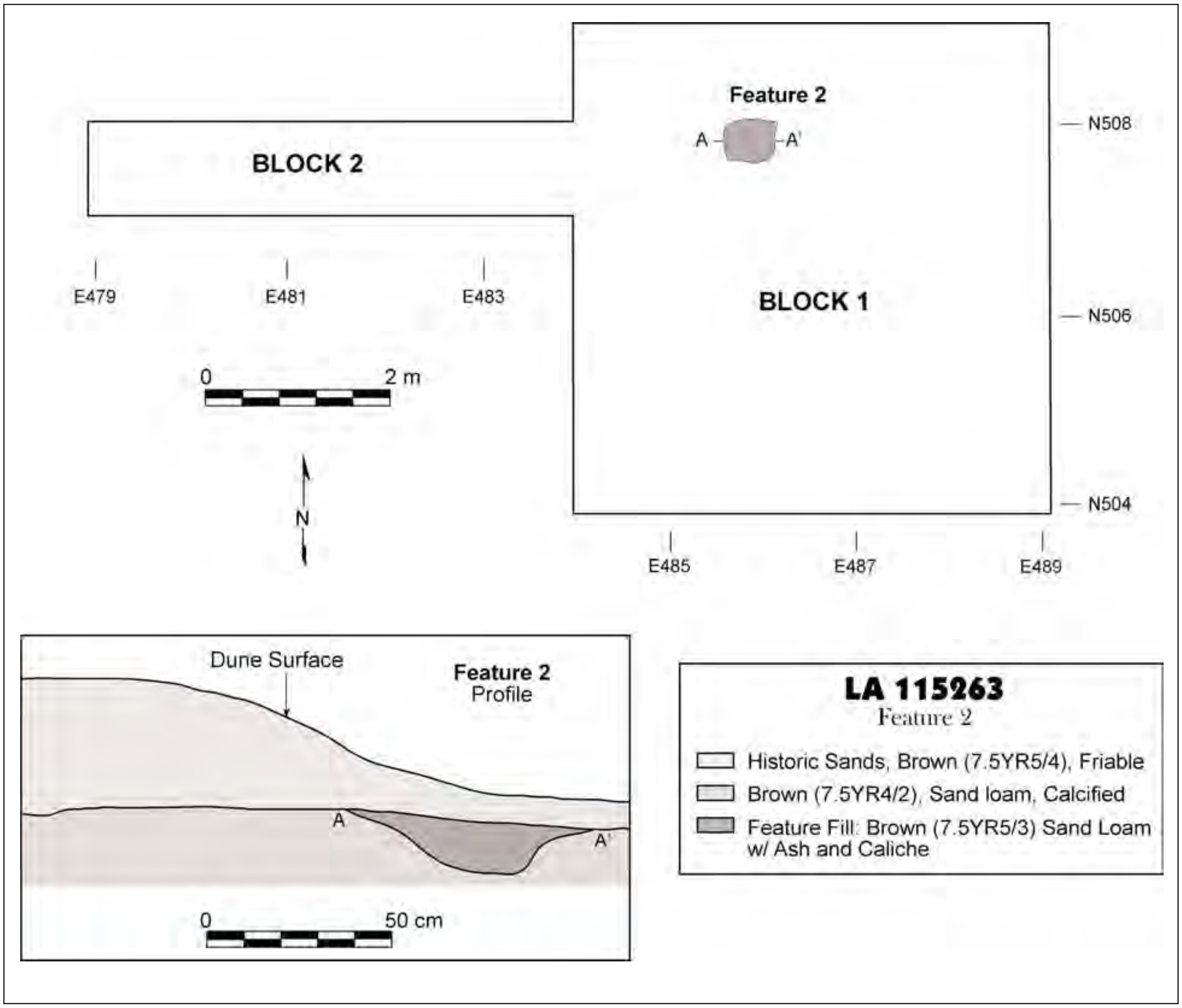

Figure 11.3 LA 115263, Feature 2.

within the hand-excavated blocks. A total of 31 m^2 was excavated, or nearly 4 percent of the site area within the right-of-way. Total excavated volume equaled 5.64 m^3. Feature 2 was mapped, excavated, and profiled.

Data Recovery Results

Feature 2, encountered in ST 6 during the testing phase (see Table 11.1),was the only prehistoric feature documented at the site. This feature, located at N507.83/E485.85, is a slightly rectangular, basin-shaped ash stain. It rests upon, and intrudes into, the dark, thin trample zone. The feature measured 0.44 x 0.36 m, with a maximum depth of 0.11 m. Seventeen small pieces of FCR (all but one less than 5 cm in diameter) and one piece of BC were the only debris recovered from the feature and surrounding excavation block. The trampled horizon was found to be continuous through the 1 x 5-m trench, but this excavation produced little artifact debris; a single chert flake and one small piece of BC were recovered from the extension trench.

Artifact Assemblage

Artifacts recovered from LA 115263 include only a single chipped stone flake, two fragments of

ground stone milling implements, and 18 thermally altered rocks.

The single chert flake was recovered from Level 2 in Excavation Block 2 (approximately 4 m west of Feature 2). This is a small retouch flake weighing only 0.1 g. The two pieces of ground stone were both recovered from surface contexts. One is a sandstone mano fragment recovered from the vicinity of Feature 1. It exhibits pecking and diffuse grinding over a convex surface. A metate fragment was recovered approximately 5 m northeast of Feature 2. It is made from an igneous material, and its extant grinding surface shows bidirectional concavity, suggesting a possible basin metate form. Both ground stone artifacts are too incomplete to merit further discussion.

Biological Remains

Biological remains from LA 115263 were sparse. One flotation sample totaling 10 liters of fill from Feature 2 was processed. Only two charred taxa were identified: *Prosopis glandulosa* and *Atriplex canescens*. *Prosopsis* and *Atriplex* are generally indicative of locally available wood/fuel sources. As such, the sample is of limited interpretative value. A soil sample from Feature 2 was also submitted for phytolith analysis, and no economic species were identified in this sample. No pollen or lipid samples were submitted for analysis.

Site Chronology

No temporally diagnostic artifacts or chronometrically datable materials were recovered from the site, and so the temporal affiliation of its scanty archaeological remains is unknown. Based on geomorphological findings the site is estimated to date from the Late Archaic and/or Early Formative periods.

Site Interpretation and Summary

LA 115263 was a very short-term campsite. Little archaeological debris is present at the site, and most of that is FCR/BC. The single hearth, Feature 2, was the only subsurface facility encountered at the site. The materials just northwest of Feature 2 (including a small cluster of FCR/BC and a metate fragment) appear to be associated with the hearth and were probably deflated and dispersed by natural erosion. Surface artifacts outside the right-of-way are widely dispersed and may derive from temporally discrete, isolated camping episodes. The presence of milling implements (i.e., manos and metates) suggests a measure of planning went into the use of this site, and that perhaps multiple occupations were anticipated (but may not have fully transpired). Otherwise, there was little investment in the occupation of this site. Structural remains, if they were originally present, were probably little more than expedient huts or windbreaks that left no surviving archaeological traces.

Recommendations

Small sites, their function, and their age constituted an important focus in the data recovery plan, and so despite its small size and impoverished artifact assemblage, data recovery investigations were carried out at LA 115263. The results of the site testing and geomorphological assessment suggest that the site does, in fact, contain subsurface remains, including features, and despite its limited data potential, the site is considered eligible to the NRHP. Data recovery investigations demonstrated that the site was largely deflated in prehistory and in historic times, and that there is no potential for further data to be recovered within the right-of-way. The goals of the data recovery plan were thus achieved, construction activities will have no effect on any cultural resources, and no additional investigations are recommended within the construction right-of-way. Additional intact archaeological remains may still be present outside the right-of-way, however, and any future construction activities that would impact this area should be preceded by further archaeological testing and, if necessary, data recovery.

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Chapter 12

LA 115265

Timothy B. Graves, Grant D. Smith, Joell Goff, Jonathan E. Van Hoose, Lance Lundquist, Gwyneth A. Duncan, Jim A. Railey, and John C. Acklen

Introduction

LA 115265 is a moderate-sized Jornada Mogollon camp or residential site, located on the desert floor of the central Tularosa Valley. The site lies on a low, grassy ridge that slopes gently (1–2 degrees) to the north into a small, shallow, playa depression. Along this slope, the site elevation ranges from 1,228 m (4,095 feet) amsl at the south end to 1,225 m (4,085 feet) amsl at the north end. The present ground surface was uneven, and cultural materials were exposed in the bottoms of shallow depressions. Large, semi-stabilized dunes surround and partially cover the site to the east of the right-of-way. The site is within the Chihuahuan biotic zone, with local vegetation including dropseed, grama grass, narrow leaf yucca, fourwing saltbush, and occasional mesquite. Vegetation is sparse, and surface visibility is more than 80 percent across the site.

The site is on the eastern side of US 54, on lands administered by the U.S. Army at Fort Bliss, along with private lands administered by the railroad. Visible archaeological remains are contained mostly inside the highway right-of-way. Planned construction activities will take place from the centerline of the existing road to the existing right-of-way fence located 43 m to the east. Previous sources of soil removal and redistribution within the site boundaries include construction of the historic US 54 roadbed, which removed an unknown portion of the western edge of the site. The roadbed cuts approximately 20 cm below the adjacent site surface along the right-of-way fence line. In addition, excavation of postholes along the right-of-way fence line introduced further, although minimal, impacts to the site, and some eolian sand has accumulated along the fence line. The eastern portion of the site extends outside the right-of-way. Here, impacts from railroad bed construction include the burying of portions of the site with imported soils, and perhaps removal and displacement of archaeological sediments. A recently installed fiber optics line on the railroad property immediately east of the highway right-of-way fence line resulted in further impacts to the site.

Previous Investigations

Cibola Research Consultants (CRC) first documented LA 115265 (Marshall and Marshall 1998). They described the site as a ceramic and chipped stone scatter with a single, ash-stained feature (Feature 1). The scatter was estimated to cover a 155 x 35–m area. The ash-stained feature measured 6 m in diameter and had an estimated depth of 0.5 m. A sample of artifacts recorded by CRC at the site included 100 sherds and 26 pieces of chipped stone. The ceramics included 85 El Paso Brownware sherds and 15 El Paso Polychrome sherds. Chipped stone artifacts included two cores, one chopper, four pieces of angular debris, 18 flakes, and one biface.

Testing Investigations

Site testing was conducted by TRC and SWCA in the fall of 1999 (Acklen *et al.* 1999). Testing began with a careful inspection of the site's surface, followed by mapping with a total station instrument, plotting and collecting of all surface artifacts within the right-of-way, and excavation of shovel tests and backhoe trenches (Figure 12.1).

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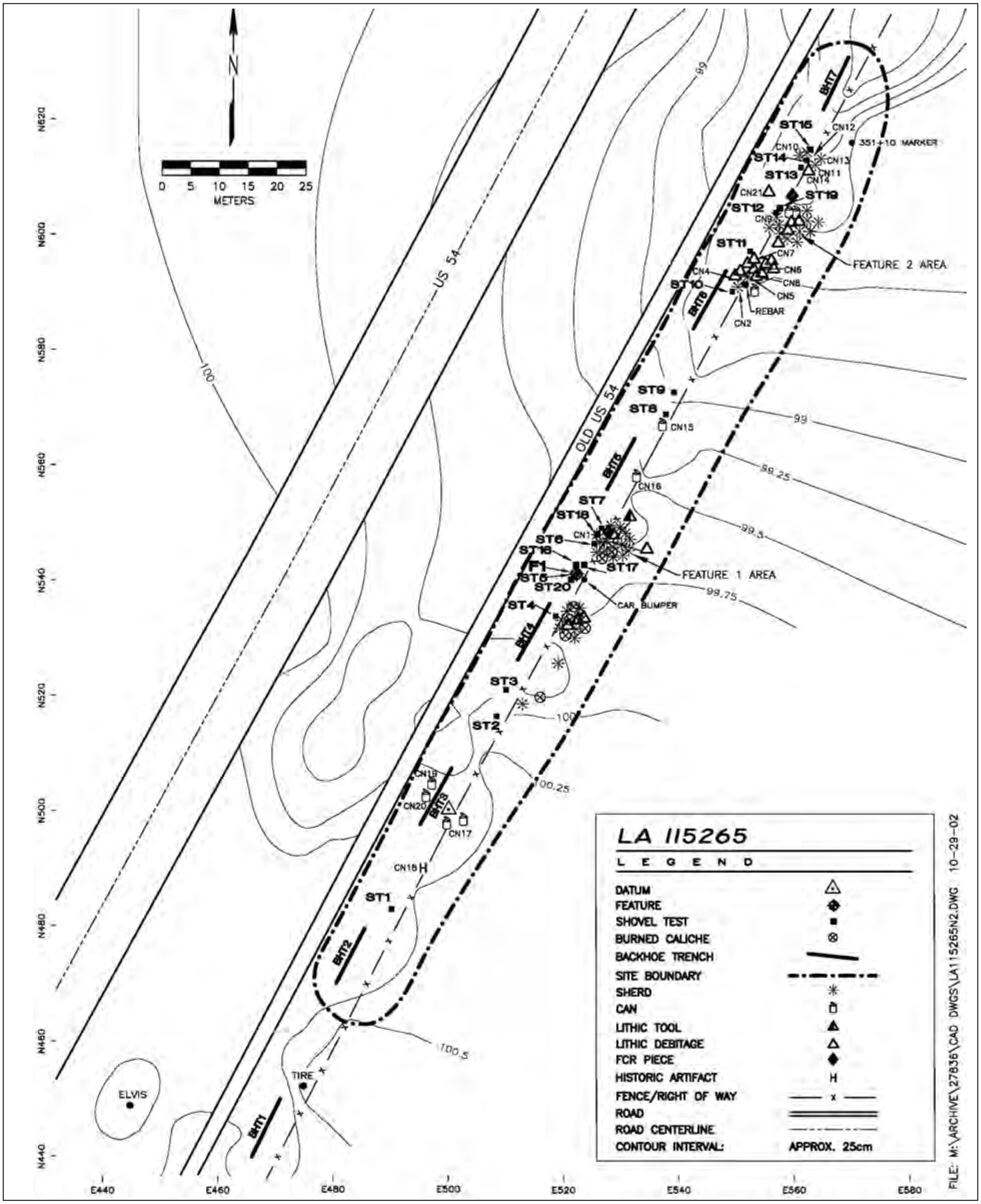

Figure 12.1 **Topographic Map of LA 115265, showing artifacts, features, shovel tests, and backhoe trenches from the testing phase.**

Surface Investigations

The testing effort found the site to be roughly similar in size to what was described by CRC. Certain characteristics of the site, however, do not match the survey site description. Specifically, the topography and feature assemblages are notably different from what the survey reported. Whereas CRC described the site as occurring within an area of mesquite coppice dunes, the tested site occurs on a low, grassy ridge that slopes gently to the north, with no dunes present. Also, despite considerable effort to do so, the ash-stained feature described by CRC (Feature 1) was not located during the testing phase, and no features were evident on the site surface.

Within the right-of-way, cultural materials cover a 189 x 12–m area, about 2,268 m^2 or roughly 57 percent of the total site area. Outside the right-of-way, the site extends an additional nine meters east of the fence line, and the total site area is 3,969 m^2.

A total of 114 artifacts was collected during the testing phase. These include 51 prehistoric ceramic sherds, nine lithic artifacts, 47 pieces of burned rock and caliche, and seven historic items. Two distinct clusters of artifacts were located near the center of the site, with three other discrete artifact clusters toward the northern end of the site (see Figure 12.1). These concentrations were all within a few shallow depressions where sheet sands were absent. The late historic materials appeared to be roadside trash associated with the old US 54, located immediately west of the site. These materials included five punch top cans, two glass shards, and one painted concrete fixture.

Subsurface Testing Results

Subsurface testing at LA 115265 involved the excavation of seven backhoe trenches and 20 shovel tests. Backhoe trenches were excavated at systematic intervals along a line 5–6 m west of the eastern highway right-of-way edge. No subsurface cultural deposits, features, or artifacts were observed in the backhoe trenches. Table 12.1 summarizes the finding of the backhoe trenches. STs 1–15 measured 0.5 x 1 m and STs 16–20 measured 0.5 x 0.5 m. STs 4–7 and 10–15 were excavated within major artifact concentrations. The other shovel tests were located between backhoe trenches in areas that had few surface cultural materials to check for the possibility of subsurface remains with no surface indicators. Table 12.2 summarizes the findings of the shovel tests. The shovel tests uncovered a total of 8.75 m^2, and the backhoe trenches opened 68.2 linear meters.

In the central part of the site, between the two distinct artifact concentrations documented on the surface, three shovel tests (STs 5, 16, and 17) encountered portions of an intact, subsurface prehistoric feature. This was designated Feature 1, but does not necessarily correlate with CRC's Feature 1 (which, again, was not relocated on the surface during the testing phase). The three shovel tests indicated Feature 1 was 0.46 m in diameter, with an oxidized area extending an additional 10–20 cm around the edge (Table 12.3). Oxidation within this apparent hearth suggested it marked the former floor of a pit structure (cf. Graves *et al*. 1996). Although no house pit or pit fill were identified in the shovel tests, it appears likely that previous construction, associated with old US 54, may have destroyed the house pit and floor, leaving only the deeper, hearth feature preserved beneath the more recent historic sands (see Site Stratigraphy and Geomorphology, below). The artifact concentrations on either side of Feature 1 probably represent debris originally associated with the now-deflated structure.

Along the western edge of the surface artifact cluster immediately north of Feature 1, STs 6, 7, and 18 encountered subsurface, El Paso Brown ceramics to a depth of 0.3 m (see Table 12.2).

Feature 2 was uncovered in ST 12 and 19 in the northern portion of the site. The feature was determined to be a soil/caliche pipe, a feature that occurs naturally within caliche-dominated strata. Table 12.3 lists the characteristics of the two features identified during the testing phase.

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Table 12.1 Backhoe Trench Results

BHT No	EDM Shot	North/East	North/East	EDM Elevation	Length (m)	Width (m)	Depth (m)	Size (m^2)	Volume (m^3)	Feature
1	2-Jan	439.84/465.62	449.87/470.54	99.93/99.94	11.4	0.75	0.42	8.55	3.6	None
2	2-Jan	469.88/480.25	479.38/485.14	99.91/100.02	11.1	0.75	0.75	8.325	6.2	None
3	2-Jan	497.60/494.74	507.23/500.20	99.88/99.71	8.4	0.75	0.12	6.3	0.8	None
4	2-Jan	525.96/511.72	535.74/517.29	99.54/99.22	8.1	0.75	0.34	6.075	2.1	None
5	2-Jan	555.63/527.30	564.35/532.03	98.85/98.78	9.3	0.75	0.24	6.975	1.7	None
6	2-Jan	583.47/542.19	593.51/547.92	98.56/98.43	10.9	0.75	0.26	8.175	2.1	None
7	2-Jan	621.55/564.75	630.53/569.12	97.68/97.53	9	0.75	0.53	6.75	3.6	None
Total	-	-	-	-	68.2	-	-	51.15	20.1	None

Table 12.2 Shovel Test Results for LA 115265

ST No.	North	East	Location	Depth	Surface Soil	Cultural Evidence	Stratum 1	Cultural Evidence	Stratum 2	Cultural Evidence
ST 1	482.6	490	South	0.23 m	Friable, strong brown, sandy (7.5YR5/6), surface to 0.07 m	None	Semi-compact, strong brown, sandy loam with some caliche (7.5YR5/6), 0.07–0.21 m	None	Compact, light brown, sandy loam with high density caliche (7.5YR6/4), 0.21–0.23 m	None
ST 2	516.14	508.09	South	0.3 m	Friable, strong brown sand (7.5YR5/6), surface to 0.2 m	1962 Pepsi bottle not collected	Semi-compact, strong brown, sandy loam with some caliche (7.5YR5/6), 0.2–0.27 m	None	Extremely compact, strong brown, sandy loam with moderate density of caliche (7.5YR5/6), 0.27+ m	None
ST 3	520.72	509.78	South	0.4 m	Friable, strong brown sand with laminations (7.5YR5/6), surface to 0.26–0.35 m	None	Extremely compact, strong brown, sandy loam with few caliche nodules (7.5YR5/6), 0.26–0.35—0.4+ m	None	N/A	N/A
ST 4	533.09	518.23	South-central	0.25 m	Friable, strong brown sand (7.5YR5/6), surface to 0.06 m	None collected–historic fence staple, 3 pieces historic brown bottle glass	Compact, strong brown, sandy loam with few caliche nodules (7.5YR5/6), 0.06—0.20–0.25+ m	None	Extremely compact, light brown, sandy loam with high density of caliche (7.5YR6/3), 0.2–0.25+ m	None

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Table 12.2 Shovel Test Results for LA 115265 (continued)

ST No.	North	East	Location	Depth	Surface Soil	Cultural Evidence	Stratum 1	Cultural Evidence	Stratum 2	Cultural Evidence
ST 5	540.63	521.97	South-central	0.19 m	Friable, strong brown, sand/sandy loam (7.5YR5/6), surface to 0.15 m	Contact Feature 1 fill	Compact, strong brown, sandy loam with few caliche nodules (7.5YR5/6), 0.15–0.19+ m	1 flake, 19 burned caliche, 12 El Paso Brownware ceramics	Dark brown, ash-stained Feature 1 fill sand with charcoal within oxidized orange fill (7.5YR2.5/2), 0.12–0.14+ m	No artifacts within ash-stained fill; partially excavated to define intact portion of feature
ST 6	546.37	525.24	South-central	0.5 m	Friable, strong brown sand (5YR5/6), surface to 0.03 m	None	Compact, reddish-brown, sandy loam with caliche nodules appearing near bottom (5YR5/8), 0.03–0.4+ m	1 El Paso Brownware 0.1–0.2 m	N/A	N/A
ST 7	548.23	526.33	Central	0.5 m	Friable, reddish-brown sand (5YR5/6), surface to 0.03 m	2 El Paso Brown ceramics	Compact, reddish-brown, sandy loam with few caliche nodules (5YR5/8), 0.03 m—0.07–0.22 m	2 El Paso Brown ceramics	Very compact, reddish-brown, sandy loam with moderate caliche nodules (5YR5/8), 0.07–0.22—0.5 m	1 El Paso Brown ceramic 0.2–0.3 m
ST 8	568.58	537.49	Central	0.5 m	Friable, reddish-brown, sand/sandy loam (5YR5/6), surface to 0.3–0.35 m	None	Compact reddish-brown, sandy loam with few caliche nodule inclusions (5YR5/8), 0.3–0.35—0.5 m	None	N/A	N/A
ST 9	572.45	538.88	Central	0.3 m	Friable to semi-compact, strong brown, sand/sandy loam (7.5YR5/6), surface to 0.12–0.21 m	None	Very compact, strong brown, sandy loam with few gravel inclusions (7.5YR5/8), 0.12–0.21—0.3+ m	None	N/A	N/A
ST 10	589.9	549.04	North-central	0.2 m	Friable, strong brown sand (7.5YR5/6), surface to 0.03–0.07 m	4 El Paso Brown ceramics	Very compact, strong brown, sandy loam (7.5YR5/8), 0.03–0.07—0.12–0.18 m	None	Solid caliche contacted at 0.12–0.18—0.2+ m	None
ST 11	597.04	552.08	North-central	0.2 m	Friable, reddish-yellow sand (7.5YR6/6), surface to 0.06 m	None	Compact, reddish-yellow, sandy loam with some caliche (7.5YR6/6), 0.06—0.16–0.2+ m	None	Solid caliche west and south portions of unit 0.16–0.2+ m	None
ST 12	603.66	556.55	North-central	0.14 m	Friable, strong brown sand (7.5YR5/6), surface to 0.02 m	None	Compact, strong brown, sandy loam (7.5YR5/6), 0.02—0.1–0.14 m	5 El Paso Brown ceramics, 1 chert flake	Solid caliche throughout unit except in small circular portion 0.1–0.14+ m	Feature 2 is small circular hole in caliche east-central edge (caliche pipe)
ST 13	611.42	560.94	North	0.3 m	Friable, strong brown sand (7.5YR5/6), surface to 0.02–0.05 m	None	Compact, strong brown, sandy loam with few small caliche nodules (7.5YR5/6), 0.02–0.05—0.3+ m	None	N/A	N/A

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Table 12.2 Shovel Test Results for LA 115265 (continued)

ST No.	North	East	Location	Depth	Surface Soil	Cultural Evidence	Stratum 1	Cultural Evidence	Stratum 2	Cultural Evidence
ST 14	612.72	561.94	North	0.24 m	Friable, strong brown sand (7.5YR5/6), surface to 0.09–0.14 m	None	Compact, strong brown, sandy loam (7.5YR5/6), 0.09–0.14—0.15–0.23 m	None	Compact, strong brown, sandy loam with some small caliche nodules (7.5YR5/6), 0.15–0.23—0.3 m	None
ST 15	614.57	562.61	North	0.4 m	Friable to semi-compact, strong brown, sand/sandy loam (7.5YR5/6), surface to 0.2–0.3 m	2 burned caliche, 11 El Paso Brown ceramics	Compact, strong brown, sandy loam with some caliche (7.5YR5/8), 0.2–0.3—0.34–0.4+ m	None	Caliche contacted in northwestern portion of unit 0.34–0.4+ m	None
ST 16	541.63	521.97	South-central, northern edge ST 5	0.15 m	Friable, strong brown, sand/sandy loam (7.5YR5/6), surface to 0.07 m	None	Compact, strong brown, sandy loam with few caliche nodules (7.5YR5/6), 0.07–0.15+ m	1 El Paso Brown ceramic, 31 small burned caliche	Dark brown, ash-stained Feature 1 fill sand with charcoal within oxidized orange fill (7.5YR2.5/2), 0.12–0.15+ m	No artifacts within ash-stained fill
ST 17	541.63	522.47	South-central, southwestern corner is northwestern corner ST 5	0.2 m	Friable, strong brown, sand/sandy loam (7.5YR5/6), surface to 0.07 m	None	Compact, strong brown, sandy loam with few caliche nodules (7.5YR5/6), 0.07–0.2+ m	5 small burned caliche	Dark brown, ash-stained Feature 1 fill sand with charcoal within oxidized orange fill (7.5YR2.5/2), 0.11–0.17+ m	No artifacts within ash-stained fill
ST 18	547.73	526.33	Central, northwestern corner is southwestern corner ST 7	0.3 m	Friable, reddish-brown, sand (5YR5/6), surface to 0.04 m	None	Compact reddish-brown, sandy loam with few caliche nodules (5YR5/6), 0.03 m—0.12–0.15 m	2 El Paso Brown ceramics	Compact, reddish-brown, sandy loam with few caliche (5YR5/8), 0.12–0.15—0.3+ m	None
ST 19	604.66	557.05	North-central, against northeastern portion of ST 12	0.2 m	Friable, strong brown sand (7.5YR5/6), surface to 0.02–0.09 m	None	Compact, strong brown, sandy loam (7.5YR5/6), 0.02–0.09—0.1–0.2+ m	None	Solid caliche throughout unit except in small circular portion, southwestern portion 0.1–0.14+ m	Feature 2 is small circular hole in caliche; southwestern corner (natural caliche pipe)
ST 20	540.13	522.47	South-central, northwestern corner is southeastern corner ST 5	0.3 m	Friable, strong brown, sand/sandy loam (7.5YR5/6), surface to 0.06 m	None	Compact, strong brown, sandy loam with few caliche nodules (7.5YR5/6), 0.07–0.1 m	4 burned caliche	Compact, strong brown, sandy loam with moderate caliche (7.5YR6/6), 0.1–0.3+ m	4 El Paso Brown ceramics, 1 flake, 2 burned caliche 0.1–0.2 m

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No other subsurface features or cultural materials were encountered in shovel tests at the site, and cultural materials were restricted primarily to the friable, eolian surface deposits.

Site Stratigraphy and Geomorphology

Geomorphic observations indicate that LA 115265 exhibits a rather simple stratigraphic profile, with historic sands overlying Organ I sediments in most exposed profiles, and with the La Mesa calcrete forming the basal unit. Within the area where archaeological excavations were carried out, prehistoric features were excavated into the Organ I sediments. Observations during the testing phase of the site, however, suggest that the Organ I sediments were often removed by previous road construction activities. As a result, probably only a remnant of the site is preserved.

Previous construction of the old US 54 roadbed has greatly influenced the current stratigraphy of the site. The seven backhoe trenches excavated during the testing phase were used to evaluate the Holocene stratigraphy on the site. In general, the depth to the Pleistocene-aged La Mesa calcrete is relatively shallow (less than 0.3 m), but a few swales contained thicker accumulations of sediments (up to 1 m deep).

The most recent deposits (Unit 1) consist of brown (7.5YR5/3, d), poorly sorted, loamy sand that were deposited in historic times. Gravel is dispersed throughout these sediments and, depending on location, comprises from 10–20 percent of the unit (Figure 12.2). The composition of the gravel is variable, but dominantly consists of quartzo-feldspathic igneous rocks (e.g., granite, monzonite, etc.) and calcium carbonate nodules, the latter probably derived from the basal La Mesa calcrete. Unit 1 is up to 33-cm thick (BHT 7), although it is typically about 20-cm thick across the site. Although it is present over much of the site, the northern end of BHT 2 (the southernmost backhoe trench within the site boundaries) did not exhibit any Unit 1 sediments. Soil development is absent within Unit 1, although it does exhibit a weak, coarse, platy structure in some locales. The sediments also react weakly to hydrochloric acid, but this is thought to be due to the presence of carbonate nodules brought in by machine disturbances as opposed to pedogenic activity.

Below the gravelly Unit 1 deposits is a light brown (7.5YR6/4, d) deposit of sandy clay loam (Unit 2). This unit is only sporadically preserved across the site, with only BHT 2 and 7 exhibiting Unit 2 sediments. Unit 2 reaches its greatest thickness (approximately 75 cm) in a filled-in swale at the south end of BHT 2 (Figure 12.2). Where Unit 2 is absent, Unit 1 directly overlies the La Mesa calcrete. Soil development in Unit 2 is exhibited by the presence of common (6 percent), fine, irregular, calcium carbonate filaments. The presence of the pedogenic carbonate in this unit causes it to effervesce when treated with weak hydrochloric acid. These properties result in the classification of Unit 2 as a Bk soil horizon.

The basal unit at site LA115265 is the La Mesa calcrete. This unit is pinkish-white (7.5YR8/2, d) and has a clay loam texture. In excavations this unit is quite evident by its white color and hardness. The calcrete provides a barrier that cannot easily be breached by the backhoe and is impenetrable for hand excavations. Previous work in the region (Gile *et al.* 1981; Blair *et al.* 1990; Monger 1993) has proposed that the calcrete is Mid-

Table 12.3 Feature Characteristics from the Testing Results

Feature No.	North	East	Location	Type	Plan shape	Morphology	L (m)	W (m)	Depth (m)	Cultural Materials
1	541.63	522.47	Central	Hearth	Circular	Basin	0.46	0.46	0.13	1 flake, 12 EP brownwares, 19 burned caliche
2	604.16	557.05	North	Caliche pipe	Circular	Cylindrical	0.63	0.6	>0.11	None

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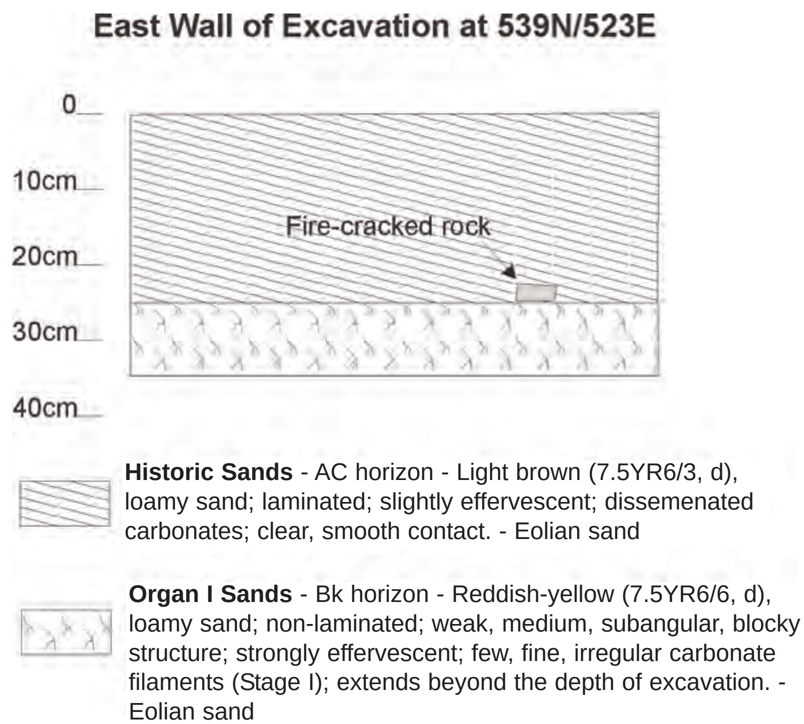

Figure 12.2 West Wall Profile Backhoe Trench 2, LA 115265.

Pleistocene in age (ca. 250,000 B.P.) and, thus, predates accepted dates for the human occupation of North America. For this purpose, the calcrete is considered to be the sterile level for archeological excavations.

The interpretation of the upper two units is most pertinent to archeological investigations. Unit 2 appears to be a natural unit that could have archeological potential. The Stage I carbonates are similar to the Organ I eolian sediments (ca. 2,100–7,000 B.P.) described by Monger (1993) and/or the Q3 unit (100–7,300 B.P.) defined by Blair *et al.* (1990). This Bk horizon lacks an overlying A horizon. In most circumstances this would suggest that this paleosol is partially eroded, an event that often concentrates cultural materials on the eroded surface. At LA 115265, this does not appear to be the case. Rather, it appears that the site was scraped with mechanical equipment during construction activities, often down to the surface of the La Mesa calcrete. Even where Unit 2 was not entirely removed by construction, it was probably partially removed. As a result, cultural materials associated with the surface of the paleosol represented by Unit 2 may have been removed or translocated to off-site areas. The bottom portions of intrusive features (e.g., hearths) are still present in some portions of LA 115265, but much of the site has been subject to soil removal and redistribution from previous construction activities.

The overlying, gravelly Unit 1 deposits also appear to be the result of construction activities. They are composed of a mixture of Unit 2 sands, carbonate nodules from the La Mesa calcrete, and roadbed gravel. Considering that Unit 2 sediments were incorporated into this unit from both the site and the surrounding areas, it is possible that cultural materials are also incorporated into Unit 1. The stratigraphic context for such materials, however, has been obscured by the previous construction activities.

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Data Recovery Strategy

TRC and SWCA conducted data recovery investigations at LA 115265 in the spring of 2000. The investigations began by relocating the existing datum and assigning the grid provenience of N500/E500, with an arbitrary elevation of 100 m. Based upon the relatively limited data potential demonstrated during site testing, the data recovery plan called for the excavation of a single 10 x 3-m unit around Feature 1 (Figure 12.3). Subsequent to hand excavation, soils immediately surrounding the block were to be stripped with mechanical equipment to search for additional features. These excavations were designed to capture any subsurface deposits, or additional features, associated with Feature 1 and the two concentrations of surface artifacts immediately north and south of the feature.

Approximately 27.73 m^2 was excavated in an irregular, stepped block that measured a maximum 11 m north-south x 1.0–3.5 m east-west area over and around Feature 1 (Figure 12.3). The excavation block encompassed three of the previous 1.0 x 0.5-m shovel tests and four of the 50 x 50-cm shovel tests excavated during the testing phase. The remaining 12 shovel tests (1.0 x 0.5 m in size) and the other 50 x 50-cm shovel tests uncovered an additional 6.25 m^2. The backhoe trenches were all 0.75-m wide and excavated a linear 68.2 m of the site within the right-of-way (51.15 m^2). Therefore, a total of 85.13 m^2 was excavated, or nearly 4 percent of the site area within the right-of-way. A total volume of 25.9 m^3 of sediment was excavated at this site.

After all hand excavation had been completed, the entire site within the right-of-way was mechanically stripped in search of additional features. This included a 92 x 8-m area stripped to the north of the hand excavation block, and 109 x 8-m area to the south of the block. This additional stripping uncovered 1,608 m^2, or roughly 71 percent of the entire site area. One mano/hammerstone north of the hand excavation block was the only cultural item discovered as a result of the mechanical stripping.

Data Recovery Results

Hand excavations centered on Feature 1 and revealed two additional thermal pits, Features 3 and 4 (Figures 12.4 and 12.5). Feature 1 was a partially intact, basin hearth with oxidized margins. Features 3 and 4 were basin-shaped thermal features (Figure 12.5, Table 12.4). All three features were mapped, sectioned, and excavated. Flotation and soil samples were collected from all three features, and a radiocarbon sample was obtained from Feature 1. Intact, subsurface cultural deposits were not identified within the excavation block outside the three hearths, or within any of the shovel tests placed nearby. Subsurface artifacts were present in the excavation block, although these materials were contained within the historic sands that overlay the features. Mechanical stripping around the excavation unit did not uncover any evidence of additional features or cultural deposits. Based on the proximity of the features and concentrated nature of the associated artifacts, the remains at this locality are probably the remnants of a pit structure, its fill/floor contents, and extramural debris in its immediate vicinity. Structural elements above the floor have been removed by the construction of US 54 and/or natural erosion.

Artifact Assemblage

Artifacts recovered and analyzed from LA 115265 include 187 ceramic sherds, 36 lithic artifacts, and seven historic items, plus small quantities of biological remains.

Ceramic Artifacts

A total of 187 sherds, weighing 371.7 grams, was recovered from LA 115265 during data recovery. As shown in Table 12.5, 20 percent of the assemblage was identified as too small for analysis.

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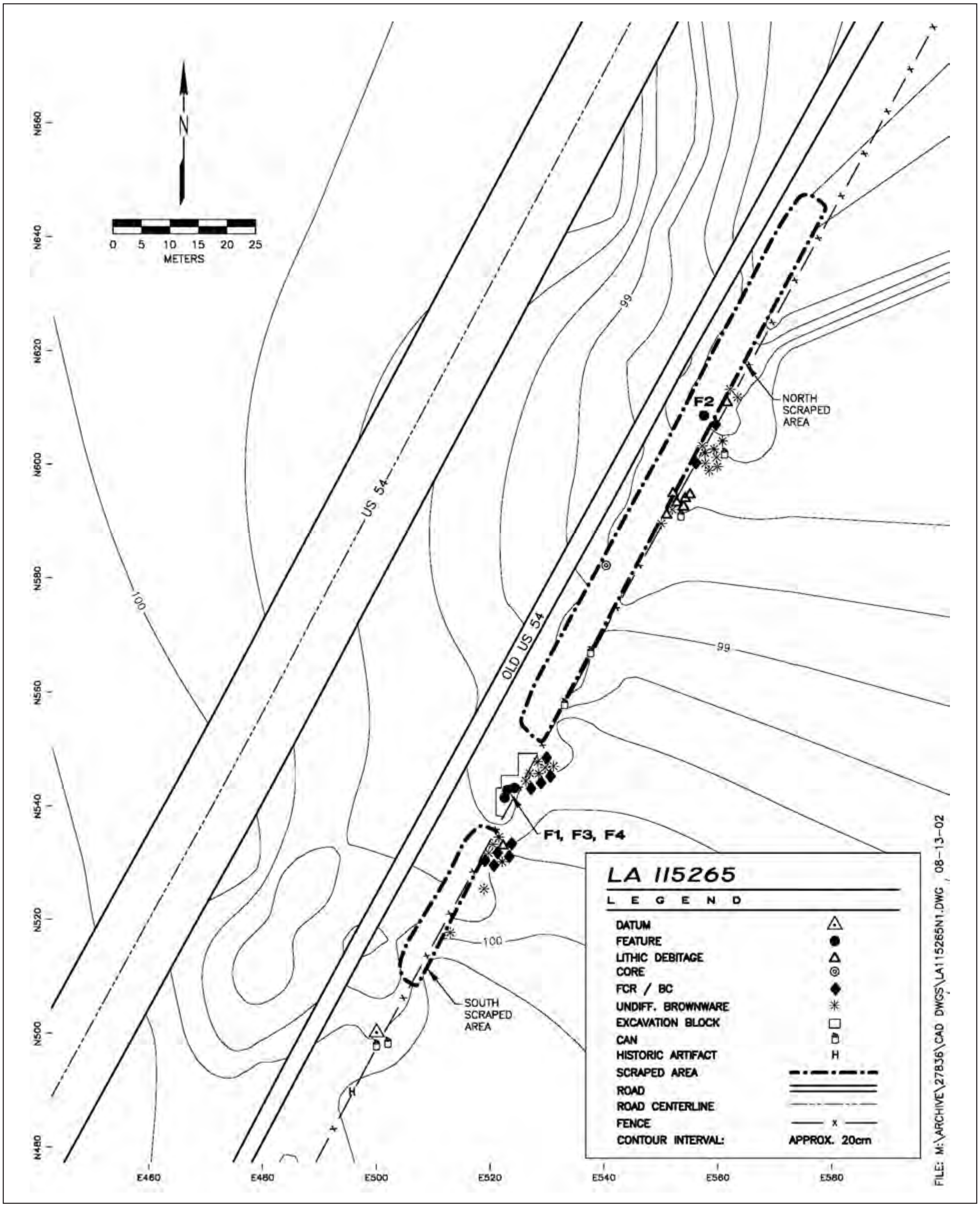

Figure 12.3 LA 115265, showing extent of data recovery excavations and feature locations.

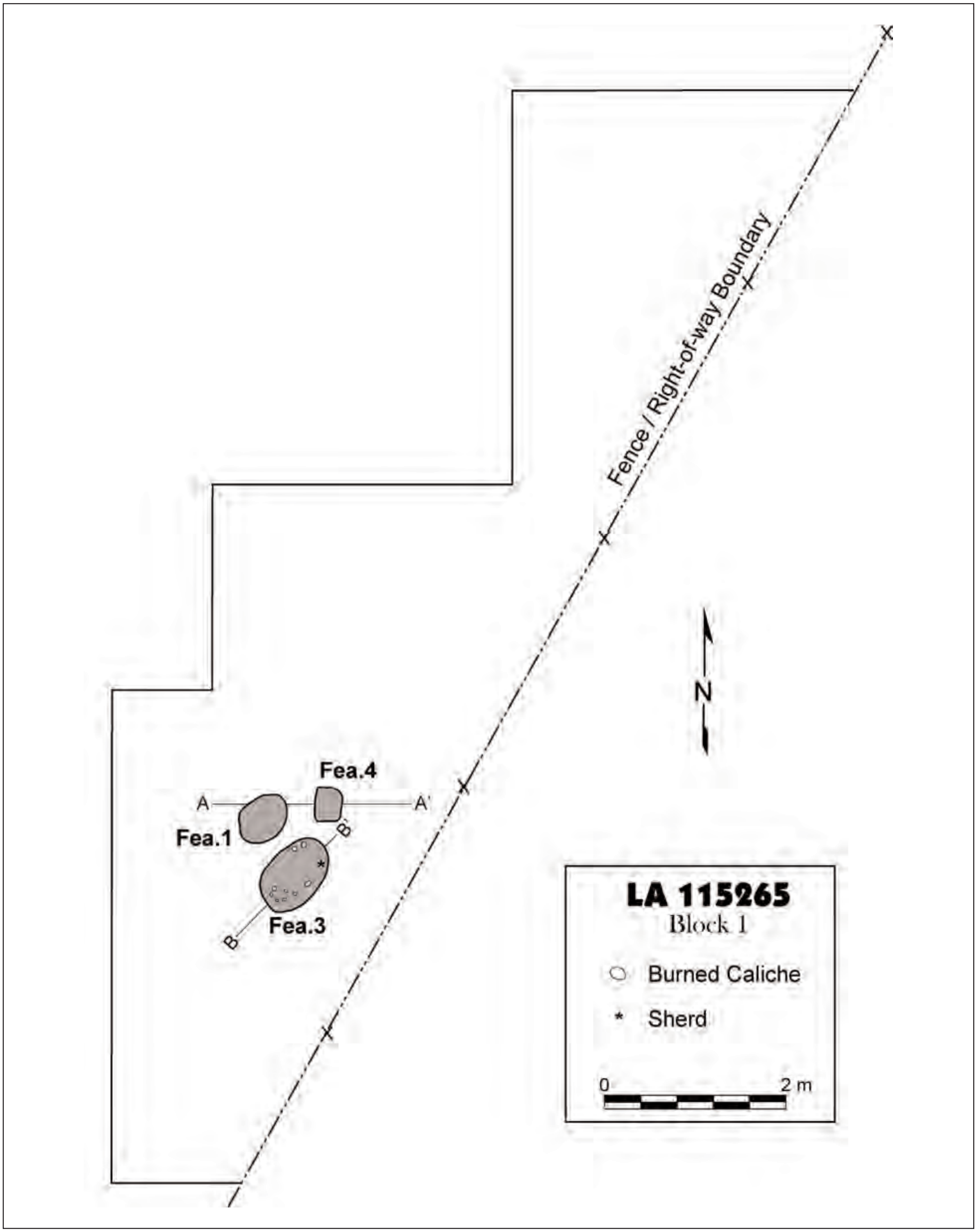

Figure 12.4 LA 115265, Excavation Block 1.

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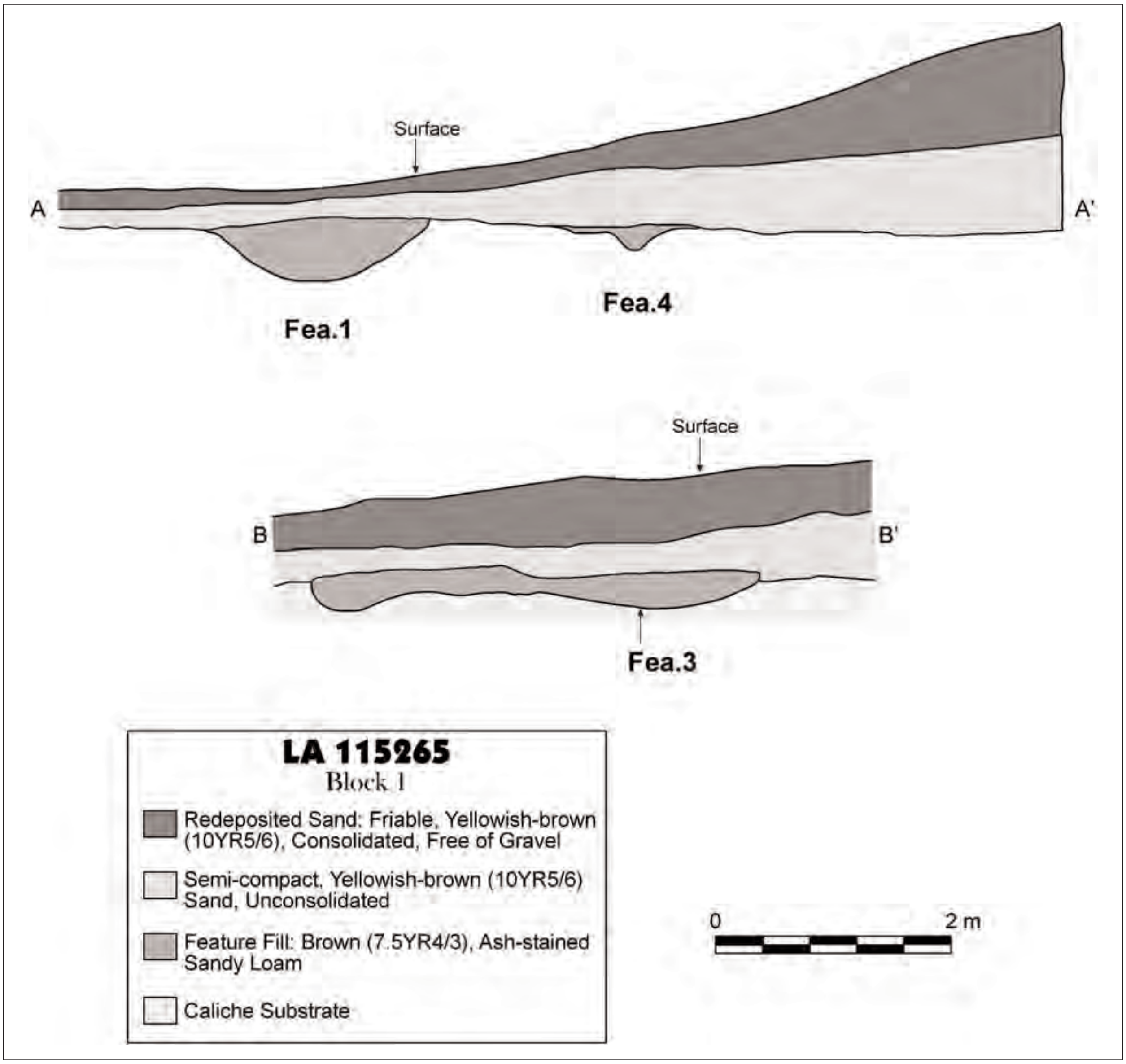

Figure 12.5 LA 115265, cross-sections of Features 1–3.

Table 12.4 Excavated Feature results on LA 115265

Fea. No.	East	North	Location	Type	Plan Shape	Morphology	L (m)	W (m)	Depth (m)	Cultural Materials
1	541.67	522.48	Central	Small thermal feature	Oval	Basin	0.55	0.43	0.13	Few small burned caliche
3	541.12	522.8	Central	Large thermal feature	Oval	Basin/lens	0.89	0.58	0.08	Burned caliche, ceramics
4	541.83	523.17	Central	Small thermal feature	Oval	Basin	0.37	0.28	0.05	Few small burned caliche

These sherds were counted and weighed, but no further analysis was conducted. Given that the too-small sherds probably are El Paso Brown, most of the assemblage may represent a minimum of two brownware utility pots. In addition to brownware jars, a San Andres Plain jar is represented and the combination of El Paso Bichrome, El Paso Polychrome, and some of the plain brown sherds may represent one El Paso Bichrome bowl and one El Paso Polychrome jar. Thus, a vessel count of five pots is estimated for the ceramic assemblage. Based on the ceramic types present, the assemblage probably dates from the Doña Ana phase.

El Paso Brown

El Paso Brown sherds include jar body (n=128), jar rim (n=1), and bowl body (n=2) fragments. The two bowl sherds have polishing on the interior surface, suggesting that they may be unpainted fragments from the El Paso Bichrome bowl described below. All of the remaining sherds are jar fragments, but based on paste and surface characteristics may represent the remains of two jars. The sherds were tempered with coarse angular granite indicative of El Paso Brown as well as El Paso Bichrome and El Paso Polychrome. The only difference between the utility and decorated pottery is the presence or absence of a mineral paint and/or a red slip. The single rim sherd has a thick, rounded rim and lip characteristic of Doña Ana-phase El Paso Brown rims.

El Paso Bichrome

A total of 14 sherds, weighing 39.0 grams, was identified as El Paso Bichrome. All of the sherds had coarse angular granite temper, polished or plain surfaces, and designs executed in a mineral pigment. Because of the small size of the sherds, specific motifs could not be determined. Both bowls (n=6) and jars (n=8) were identified, of which one of each vessel type is represented. One jar body fragment has a shaped edge; however, so little of the modification was present that its function could not be determined. No other use-wear or post-firing modifications were noted.

El Paso Polychrome

One El Paso Polychrome jar rim and one body fragment, weighing 5.0 grams, were identified. They have coarse angular granite temper, plain interior surfaces, and painted and polished exterior surfaces. Designs were executed in a black mineral and red clay pigments. Because the sherds are small, individual motifs could not be identified. No use-wear or post-firing modifications were noted.

San Andres Plain

Two San Andres Plain jar body sherds from a single vessel were recovered from non-feature areas. The combined weight of the two sherds totals 3.8 grams. The sherds have coarse quartz sand temper, plain interior and exterior surfaces, buff-colored paste and surface, and semi-friable paste fracture. No use-wear or post-firing modifications were

Table 12.5 Summary of Ceramic Types and Vessel Data from LA 115262

Ceramic Type	Vessel Form	Vessel Part	Count		Weight	
			n	%	n	%
El Paso Bichrome	Bowl	Body	6	3.2	16.3	4.4
	Jar	Body	8	4.3	22.7	6.1
El Paso Brown	Bowl	Body	2	1.1	15.4	4.1
	Jar	Body	128	68.4	279.7	75.2
		Rim	1	0.5	4.3	1.2
El Paso Polychrome	Jar	Body	1	0.5	0.6	0.2
		Rim	1	0.5	4.4	1.2
San Andres Plain	Jar	Body	2	1.1	3.8	1
Too small for analysis	Not analyzed	Not analyzed	38	20.3	24.5	6.6
Total			187	100	371.7	100

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noted. San Andres Plain ceramics date between A.D. 1000 and 1200, further indicating a Doña Ana-phase affiliation for the LA 115265 assemblage.

Spatial Distribution and Ceramic Chronometry

The majority (82 percent) of sherds from LA 115265 are from surface and non-feature subsurface contexts surrounding Feature 1, a thermal feature. Feature 1 yielded a small assemblage of 29 sherds including El Paso Brown and El Paso Bichrome (Table 12.6). A radiocarbon date of A.D. 870–1220 obtained from Feature 1 falls in line with the ceramic types recovered from the site, indicating a Doña Ana-phase assemblage. Notably lacking in the assemblage is Chupadero Black-on-white, indicating the site probably pre-dates A.D. 1150.

Lithic Artifacts

A total of 30 pieces of lithic debitage was collected and analyzed from LA 115265. Five pieces of debitage were collected from the surface and 25 came from the subsurface. More than 50 percent of the material represented is silicified shale (n=16), followed by 23 percent chert (n=7) and 10 percent quartzite (n=3). Other material types include two pieces of an igneous material, a piece of hornfels, and a piece of rhyolite. The large percentage of silicified shale suggests a lack of preceramic occupation (see Chapter 22). Larger and heavier flake sizes are consistent with an expedient technology and the short-term nature of this site.

In addition, four pieces of ground stone were recovered and analyzed. These include three granite manos and one metate fragment. One mano was complete and had an irregular, plan-view shape and two parallel grinding surfaces. The other two manos were incomplete with indeterminate morphology. The metate fragment was also granite, and was very incomplete. See Chapter 21 for more information on the lithics from this site and how they compare to the other sites in the study area.

Biological Remains

Low frequencies of both botanical and faunal remains were recovered from LA 115265. Plant

Table 12.6 Ceramic Distributions by Provenience at LA 115262.

Feature No.	Feature Type	Ceramic Type	Vessel Form	Sum of Count	Sum of Count 2
	Non-feature	El Paso Bichrome	Bowl	6	3.2
			Jar	7	3.7
		El Paso Brown	Bowl	1	0.5
			Jar	98	52.4
		El Paso Polychrome	Jar	1	0.5
		San Andres Plain	Jar	2	1.1
		Too small for analysis	Not analyzed	31	16.6
	Surface	El Paso Brown	Jar	6	3.2
		El Paso Polychrome	Jar	1	0.5
		Too small for analysis	Not analyzed	1	0.5
	Sub-total			*154*	*82.4*
1	Thermal Feature	El Paso Bichrome	Jar	1	0.5
		El Paso Brown	Bowl	1	0.5
			Jar	24	12.8
		Too small for analysis	Not analyzed	3	1.6
	Sub-total			*29*	*15.5*
2	Natural	El Paso Brown	Jar	1	0.5
		Too small for analysis	Not analyzed	3	1.6
	Sub-total			*4*	*2.1*
	Total			187	100.00%

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remains were sparse and derive from two flotation samples, one phytolith and one radiocarbon sample. Two flotation samples totaling 40.75 liters of fill from Features 1 and 3 were analyzed. Recovered charcoal consisted of primarily *Prosopis glandulosa* and *Atriplex canescens* with two Gramineae stems. *Prosopsis* and *Atriplex* are generally indicative of locally available wood/fuel sources. Carbonized cultigens and native plant seeds include 69 kernels and three cupules of *Zea mays*, one *Amaranthus* sp. seed, one Cheno-Am seed, and one unidentifiable seed fragment. The phytolith sample sent for analysis was from Feature 1. The sample found three instances of one economic species, *Zea mays*. No pollen or lipid samples were sent for analysis.

The presence of maize within both flotation and phytolith samples is significant. Within the region, similar high percentages of samples with corn are known only for late Doña Ana- and El Paso-phase residential sites that range from pueblos to pithouses of suggested seasonal occupation (Duran and Batcho 1983; Foster *et al.* 1981; O'Laughlin 1985, 1995a, 1995b, 2001; O'Laughlin and Martin 1990).

Faunal remains include six specimens, weighing a grand total of 0.2 g. None of these were identifiable beyond the level of bird/small mammal. One of the bone fragments was burned.

Historic Artifacts

Seven historic artifacts were recovered from LA 115265 (Table 12.7), all collected from the surface during the testing phase. The majority of historic artifacts recovered during this project are not diagnostic of an especially narrow time frame within the historic period, but most of the items appear to date within the first half of the twentieth century. Only one metal can has a mark dating it to the mid-twentieth century. The historic items all appear to be roadside trash associated with old US 54, which runs along the western edge of the site.

Site Chronology

A single radiocarbon sample from Feature 1 yielded a two-sigma calibrated date of A.D. 870–1220 (Beta-156965). This spans the late Mesilla phase and approximately the entire span of the Doña Ana phase. The date accords well with the ceramic assemblage from the Feature 1 area, which includes mostly El Paso brownwares and a few El Paso polychrome sherds, but no Chupadero Black-on-white. Based on these temporal indicators and the high percentage of corn in the flotation samples, the Feature 1 locality probably dates from the early portion of the Doña Ana phase (A.D. 1100–1250). Historic debris at the site all dates from the early to mid-twentieth century.

Table 12.7 Historic Artifacts from LA 115265

Gen. Provenience	Item	Attributes	Indicators	Comments
Surface (FS 4)	Flat glass, clear in two pieces	0.5 cm thick	Slight patina	Cf. window glass
Surface (FS 15)	Metal can	Sanitary can, side seam	Church key opened	
Surface (FS 16)	Metal can	Straight, soldered side seam	Church key opened	1935–1958
Surface (FS 17)	Metal can	Sanitary can, side seam	Church key opened	
Surface (FS 18)	Terra cotta "palette" or decorative tile	Terra cotta applied to cement base	Green lead glazed with black painted design	
Surface (FS 19)	Metal can, crushed	Sanitary can, side seam	Unknown opening	
Surface (FS 20)	Metal can, crushed	Sanitary can, notched side seam		

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Site Interpretation and Summary

The single cluster of features documented during data recovery and the associated concentration of artifacts mark the probable former location of a Doña Ana-phase pit structure. The oxidized margin of Feature 1 indicates intense, sustained, and repeated burning and, based on comparative information from the Jornada Mogollon region, is especially suggestive of a pit structure floor hearth (cf. Graves *et al.* 1996). The burned rock and caliche associated with all three features are characterized by small pieces, further indicating sustained, repeated use of these thermal pits. To the north, another concentration of sherds, lithics, and fire-cracked rock/burned caliche may mark the location of another structure, although no subsurface features were uncovered in this locality.

It is impossible to determine how large or extensive this site originally was. A portion of the site was destroyed by previous construction of US 54, and these construction activities also apparently removed some of the deposits within the site, resulting in removal and re-deposition of artifacts. Moreover, a portion of the site extends east of the right-of-way fence, and this area was not investigated. It is possible that the LA 115265 remains are related to the more substantial occupation at LA 115260, which is located to the west, on the other side of US 54. If so, then these sites probably mark the remains of a rather extensive settlement, perhaps involving a scatter of dispersed structures. Both sites lie within the same desert floor depression, and it seems likely that this landscape feature probably held water on at least a temporary basis and was the main natural attraction for prehistoric settlement at this locality. As such, the LA 115260/115265 site complex constitutes one of the few late Formative, desert-floor sites that have yielded what appears to be evidence (albeit indirect) of structural remains.

Recommendations

Although severely impacted by construction activities, LA 115265 retained subsurface features that have yielded data relevant to research questions outlined in the data recovery plan. As such, it is considered eligible to the NRHP. Data recovery investigations have exhausted the data potential of the site within the right-of-way, and the proposed construction activities will have no effect on any cultural resources. It is possible that intact, subsurface cultural remains may still be present in the narrow eastern portion of the site outside the right-of-way. If any future construction activities are planned that would impact this portion of the site, such activities should be preceded by further site testing and, if necessary, data recovery.

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Chapter 13

LA 126181

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Introduction

LA 126181 is a moderate-sized Jornada Mogollon site, located on the eastern alluvial fans of the Jarilla Mountains. The site surface slopes very gently (< 1 degree) to the southeast. A small, southeast-trending drainage runs through the northeast portion of the site. The area is blanketed with loamy sand containing some gravel inclusions, classified within the Pintura–Doña Ana Series (Derr 1981:Sheet 23). These soils are up to 3-m deep, and overlay a caliche cap (observed in a borrow pit bordering the southern edge of the site). The site locality is within the Chihuahuan biotic zone, with creosote, broom snakeweed, sand sagebrush, broad leaf yucca, little-leaf sumac, mesquite, all thorn, and prickly pear.

The site lies on federal lands administered by the BLM. Archaeological debris occurs both inside and outside of the right-of-way. Major sources of soil redistribution derive from previous construction of the US 54 roadbed. These activities left a large borrow pit on the southern edge of the site, which has removed an unknown portion of the site. Planned construction activities will take place from the centerline of the existing road to the new right-of-way edge 40 m to the east.

Previous Investigations

Michalik (1999) originally recorded the site. It was reported as a concentration of 137 sherds within a 10-m diameter area, with a scatter of 22 additional sherds adjacent to the concentration, and 12 sherds and a single quartzite flake within 30 m of the sherd concentration. Ceramics observed at the site included El Paso Brownwares and El Paso Polychrome.

Testing Investigations

TRC and SWCA crews conducted site testing in the fall of 1999. During testing, the surface was first carefully inspected to determine the current extent and distribution of surface artifacts and features. A site datum was established, and a topographic map of the site was produced using a total station instrument. Diagnostic surface artifacts within the right-of-way were collected, and features were described and trowel tested to determine their depth potential. Finally, shovel testing was carried out (Figure 13.1).

Surface Investigations

Testing began with a careful inspection of the site surface, and it was found that the site was larger than originally recorded by Michalik (1999). The low- to moderate-density surface scatter of lithic artifacts, ceramic, and FCR/BC was found to extend over a 70 x 60-m area. Only a small sample of surface artifacts within the right-of-way was collected during the testing phase, with the remaining ones collected during data recovery. Within this area, four cultural features were documented (Features 1–4), all of which were ashy stains and were widely dispersed over the site (see Figure 13.1). Feature 1 is the deflated remains of a hearth. Features 2 and 3 are the semi-deflated remains of hearths or roasting pits. Feature 4 was a pocket of ash stained soils brought to the surface under a creosote bush by rodent burrowing. Feature 4 was located within the right-of-way, in the north-central portion of the site, while Features 1–3 were outside the right of way to the east, and widely dispersed. Characteristics of the features and ceramic concentrations from the testing phase are presented in Table 13.1.

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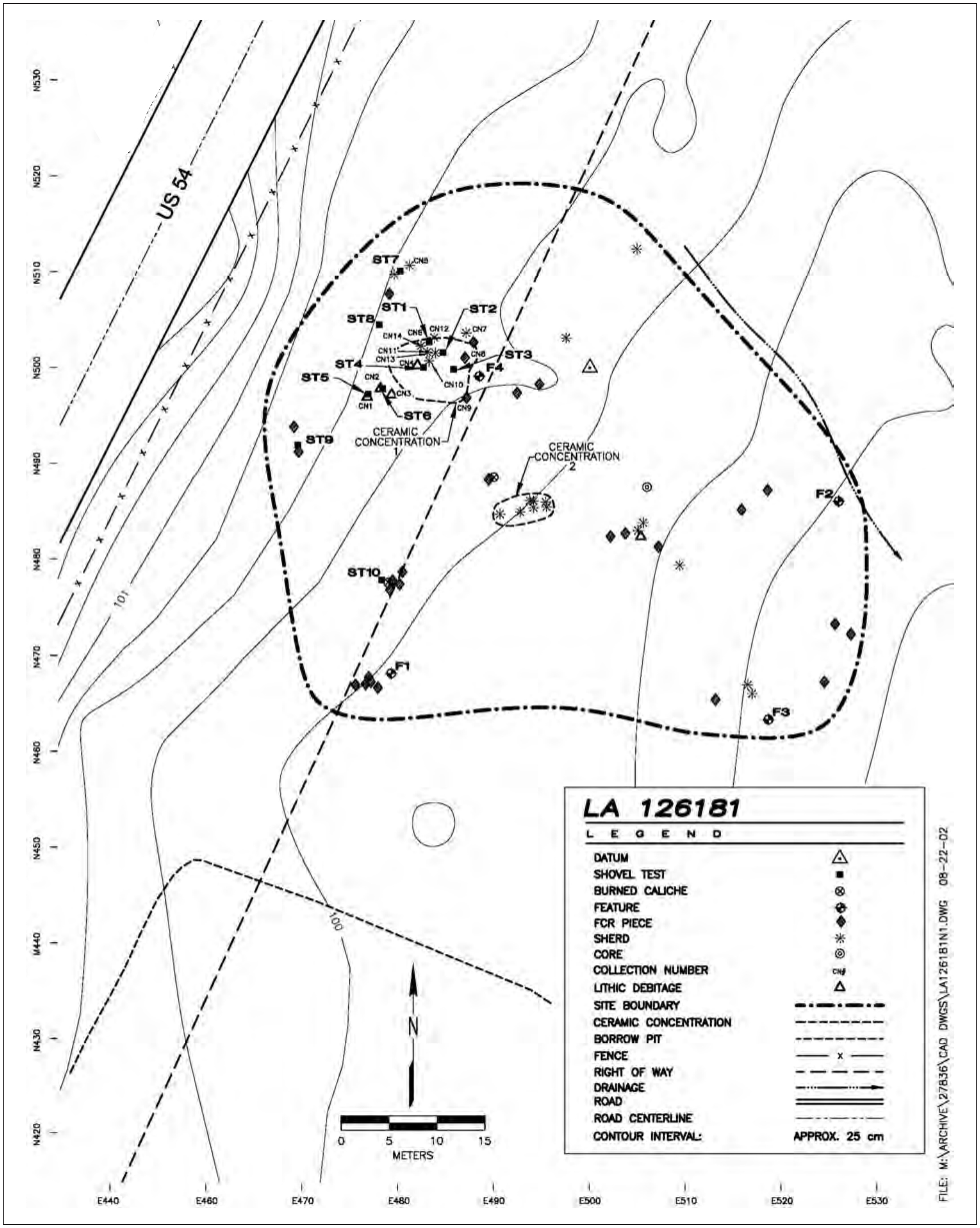

Figure 13.1 LA 126181, testing phase map.

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Table 13.1 Feature Characteristics from the Testing Results

Feature No.	Location	Type	Plan shape	L (m)	W (m)	Trowel Test Depth	Cultural Materials
1	SW	Thermal Feature	Circular	0.5	0.4	Surface	5 FCR with an additional scatter of eight additional FCR
2	NE	Thermal Feature	Circular	3	3	>0.10	150+ FCR and ash staining in central portion of FCR scatter
3	SE	Thermal Feature	Circular	2	2	>0.10	25 FCR and ash staining in central portion of FCR scatter
4	NW	Thermal Feature	Circular	>0.1	>0.1	>0.1	Subsurface ash stain brought up by rodent activity
Ceramic Concentration 1	NW	Midden	Circular	8	7	0.2	Depth of cultural materials determined in four shovel tests excavated within the ceramic concentration, 200+ El Paso polychrome and El Paso brownware body and rim ceramics and a few lithic flakes
Ceramic Concentration 2	Central	Midden	Oval	8	4	Unknown	> 40 El Paso polychrome and El Paso brownware body ceramics and flattened direct rims along with a few FCR

In addition to the four thermal features, two discrete concentrations of ceramics were recorded, one of which (Ceramic Concentration 1) was within the right-of-way. Most of the archaeological debris observed on the surface was concentrated in these two localities. Ceramic Concentration 1 contained more than 200 sherds, while Ceramic Concentration 2 was smaller, but still contained more than 40 sherds. Along with ceramics, these concentrations also included scattered FCR and chipped stone artifacts. Outside the two concentrations was a very low-density scatter of surface artifacts, including lithic debitage, ground stone, ceramics, and fire-cracked rock.

Subsurface Testing Results

The subsurface testing strategy for LA 126181 involved the manual excavation of 10 0.5 x 0.5-m shovel tests (Figure 13.1). All but two of the shovel tests were placed in Ceramic Concentration 1 (ST 1–4) or within 10 m of this concentration (ST 5–8). The other two shovel tests (ST 9 and 10), were located further away, in two localities to the southwest and south where very small concentrations of FCR were observed. Feature 4, the only feature visible on the surface within the right of way, was not trowel tested; this feature was located primarily beneath a creosote bush, and subsurface testing elsewhere demonstrated the site's subsurface potential so this feature was left for the data recovery phase.

Table 13.2 summarizes the findings of the shovel test pits, including depths, soil descriptions and color, and cultural materials recovered. Artifacts were recovered from ST 1-5 and 8. Indirect cultural evidence was uncovered within ST 10, where ash-stained soil was observed within a rodent burrow. Most of the items recovered from subsurface contexts came from shovel test excavated within Ceramic Concentration 1 (ST 1–4). These shovel tests yielded 154 ceramic sherds and 2 lithic flakes, of which one was worked. The ceramics included 5 El Paso Polychrome rims, 3 El Paso Polychrome body sherds, and 146 brownware body sherds. Almost all of the ceramics were recovered within the upper 10 cm, with the exception of six that came from 10–20 cm bgs. The single worked lithic flake was recovered from the upper 10 cm of sediment, with the flake recovered from 38 cm bgs. ST 5, excavated to the southwest of Ceramic Concentration 1, also contained subsurface cultural materials 10–20 cm bgs. ST 8 was excavated to the west of Ceramic Concentration 1 and recovered a single sherd from the upper 10 cm of soil. ST 10 uncovered ash-stained fill within a rodent burrow at 20 cm bgs.

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Table 13.2 Shovel Test Results for LA 126181

Test	North	East	Location	Depth	Surface soil	Cultural Evidence	Strata 1	Cultural Evidence	Strata 2	Cultural Evidence
ST 1	502.73	483.21	West-central, Ceramic Conc. # 1	0.4 m	Friable, light brown, loamy sand (7.5YR6/4), surface to 0.06 m	8 El Paso Brown ceramics, 1 worked flake, surface to 0.1 m	Semi-compact, brown, loamy sand with few caliche filaments (7.5YR5/4), 0.06–0.4 m	None	N/A	N/A
ST 2	501.6	484.67	West-central, Ceramic Conc. # 1	0.6 m	Friable, light brown, loamy sand (7.5YR6/4), surface to 0.04 m	16 El Paso Brown ceramics, surface to 0.10 m	Semi-compact, brown, loamy sand with few caliche filaments (7.5YR5/4), 0.04–0.6 m	1 El Paso Brown ceramic 0.1–0.2 m, 1 flake 0.3–0.4 m	N/A	N/A
ST 3	499.85	485.78	West-central, Ceramic Conc. # 1	0.5 m –auger to 1.2 m	Friable, light brown, loamy sand (7.5YR6/4), surface to 0.04 m	7 El Paso Brown and Polychrome ceramics, surface to 0.1 m	Semi-compact, brown, loamy sand with few caliche filaments (7.5YR5/4), 0.04–0.5 m (same fill in auger to 1.2 m)	5 El Paso Brown and Polychrome ceramics 0.1 to 0.2 m	Compact caliche coated gravelly sandy loam strong brown (7.5YR5/6), 1.2+ m	None
ST 4	500.05	482.61	West-central, Ceramic Conc. # 1	0.4 m	Friable, light brown, loamy sand (7.5YR6/4), surface to 0.04 m	71 El Paso Brown ceramics, surface to 0.1 m	Semi-compact, brown, loamy sand (7.5YR5/4), 0.04–0.28—36 m	None	Semi-compact brown loamy sand with caliche nodules (7.5YR5/4), 0.28-36–0.4 m	None
ST 5	497.26	476.9	Southwest of Ceramic Conc. # 1	0.5 m	Friable, light brown, loamy sand (7.5YR6/4), surface to 0.02 m	None	Semi-compact, brown, loamy sand with few gravels (7.5YR5/4), 0.02–0.4 m	2 flakes, 0.1–0.2 m	Compact brown loamy sand with a high density of gravels (7.5YR5/4) 0.4–0.5+ m	None
ST 6	497.87	478.39	Southwest of Ceramic Conc. # 1	0.3 m	Friable, light brown, loamy sand (7.5YR6/4), surface to 0.02 m	None	Semi-compact, brown, loamy sand with few gravels (7.5YR5/4), 0.02–0.3 m	None	N/A	N/A
ST 7	510.03	480.1	8 m northwest of Ceramic Conc. # 1	0.3 m	Friable, light brown, loamy sand (7.5YR6/4), surface to 0.05 m	None	Semi-compact, brown, loamy sand with few gravels and caliche (7.5YR5/4), 0.05–0.3 m	None	N/A	N/A
ST 8	504.5	478.01	5 m west of Ceramic Conc. # 1	0.4 m	Friable, light brown, loamy sand (7.5YR6/4), surface to 0.03 m	1 El Paso Brown ceramic surface to 0.1 m	Friable, light brown, loamy sand (7.5YR6/4), 0.03–0.0 m	None	N/A	N/A
ST 9	491.94	469.53	Western edge of site	0.3 m	Friable, light brown, loamy sand (7.5YR6/4), surface to 0.02 m	None	Friable, light brown, loamy sand (7.5YR6/4), 0.02–0.3 m	None	N/A	N/A
ST 10	477.73	478.44	Southwestern portion of site	0.3 m	Friable, light brown, loamy sand (7.5YR6/4), surface to 0.02 m	None	Friable, light brown, loamy sand (7.5YR6/4), 0.02–0.3 m	Ash-stained fill and charcoal in rodent burrow at 0.2 m	N/A	N/A

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No other shovel tests uncovered subsurface cultural remains. Given the relatively thick mantle of alluvium at the site, however, there was clearly a potential for as-yet-undiscovered, buried features and materials not evident on the surface.

Site Stratigraphy and Geomorphology

Geomorphic observations indicated that Historic, Organ III, and Organ I alluvial deposits are present at the site. Surface observations and shovel tests on this site indicate a relatively thick (up to ca. 3 m) accumulation of alluvium (Figure 13.2). The present land surface exhibits a relatively thin (less than 6-cm thick) blanket of alluvium that is probably historic in age. El Paso phase cultural materials are often associated with this soil unit, but this is probably due to translocation of the materials through bioturbation and/or slopewash. The primary context of Formative-period cultural materials at this site is the underlying unit, which is a non-calcareous alluvial deposit that appears to match the Organ III alluvium (100–1,100 B.P.) described by Gile *et al.* (1981). In some tests, these deposits were up to 60-cm thick. The high chroma values, slight induration, and lack of visible pedogenic accumulations (e.g., carbonates) suggest that this is a Bw horizon. The majority of cultural materials appear to be associated with the upper portions of this unit, however, which suggests that most of the Organ III alluvium was

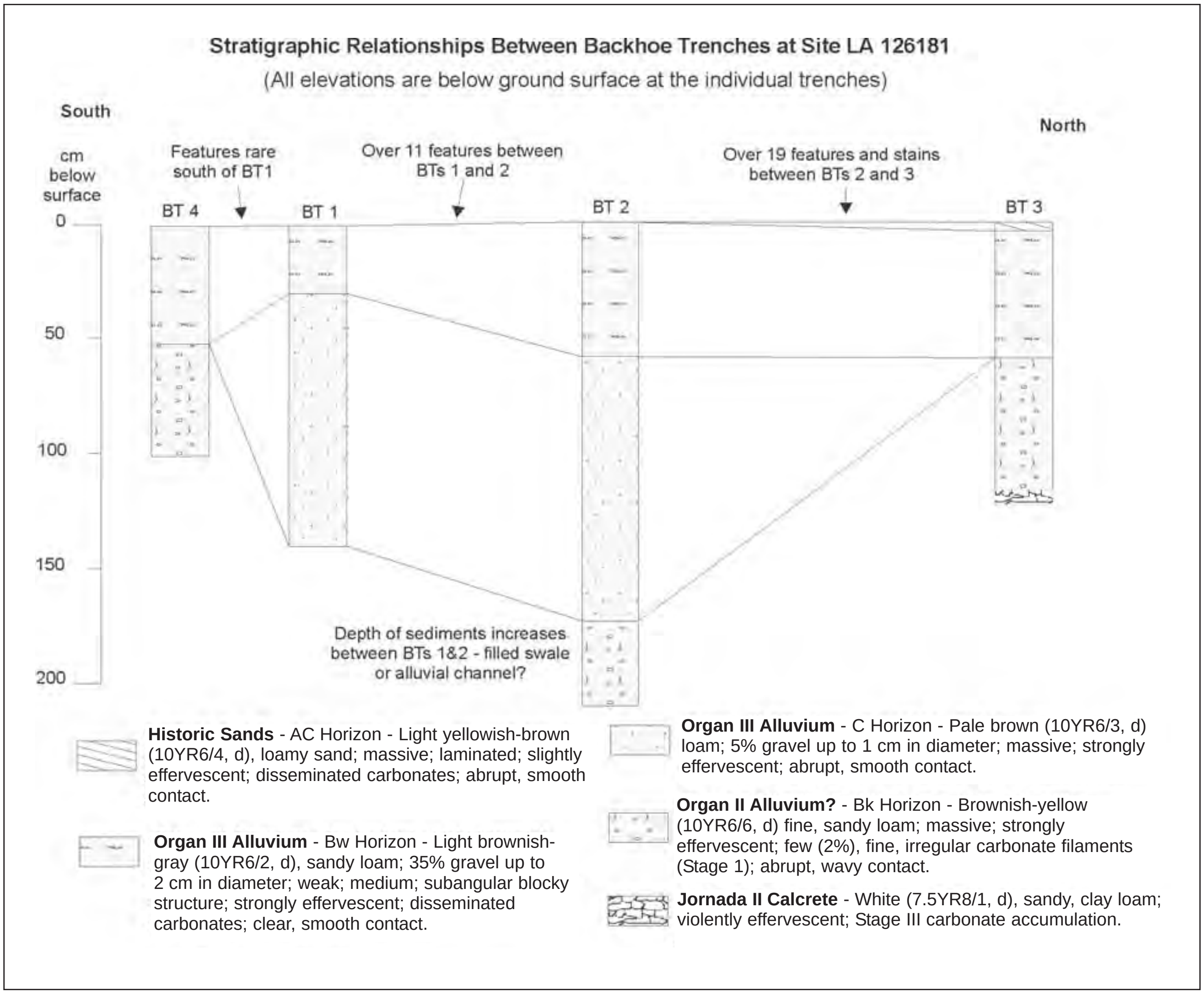

Figure 13.2 Stratigraphic Relationships Between Backhoe Trenches at LA 126181

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already deposited by the time of the occupation(s).

In the central portion of the site (BTs 1 and 2) an additional unit of unaltered parent material was observed below the Bw horizon. Based on its lack of pedogenic characteristics, this unit is considered a C horizon (Unit 3). The position of this unit suggests that it may either be an unaltered portion of Organ III sediments (ca. 100–1,100 B.P.) or it may be an Organ II (1,100–2,100 B.P.) deposit. The lack of datable materials within this C horizon makes it difficult to give a more accurate age assessment. Generally, Organ II sediments are known for their weak accumulation of pedogenic carbonates (Bk horizon) which appears to be a better description for the underlying unit. All of the sediments in this area effervesce when exposed to hydrochloric acid, an indication of calcareous parent material. Due to this calcareous origin, it is possible that the pedogenic carbonate accumulations in the soil are masked by other carbonates. Thus, the C horizon may actually contain pedogenic carbonates that are not discernable to the naked eye in the field. The C horizon pinches out on the northern and southern edges of the site. Based on its isolation and depth in the center of the site, Unit 3 may be an isolated channel fill or swale deposit. No cultural materials were observed in association with this unit.

In northern and southern portions of the site, the Bw horizon (Unit 2) directly overlies a Bk horizon (Unit 4). This is a slightly calcareous alluvial deposit that appears to match the description of the Organ II (1,100–2,100 B.P.) or Organ I alluvium (2,100–7000 B.P.; after Gile *et al.* 1981; Monger 1993). Some deep shovel tests and exposures within the borrow pit indicate that these Organ II sediments extend to 3 m bgs. In the central portion of the site, this unit underlies Unit 3 (the C-horizon). It is possible that, at this site, the Organ II and Organ I sediments are inseparable, and are represented by a single depositional unit. No cultural materials have been observed in association with the Organ I deposits, but considering that at least 30 cm or more of recent sediments typically buries these deposits, it is unlikely that components of this age would be expressed on the modern surface. Thus, Late to Middle Archaic components may be present in the subsurface of this site, but none of the deep backhoe trenches encountered any such materials or features.

The basal unit observed at the site consists of a gravel-rich alluvial fan deposit with Stage III carbonate accumulations. Within the region, such carbonate accumulations on alluvial fan sediments are typically associated with the Late Pleistocene Jornada II alluvium (150,000–25,000 B.P.; Gile 1987). Based on this age, this unit is considered the sterile level for archaeological excavations at the site. The only place this unit was observed was in BHT 3 on the northern margin of the site, where it was encountered ca. 1.35 m below the surface. In other locales it is assumed that the unit is present below the bottom of excavations, in some cases over 2-m deep.

Data Recovery Strategy

TRC and SWCA carried out data recovery investigations at LA 126181 in the spring of 2000. Data recovery began by relocating the datum established during testing, and assigning it the grid provenience N500/E500, with an arbitrary elevation of 100 m. The data recovery plan called for all remaining surface artifacts at the site to be plotted with a total station and collected. Given the high density of surface materials within Ceramic Concentration1, this method was modified during data recovery. Specifically, surface materials within this concentration were collected within a grid of 52 1 x 1-m squares. Outside of Ceramic Concentration 1, materials were point provenienced and collected, per the data recovery plan.

Subsurface investigations at LA 126181 involved a combination of hand-excavated trenches and blocks, backhoe trenching, and machine stripping of the entire site within the right of way (Figure 13.3). These investigations began with excavations in, and adjacent to, Ceramic Concentration 1. Feature 4, on the edge of the ceramic concentration, was investigated within a 5 x 5-m block (Excavation Block 1). A 1 x 8-m trench was excavated through the center of Ceramic Concentration 1, to determine if there were any buried deposits or features underlying the surface artifacts. This

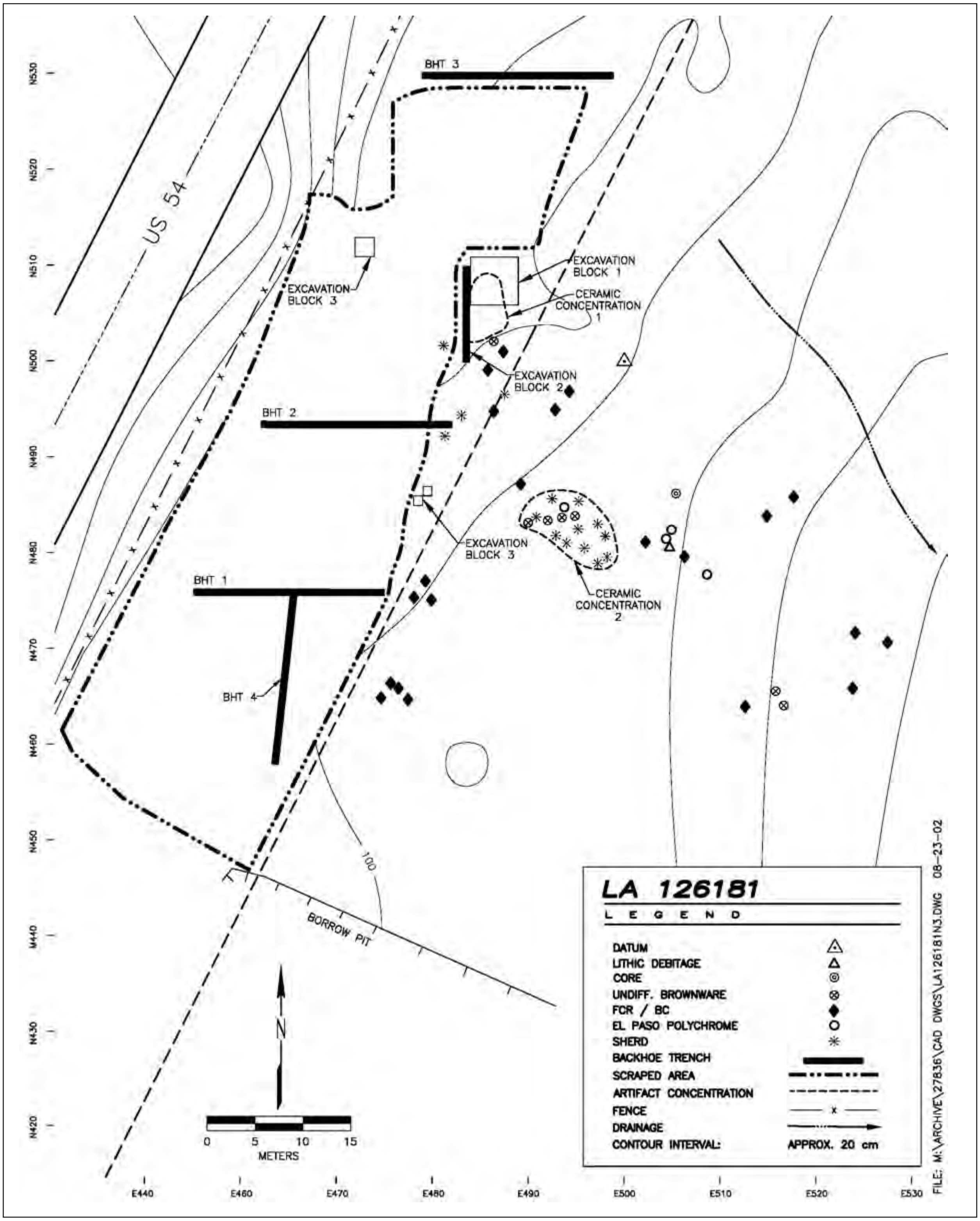

Figure 13.3 LA 126181, showing locations of data recovery excavations.

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trench excavation (designated Excavation Block 2) indicated that the materials marking Ceramic Concentration 1 were in a shallow and largely deflated context, and so the 10 x 8-m excavation block called for in the data recovery plan to investigate this locality was not excavated. Two 1 x 1-m units (Excavation Block 3) were established in the vicinity of ST 10, but did not uncover any subsurface features. A 2 x 2-m unit (Excavation Block 4) was positioned to the northwest of Ceramic Concentration 1, over an ash stain (Feature 5) exposed during mechanical stripping.

Once hand excavation was complete, four backhoe trenches were excavated to search for any buried features or deposits that might not be evident on the site's surface, and to facilitate the geomorphic study of the site. The presence of such buried cultural remains was considered a distinct possibility given the relatively thick accumulation of alluvial fan deposits at this site. Following backhoe trenching, mechanical stripping of the site was carried out, including the entire portion of the site within the right of way (Figure 13.4). Mechanical stripping extended beyond the southern site boundary all the way to the northern edge of the borrow pit because several features were encountered in BHT 1, near the southern boundary of the site.

Mechanical and hand excavations uncovered 22 previously undocumented features at the site (Figure 13.5). One of the newly documented features, Feature 6, was exposed within the 5 x 5-m block centered on Feature 4 (on the edge of Ceramic Concentration 1). The other 21 new features were uncovered through mechanical excavations. One of these, Feature 5, was excavated within a 2 x 2-m block (Excavation Block 4) following initial exposure of this feature during mechanical stripping.

The block excavations uncovered a total of 41m^2. Along with the 2.5 m^2 exposed during previous shovel testing , hand excavations at this site totaled 43.5 m^2, or 1.3 percent of the site area within the right-of-way. The four backhoe trenches were each 0.75-m wide and uncovered 76 linear meters, for a total exposure of 57 m^2. Overall, a total of 100.5 m^2 was excavated by hand and backhoe, equal to just over three percent of the site within the right-of-way. The total fill exca-

Figure 13.4 Machine scraping at LA 126181. The Jarilla Mountains are visible in the background.

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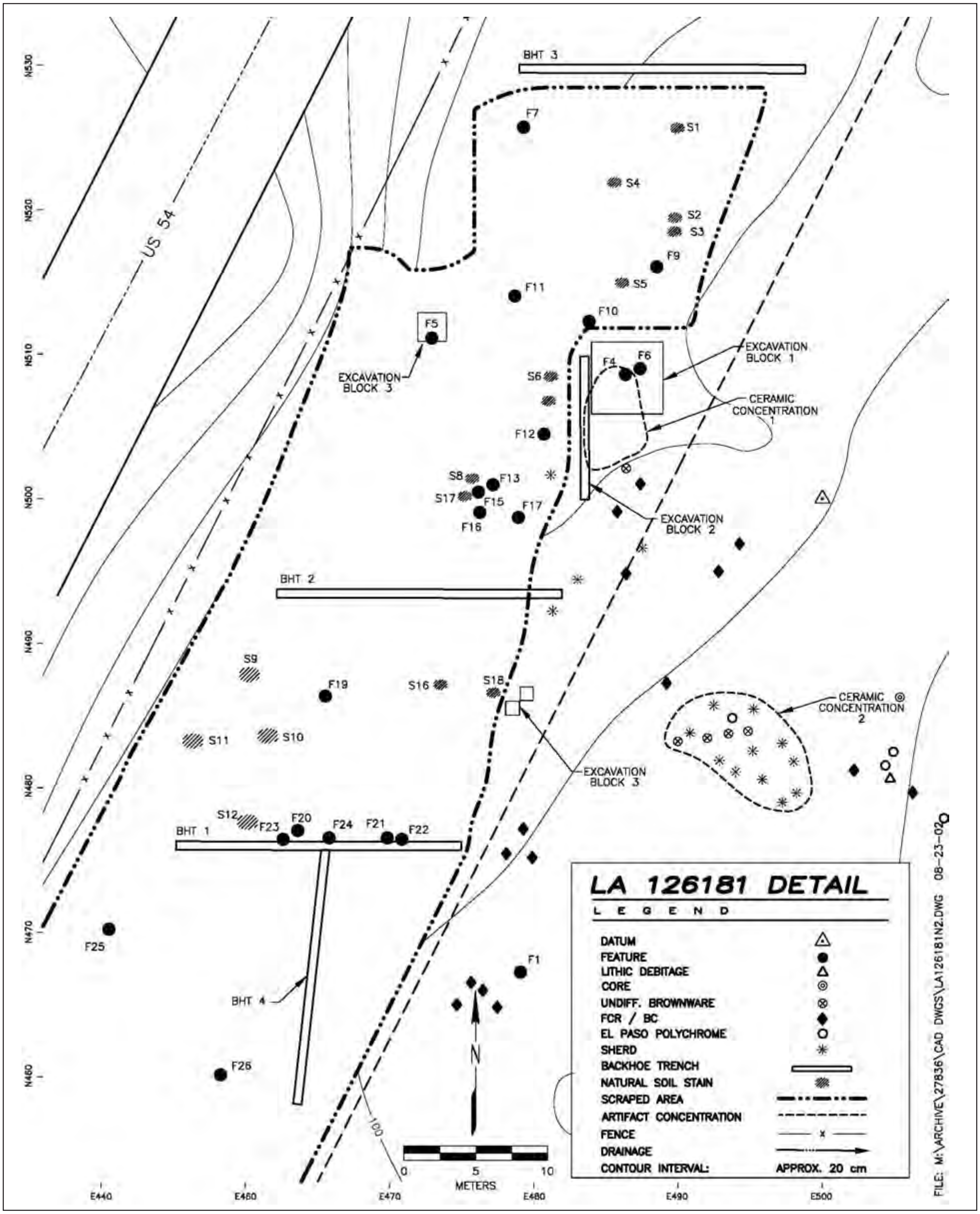

Figure 13.5 LA 121681, detail, showing feature locations.

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vated by hand was 2.9 m^3. The total fill excavated within the backhoe trenches was 84.09 m^3 and total fill excavated by both hand and trench excavations was 86.99 m^3.

Mechanical stripping exposed features to the south, west, and north of the original site boundary that was defined by surface artifacts. As a result the site boundaries were expanded to 89 m north-south x 77 m east-west, and encompasses an estimated 6,853 m^2. Within the right-of-way the new site boundaries measured 89 m x 37 m and encompasses 3,293 m^2, or nearly 48 percent of the total site area. (See Figure 13.4)

Data Recovery Results

Controlled Surface Collection

Data recovery began with a controlled surface collection, carried out within a 58-m^2 grid centered over Ceramic Concentration 1 (Figures 13.6, 13.7). This controlled surface collection recovered 202 ceramic sherds, 11 pieces of chipped stone debitage, two cores, and 24 pieces of thermally altered rock. The ceramics were concentrated in the south-central portion of the surface collection grid. What this intense, highly discrete concentration reflects in terms of activities associated with the site is not entirely clear. It probably represents a formal trash disposal area, and if so Ceramic Concentration 2 (outside the right-of-way) would represent another such dump. It may also mark a food preparation area where numerous ceramic vessels were broken and the debris left here, although this seems less likely, as such dense concentration of trash would probably have interfered with food preparation. If they are formal trash dumps, the two ceramic concentrations may have been adjacent to domestic activity areas and/or structures. In either event, such a dense concentration of debris indicates an intensive, residential occupation at this site, despite the absence of uncovered structure remains (see below).

Subsurface Investigations

Along with the two ceramic concentrations, the investigations at LA 126181 recorded 26 features, 23 of which were within the right of way (see Figure 13.5). Following the controlled surface collection, excavations blocks were opened within and around Ceramic Concentration 1. Excavation Block 1, centered over Feature 4, also captured the northern portion of Ceramic Concentration 1 (compare Figure 13.5 with 13.7). A 1 x 8-m trench, designated Excavation Block 2, ran north-south through the western portion of the controlled surface collection grid. This trench produced abundant cultural material in the upper few centimeters of unconsolidated fill, but no evidence of subsurface ash staining or buried features. Artifact density dropped off dramatically in the second level (0.1–0.2 m bgs). From these results, it became apparent that the materials marking Ceramic Concentration 1 were in a shallow, deflated context. Again, Ceramic Concentration 1 appears to be a formal trash disposal area, and as such is probably adjacent to a former structure and activity area, although no structural remains were encountered at the site.

Features

Of the 23 features within the right of way, 20 were thermal features, one was a non-thermal pit, and two turned out to be rodent burrows (Table 13.3). Thermal features were classed as either small or large (see Chapter 30). Specifically, small thermal features were defined as those less than 70 cm in maximum length, while their larger counterparts were equal to or larger than 70 cm. Eleven of the 20 thermal features were classified as small (Figure 13.8). Two of these (Features 21 and 22) were partially removed by backhoe trench excavations, and so data regarding plan morphology was incomplete for these two features. Of the nine complete small thermal features, five were oval and four were circular. Maximum length of these nine small thermal features ranged 26–61 cm, with an average diameter of 47 cm. In terms of profile morphology, all but one of the 11 small thermal features were basin, with the one exception exhibiting a shallow, cylindrical cross-section (Feature 22). It is important to keep in mind that the upper portions of all excavated small thermal features had likely been previously removed, through either natural deflation and/or mechanical stripping. The two uncovered by hand excavations, Features 5 and 6, ranged from

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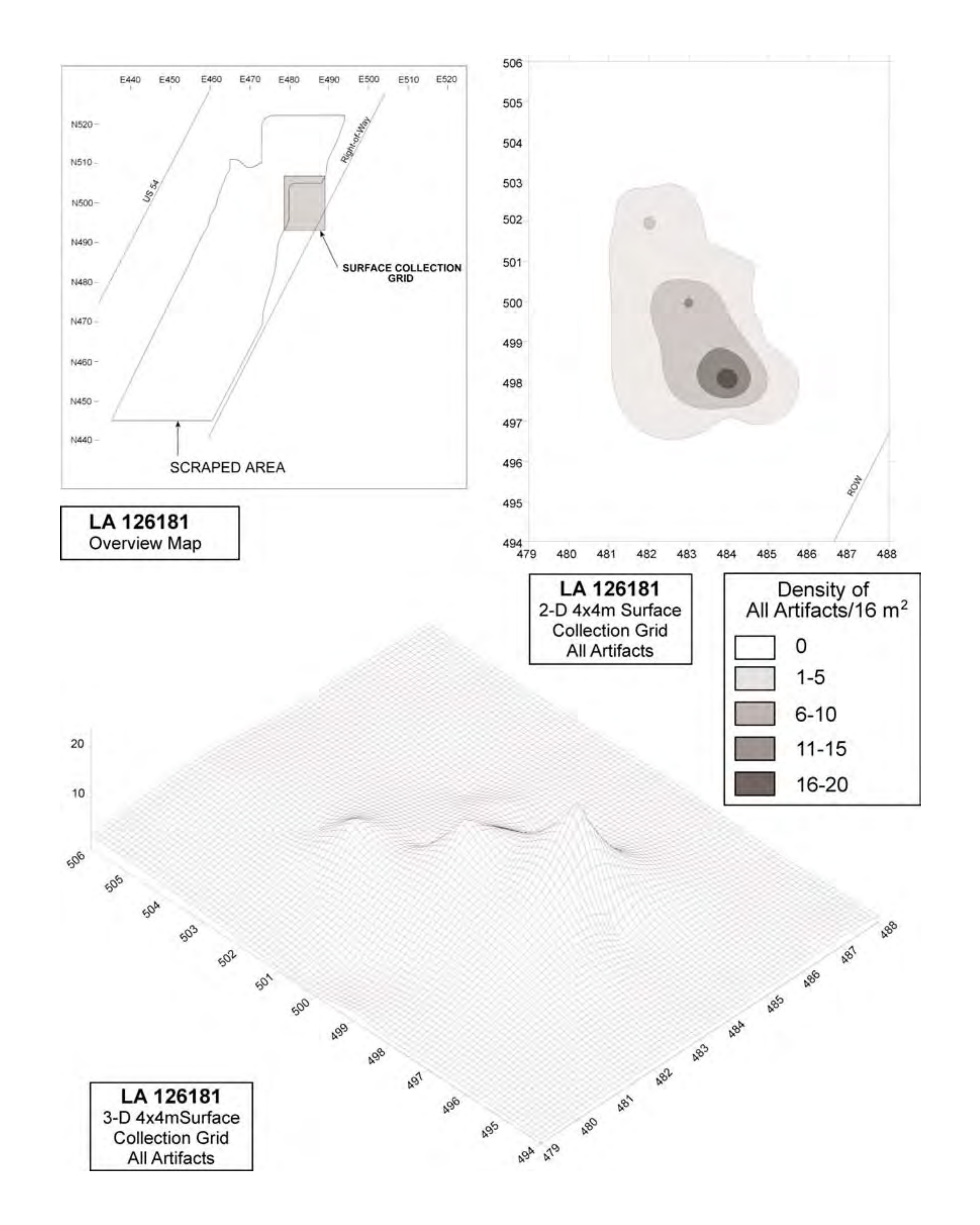

Figure 13.6 Controlled surface collection grid in Ceramic Concentration 1, showing density distribution of all artifacts.

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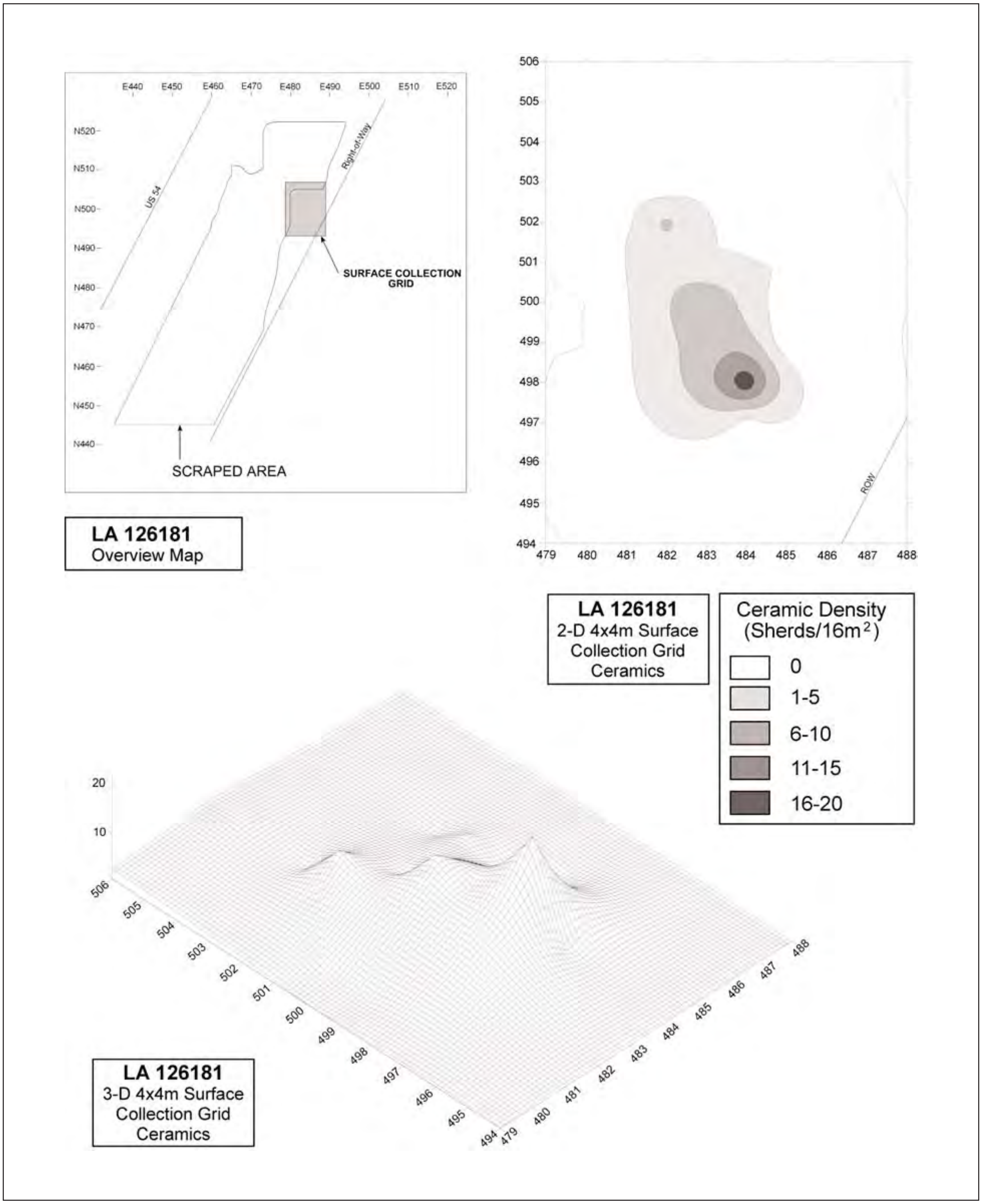

Figure 13.7 **Controlled surface collection grid in Ceramic Concentration 1, showing density distribution of ceramics only.**

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Table 13.3 Features at LA 126181

Fea.	Prov.	North	East	Profile	Plan	Type	Content/ fill	% Excav	L (m)	W (m)	Depth (m)	Comments
1	E of ROW	461	479	Unknown	Circular	Thermal feature	Unknown	0	0.5	0.4	.	Surface only
2	E of ROW	479	536.5	Unknown	Circular	Thermal feature	Unknown	0	3	3	0.1	Depth determined with trowel test and exceeds 10 cm bgs
3	E of ROW	455	517	Unknown	Circular	Thermal feature	Unknown	0	2	2	0.1	Depth determined with trowel test and exceeds 10 cm bgs
4	1	502.89	486.7	Basin	Circular	Thermal feature	Primary	100	0.77	0.77	0.13	
5	4	505.4	473.04	Basin	Oval	Thermal feature	Primary	100	0.58	0.2	0.07	Plan semi amor-phous; rodent disturb
6	1	503.3	487.21	Basin	Circular	Thermal feature	Primary	100	0.64	0.57	0.12	
7	Mech scrape	520.41	479.38	Basin	Circular	Thermal feature	Primary	100	0.7	0.65	0.14	
8	Surface scrape	513.68	487.27	Basin	Circular	Non-Thermal pit	Secondary	100	0.28	0.27	0.08	
9	Surface scrape	510.17	488.48	Basin	Oval	Thermal feature	Primary	100	0.98	0.74	0.16	Deflated remains of a thermal feature
10	Surface scrape	506.61	484.06	Basin	Oval	Thermal feature	Primary	100	0.46	0.4	0.06	
11	Surface scrape	508.34	478.72	Basin	Circular	Thermal feature	Primary	100	0.6	0.6	0.14	
12	Surface scrape	498.47	480.77	Basin	Circular	Thermal feature	Primary	100	0.55	0.55	0.05	
13	Surface scrape	495.21	477.17	Basin	Circular	Thermal feature	Primary	100	0.5	0.45	0.09	
14	Surface scrape	494.47	475.21	Basin	Circular	Rodent burrow	Primary	100	0.1	0.1	0.03	Not a feature and later designated Soils Stain 17 by field crew but for this list lets keep as Feature 14, rodent burrow
15	Surface scrape	494.66	476.11	Basin	Circular	Thermal feature	Primary	100	0.9	0.9	0.16	Rodent activity
16	Surface scrape	493.09	476.36	Basin	Circular	Thermal feature	Primary	100	0.79	0.7	0.15	Rodent activity
17	Surface scrape	492.84	479.17	Basin	Oval	Thermal feature	Primary	100	0.83	0.63	0.1	
18	Surface scrape	497.26	463.45	Basin	Oval	Thermal feature	Primary	100	0.7	0.55	0.14	
19	Surface scrape	480.24	465.43	Basin	Irregular	Thermal feature	Primary	100	0.8	0.6	0.15	Kernel/seed removed from phytolith
20	Surface scrape	470.73	463.44	Basin	Oval	Thermal feature	Primary	100	0.65	0.45	0.09	Old soil stain 14
21	BHT1	470.44	469.94	Basin	Oval	Thermal feature	Primary	100	0.65	0.26	0.12	Half of feature removed by backhoe trench
22	BHT1	470.53	470.83	Cylindrical	Oval	Thermal feature	Primary	100	0.69	0.59	0.12	Portion of feature removed by backhoe trench

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Table 13.3 Features at LA 126181 (continued)

Fea.	Prov.	North	East	Profile	Plan	Type	Content/ fill	% Excav	L (m)	W (m)	Depth (m)	Comments
23	Surface scrape	471.58	460.51	Basin	Oval	Thermal feature	Primary	100	0.45	0.34	0.09	Old soil stain 13
24	Surface scrape	470.49	465.7	Basin	Circular	Thermal feature	Primary	100	0.7	0.63	0.32	Good context, bad sampling, old soil stain 15
25	Surface scrape	463.99	454.4	Basin	Circular	Rodent burrow	Natural	100	0.1	0.1	0.03	Rodent burrow
26	Surface scrape	454.01	458.38	Basin	Oval	Thermal feature	Primary	100	0.32	0.19	0.03	
CC1	2	519.83	490	Strat	Circular	Midden	Primary	14	8	7	0.1	Ceramic concentration on surface and subsurface
CC2	E of ROW	477	506	Unknown	Oval	Midden	Primary	0	8	4	.	

39–61 cm in diameter and seven to 12-cm deep (see Figure 13.6). Depth of all small thermal features ranged from 3–14 cm with an average of 8.9 cm. All but one of the small thermal features at LA 126181 lacked fire-cracked rock and/or burned caliche. Feature 11 was the sole exception; it contained a small amount of fire-cracked rock (Figure 13.9). Feature 24 exhibited internal stratigraphy (Figure 13.9).

Nine of the 20 thermal features were 70 cm or larger in maximum dimension and were classified as large thermal features (Figure 13.10). Most or all are probably roasting pits. These included five circular pits, three oval pits, and one pit with irregular plan morphology. These features ranged 70–98 cm in maximum dimension. The average diameter (i.e., length x width/2) of the roasting pits was 74 cm, with a range from 63–90 cm. Average depth was 16 cm, with a range from 10–32 cm. All of the large thermal features were basin in profile. As with their smaller counterparts, the true shapes, depths, and sizes of large thermal features uncovered by scraping may not reflect their actual sizes; both natural deflation and mechanical stripping removed an unknown amount of the upper portions of these features. Only one large thermal feature was uncovered and excavated by hand (Feature 4); it was 77 cm in diameter and 13-cm deep. Thermally altered rock and/or caliche was present in only one large thermal feature (Feature 18, see Figure 13.10), and the general lack of these materials suggests either that heated rock was not used in these pits, or was routinely cleaned out following each cooking episode. None of the large thermal features exhibited oxidization.

The single non-thermal pit (Feature 8) was a small, circular, shallow basin. It lacked ash and charcoal and was probably a small storage bin.

Soil Stains

In addition to the cultural features uncovered from hand and mechanical excavations, an additional 18 small soil stains (SS) were also exposed during mechanical stripping of the site (see Figure 13.5). Three were identified as cultural features (SS 13–15, Features 20, 23, and 24). The characteristics of the 15 other small stains are listed in Table 13.4. Each of these were recorded and shot in with the total station. They were marked, although heavy winds in the spring months uprooted and displaced pin flags marking the locations of four of the soil stains, and these could not be relocated, probably due to wind erosion. The remaining 11 small soil stains were relocated and excavated. The fill from only two of these (SS 7 and 10) was screened through 1/8-inch mesh; fill from the remaining nine stains was collected as soil samples. The origins of these small stains were varied and not always clear. Two of these (SS 12 and 16) may represent the remnants

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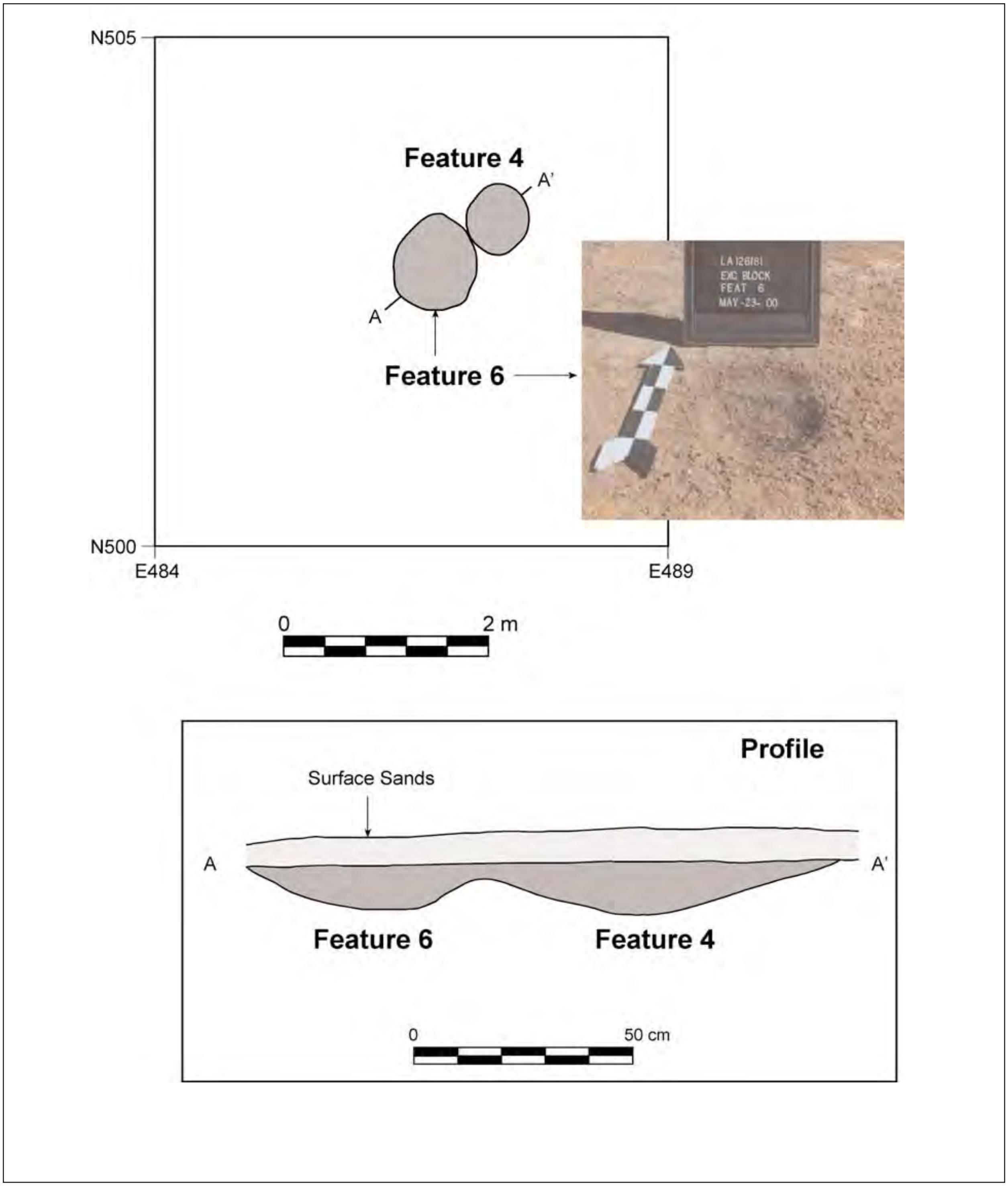

Figure 13.8 Two typical, small thermal features in Excavation Block 1 at LA 128161.

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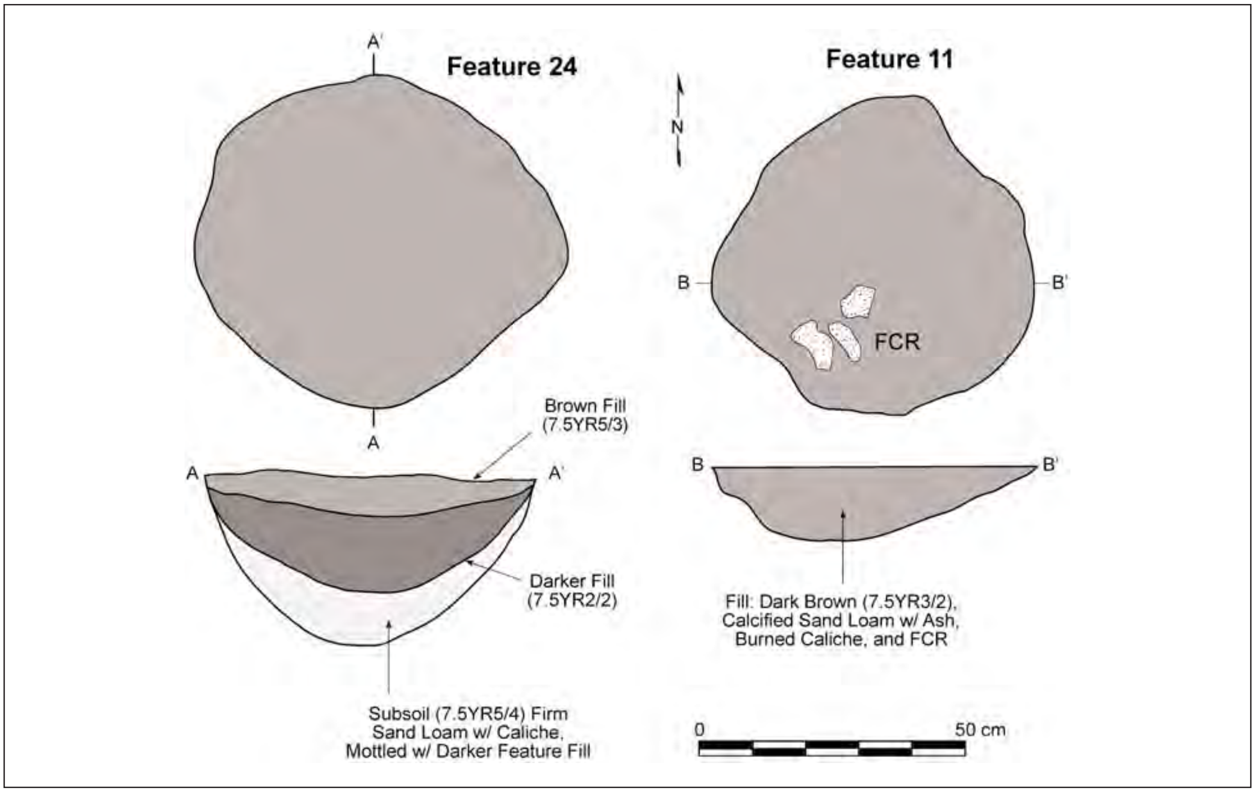

Figure 13.9 Features 11 and 24, two small thermal features at LA 126181.

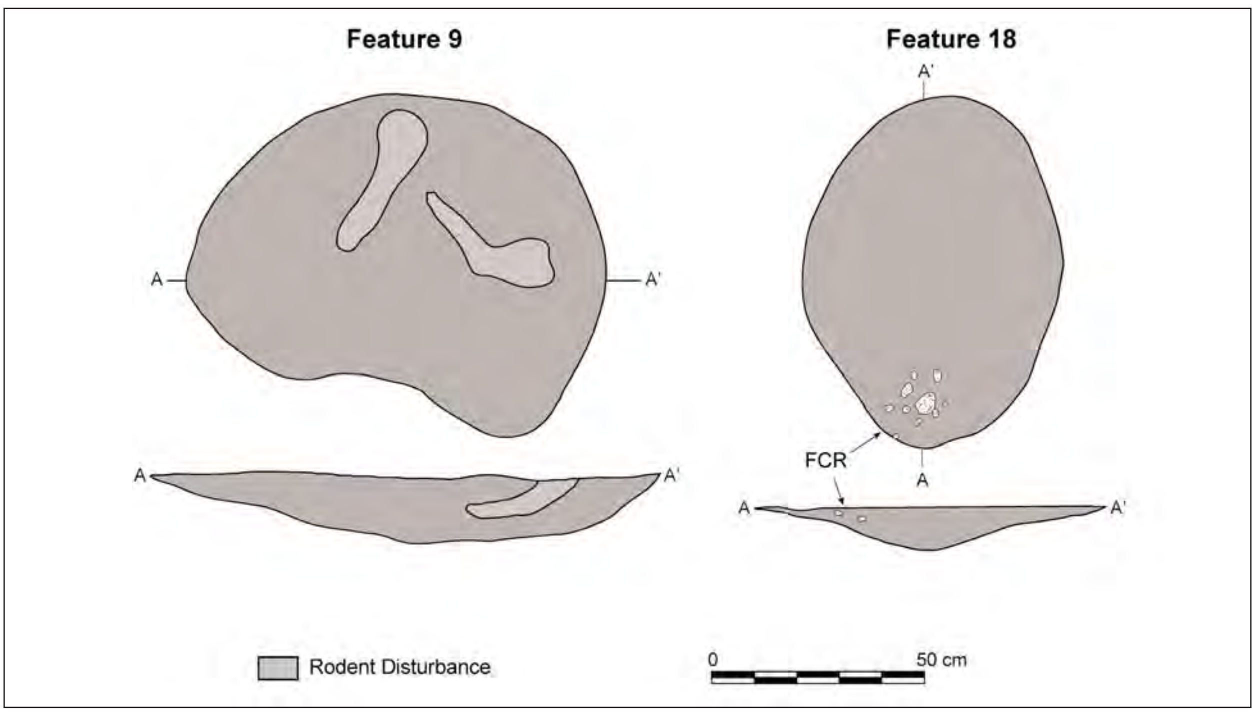

Figure 13.10 Two large thermal features at LA 126181.

Table 13.4 Small Soils Stains, Non-features

Stain	Block	North	East	Heat trtmt	Loc	Morph	Plan	Type	Contents/ fill	% excav	L (m)	W (m)	Depth (m)	Comments
SS01	Surface scrape	519.83	489.99	Non-thermal	External	Basin	Circular	Rodent burrow	Natural	100	0.14	0.14	0.05	
SS02	Surface scrape	513.72	489.93	unknown	External	Basin	Circular	Unknown use	Unknown	100	0.1	0.1	0.02	
SS03	Surface scrape	512.77	489.93	Unknown	External	Basin	Circular	Unknown use	Unknown	100	0.3	0.3	0.06	
SS04	Surface scrape	516.24	485.56	Unknown	External	Basin	Circular	Unknown use	Unknown	100	0.3	0.3	0.05	
SS05	Surface scrape	509.24	486.28	Unknown	External	Lens	Circular	Unknown use	Unknown	0	0.5	0.5	0.02	Not relocated
SS06	Surface scrape	502.75	481.32	Unknown	External	Basin	Amorphous	Unknown use	Unknown	100	0.35	0.35	0.05	
SS07	CC1	500.83	481.17	Unknown	External	Basin	Circular	Unknown use	Unknown	100	0.5	0.5	0.06	
SS08	Surface scrape	495.51	475.67	Unknown	External	Basin	Oval	Unknown use	Unknown	100	0.36	0.23	0.04	
SS09	Surface scrape	481.93	463.2	Unknown	External	lens	Circular	Unknown use	Unknown	0	0.1	0.1	0.01	Not relocated
SS10	Surface scrape	477.58	461.42	Unknown	External	Lens	Oval	Unknown use	Unknown	100	0.55	0.4	0.03	
SS11	Surface scrape	477.19	456.25	Unknown	External	Lens	Oval	Unknown use	Unknown	100	0.75	0.54	0.02	
SS12	Surface scrape	471.64	460.06	Thermal	External	Conical	Circular	Unknown use	Unknown	100	0.1	0.1	0.04	
SS16	Surface scrape	481.36	473.56	Thermal	External	Basin	Oval	Unknown use	Unknown	100	0.52	0.4	0.04	
SS17	Surface scrape	480.59	477.28	Unknown	External	Lens	Circular	Unknown use	Unknown	0	0.1	0.1	0.01	Not relocated
SS18	Surface scrape	480.13	477.55	Unknown	External	Lens	Circular	Unknown use	Unknown	0	0.1	0.1	0.01	Not relocated

of thermal features that had been deflated by natural erosion or removed during mechanical stripping of the overburden. These stains were so ephemeral, however, and were not of demonstrable cultural origin, and so they were not treated as formal features. Three small soil stains (SS 5, 8, and 17) were likely pockets of ashy soil displaced from nearby thermal features during machine stripping, and redeposited at their recorded locations. Others proved to be rodent burrows or natural stains left by decomposed roots or surface vegetation (SS 1, a rodent burrow; and SS 2, 9, and 18, which were likely the remains of decayed roots; and SS 10 and 11, which were extremely thin lenses of lightly stained soil, probably marking naturally decomposed vegetal matter). None of the small soil stains contained charcoal or cultural materials.

Artifact Assemblage

Investigations at LA 126181 recovered and analyzed 1,082 durable artifacts, the vast majority of which were ceramic sherds (n=1,057), along with a much smaller assemblage of lithics (n=25). In addition, quantities of thermally altered rock were recovered from subsurface exactions. Flotation, pollen, and phytolith samples were also submitted for analysis, but preservation conditions at this site were not especially good, and these samples yielded little data relevant to subsistence patterns associated with the site's occupation. No ground stone artifacts or faunal remains were recovered from this site.

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Ceramic Artifacts

The ceramic assemblage from LA 126181 appears to date from the Doña Ana phase. Of the 1,057 sherds recovered, roughly 46 percent were identified as brownware too small for analysis. When evaluated by sherd weight, the too small fragments comprise only 25 percent of the assemblage (Table 13.5). These sherds were counted and weighed, but no further analysis was conducted. Given that the too small sherds are all brownware, 69 percent (64 percent by weight) of the total assemblage may represent brownware utility pots; however, El Paso Polychrome and Bichrome generally have significant unpainted portions that in sherd form would be identified as El Paso Brown. Along with a lack of El Paso Brown rims, evidence for more than one undecorated utility ware jar in the assemblage is problematic. As discussed in greater detail below, most of the LA 126181 assemblage may represent decorated vessels. Unlike LA 128700, for example, which yielded 89 percent El Paso Brown and rim sherds representing three vessels, LA 126181 lacks clear evidence of undecorated, El Paso Brown jars. Each of the ceramic type designations is described in detail below along with spatial and temporal interpretations of the assemblage.

El Paso Brown

A total of 234 sherds were identified as El Paso Brown. All 234 ceramics were tempered with coarse angular granite and have brown surfaces and brown to black, semi-friable pastes. Polished and plain surfaces were identified on both bowls and jars; however, most of the jar fragments had plain interior and exterior surfaces. Most of the sherds (n=231) were jar fragments including neck and body sherds. Only three sherds were classified as bowls based on the presence of significant polish on both surfaces. No use-wear, residues or post-firing modifications were noted in the El Paso Brown assemblage. Since no attrition was noted, vessel use can only be surmised. It is likely that the pottery was used for cooking and/or storage purposes. The lack of rim sherds makes estimates of vessel numbers difficult for the El Paso Brown assemblage. It is probable that many of the jar and particularly the bowl fragments are from unpainted portions of El Paso Bichrome or Polychrome vessels. At a minimum, an estimate of one El Paso Brown jar is probably represented, but morphology and rim shape data are absent.

El Paso Polychrome

El Paso Polychrome comprises roughly 20 percent of the total assemblage most of which represent a single jar (Vessel A). El Paso Polychrome is identified by the presence of both black and red pigments over plain or polished brown surfaces. Red clay pigment was applied as either slip or paint. Most El Paso Polychrome vessels have significant portions lacking painted designs or slips, making identification of vessel fragments difficult. All of the polychrome sherds were tempered with coarse angular granite. Rim, body, and neck fragments were identified. No use-wear or residues were identified in the assemblage; however, one sherd displayed a post-firing modification. A single indeterminate drill hole was noted on one of the rim fragments from Vessel A. Since only one drill hole was identified, its function could not be determined.

Eighteen polychrome rim and neck sherds are associated with Vessel A, an El Paso Polychrome jar. Because most of the polychrome body sherds are small, it is difficult to determine how many are from the body portion of the jar. Given that all but one of the polychrome rims were assigned to Vessel A, most if not all of the remaining neck and body sherds in the assemblage probably originated from Vessel A. As shown in Figures 13.11 and 13.12, the jar is distinguished by a thick flared rim with a flattened lip, a painted and polished interior, and a slipped and painted exterior. Many of the rims have evidence of a painted design on the interior, suggesting that the exterior design overlapped the rim onto the top interior of the jar.

El Paso Bichrome

Painted brownware having one paint type was identified as El Paso Bichrome (n=112). Some of the bichrome sherds may have originated from portions of El Paso Polychrome vessels lacking more than one paint color (red or black) in a design element. Based on surface and paste characteristics, it appears that one distinct El Paso

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Table 13.5 Summary of Ceramic Types and Vessel Data from LA 126181

Type	Vessel Form	Vessel Part	Count		Weight	
			n	%	g	%
Chupadero B/W	Jar	Body	3	0.3	10.8	0.6
El Paso Bichrome	Bowl	Body	3	0.3	12.5	0.7
		Rim	1	0.1	2.4	0.1
	Jar	Body	97	9.2	172.5	10.3
		Neck	11	1	23.7	1.4
Sub-total			*112*	*10.6*	*211.1*	*12.6*
El Paso Brown	Bowl	Body	3	0.3	119.9	7.2
	Jar	Body	227	21.5	517.7	30.9
		Neck	4	0.4	17.3	1
Sub-total			*234*	*22.1*	*654.9*	*39.1*
El Paso Polychrome	Jar	Body	155	14.7	183.1	11
		Neck	47	4.4	130.2	7.8
		Rim	15	1.4	62.1	11.8
Sub-total			*217*	*20.5*	*375.4*	*22.4*
Too small for analysis	Not analyzed	Not analyzed	491	46.5	421.6	25.2
Total			1057	100	1673.8	100

Figure 13.11 Decorated ceramics from LA 126181. Top: El Paso Polychrome (Vessel A). Bottom left and center: El Paso Bichrome (Vessel B). Bottom right: Chupadero Black-on-white.

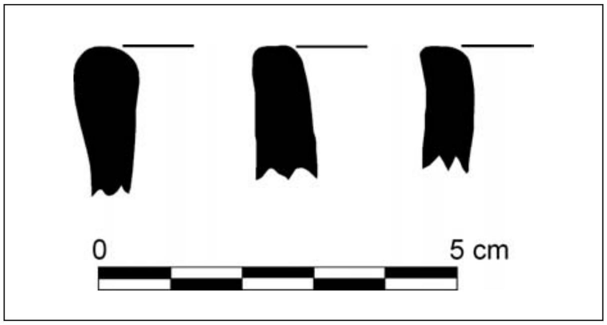

Figure 13.12 Rim profiles for El Paso Polychrome jar, Vessel A.

Bichrome vessel (Vessel B) is represented in the assemblage (see Figure 13.11). The fragments from Vessel B have plain gray exterior surface and paste and dull mineral-painted designs. It does not appear that a slip or a polish was ever present on the vessel. The designs are simple rectilinear or wavy lines. These characteristics made the vessel distinctive from the remainder of the assemblage. Other unslipped and unpolished El Paso Bichrome sherds were identified, but they had a brown paste and surface. Because no rim fragments were identified, a specific jar form could not be assigned. All of the bichrome sherds were tempered with coarse angular granite, had a slipped, polished or plain surfaces, and designs executed in a mineral pigment. Because of the small size of the sherds, specific motifs could not be determined. Both bowls and jars were identified including rim, neck, and body fragments. No use-wear, residues, or post-firing modifications were noted.

Chupadero Black-on-white

Three Chupadero Black-on-white jar fragments representing a single vessel were recovered from surface collection. Comparison of the original and refire pastes suggests they are tempered with crushed sherd; the sherd fragments were gray in the original paste and fired orange when oxidized. The sherds have a gray paste, a hard fracture, a dead (matte) white slip, and mineral-painted designs. As shown in Figure 13.7, the only painted sherd has an indeterminate design motif consisting of a solid-painted motif.

Spatial Distribution

As shown in Table 13.6, ceramics were recovered from subsurface non-feature, surface, midden, and Feature 7 contexts. Sixty-five percent of the ceramics were recovered from Stratum 1, Level 1 of non-feature contexts. Surface collections yielded 20 percent of the pottery; 15 percent were recovered from the midden, and less than 1 percent was associated with Feature 7, a thermal feature. Sherds associated with specific vessels were concentrated within a roughly 10 m² area in surface and subsurface contexts, suggesting that post-depositional processes influenced the ceramic contexts to a small degree. Outside of the main concentration of ceramics, one El Paso Brown sherd was recovered from Feature 7, and this single sherd provides no information regarding the feature's association with the main concentration of ceramics.

Based on the distribution of ceramic types, the main ceramic concentration, including the midden, surface, and non-feature subsurface contexts, represents a Doña Ana-phase occupation at the site. The presence of Chupadero Black-on-white, El Paso Bichrome, and El Paso Polychrome supports a Doña Ana-phase component. Although outside of the main concentration of ceramics, Feature 24 yielded radiocarbon date ranges of A.D. 1050–1100 and A.D. 1140–1290. The association of El Paso Brown with Feature 7, which yielded a radiocarbon age range of A.D. 390–630, suggests that earlier Mesilla phase peoples also may have used the site.

In summary, both utility and decorated ceramics were identified from LA 126181, indicating that the pottery was used for cooking, storage, and/or serving purposes. Fragments of three distinct vessels were identified as a Chupadero Black-on-white jar, El Paso Bichrome jar, and an El Paso Polychrome jar. Although no El Paso Brown rim sherds were recovered, it is probable that at least one El Paso Brown jar is represented in the Doña Ana phase assemblage as well. Given the earlier dates associated with Feature 7, it also is possible that a second El Paso Brown jar represents a Mesilla phase component.

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Table 13.6 Ceramics Identified by Provenience at LA 126181 (note: CC1=Ceramic Concentration 1)

Feature No	Feature Type	Type	Vessel Designation	Total
Non-feature	Non-feature	El Paso Bichrome	B	6
			None	37
		El Paso Brown	None	127
		El Paso Polychrome	A	5
			None	132
		Too small for analysis	None	382
	Surface	Chupadero B/W	None	3
		El Paso Bichrome	B	33
			None	13
		El Paso Brown	None	59
		El Paso Polychrome	A	3
			None	33
		Too small for analysis	None	63
7	Thermal feature	El Paso Brown	None	1
CC1	Midden	El Paso Bichrome	B	7
			None	16
		El Paso Brown	None	47
		El Paso Polychrome	A	10
			None	34
		Too small for analysis	None	46
Total				1057

Lithic Artifacts

In contrast to the abundance of ceramics at LA 126181, only 25 lithic artifacts were recovered from the site (Table 13.7). These include one retouched tool, two cores, and 22 pieces of debitage. The retouched tool is a piece of silicified shale, with continuous retouch on a single edge. It exhibits rounding wear and was recovered from subsurface context within Ceramic Concentration 1. The two cores are also silicified shale, and were recovered from nonfeature surface contexts. One is a core fragment of indeterminate directionality; the other is bi-directional.

Of the 22 pieces of debitage recovered, 19 came from the surface and three from subsurface contexts. Thirty-six percent (n=8) of the material represented is chert, one of which was identified as local Rancheria chert. The second most common material is silicified shale, with 27 percent (n=6). Other materials include indurated limestone (n=2), quartzite (n=4), and rhyolite (n=2). Larger and heavier flake sizes are consistent with an expedient technology and Late Formative-period affiliation. The dominance of chert is surprising for a Formative-period site in this area, but the small sample size mitigates the potential significance of the material type distribution at this site. See Chapter 21 for more information on this site's lithic assemblage and how it compares to the other sites in the study area.

Table 13.7 Lithic artifacts recovered from LA 126181, by material type

Materials	Core	Debitage	Retouched tool	Total
Chert		7		7
Limestone		2		2
Quartzite		4		4
Rhyolite		2		2
Rancheria chert		1		1
Silicified shale	2	6	1	9
Total	2	22	1	25

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Biological Remains

Archaeobotanical Remains

Eight macrobotanical samples from flotation, two pollen samples, and one phytolith sample were submitted for analyses. The eight flotation samples totaled 139 liters of fill, from Features 4, 6, 7, 12, 15, 16, 18, and 24. These samples did not yield abundant macrobotanical remains, and no unequivocally economic species were identified. Recovered charcoal consisted of primarily *Prosopis glandulosa* with a small amount of *Atriplex canescens*. Other species recovered consisted of one *Gramineae* stem. *Prosopsis* and *Atriplex* are generally indicative of locally available wood/fuel sources. As such, the samples were of limited interpretative value. See Chapter 24 for more information on the macrobotanical remains from this site, and how they compare to those from the other sites.

The two pollen samples from LA 126181 were selected for analysis, representing fill from Feature 4 and 7, both circular basin thermal features. Concentration values were 3,428 and 5,143 grains/ml, values considered to be acceptable for analysis. Fossil pollen preservation was fairly good, and pollen counts and percentages are presented in Chapter 26. The samples were dominated by *Artemisia,* low spine Asteraceae, Cheno-Ams, Poaceae, *Juniperus,* and *Pinus* grains. Other background taxa noted in the assemblages include high spine Asteraceae, *Cirsium,* Liguliflorae, *Boerhaavia, Ephedra,* Fabaceae, Liliaceae, Sphaeralcea, *Quercus*, and *Salix.* Taxa encountered in the samples that may represent the prehistoric use of economic plants include *Brassicaceae*, *Platyopuntia* and *Prunus* grains.

One soil sample from LA 126181 was submitted for phytolith analysis. This sample yielded a high concentration of phytoliths (8,173/g), but did not yield any culturally significant grains.

Site Chronology

Radiocarbon dates and diagnostic ceramics indicate a Formative-period occupation of LA 126181. The radiocarbon dates themselves span the Early Mesilla to El Paso phases (Table 13.8; Figure 13.13), and the ceramic assemblage is potentially consistent with this time range. Given the deflated conditions at the site, stratigraphy was of little use in sorting out the site's occupational sequence. Organ III (Bw horizon) deposits dominate the site from 30–65 cm in depth with the majority of the features occurring across the site surface and up to 15 cm below.

Although three of the four radiocarbon dates fall within the Mesilla phase, the ceramic information suggests that the most intensive and extensive occupation occurred during the Doña Ana phase. Aside from Feature 7, none of the radiocarbon dates are associated with diagnostic artifacts. Feature 7 yielded a single El Paso Brown sherd, and no decorated wares, which is consistent with its Mesilla-phase date. This feature was located at the northern end of the site, relatively isolated from the other features. One of the other two Mesilla-phase dates came from Feature 4, located immediately north of Ceramic Concentration 1. If this radiocarbon determination correctly dates this feature, which lacked diagnostic artifacts in its fill, then this feature is not contemporary with the nearby ceramic concentration that dates from the Late Formative. The third Mesilla-phase date came from Feature 15, which also lacked diagnostic materials. This feature occurs within a tight cluster that includes three other features, and contemporaneity might be assumed given their spatial association. This cannot be demonstrated, however, in the absence of diagnostic artifacts and without additional radiocarbon dates from this feature cluster. The same can be said of Features 20–24, which also form a cluster, and may date from the Doña Ana or El Paso phases given the Late Formative radiocarbon date from one of these features (Feature 24).

Site Interpretation and Summary

Data recovery investigations documented Formative-period components at LA 126181. These include both Mesilla and Doña Ana phase

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Table 13.8 Radiocarbon Dates from LA 126181

Fea.	Beta #	Date type	Conventional Radiocarbon Age (B.P.)	Calibrated (2-Sigma)
24	156968	Standard	810 ± 60	A.D. 1050–1100 and A.D. 1140–1290
15	156969	Extended count	1550 ± 60	A.D. 400–640
7	156967	Standard	1560 ± 60	A.D. 390–630
4	156966	Standard	1590 ± 60	A.D. 260–640

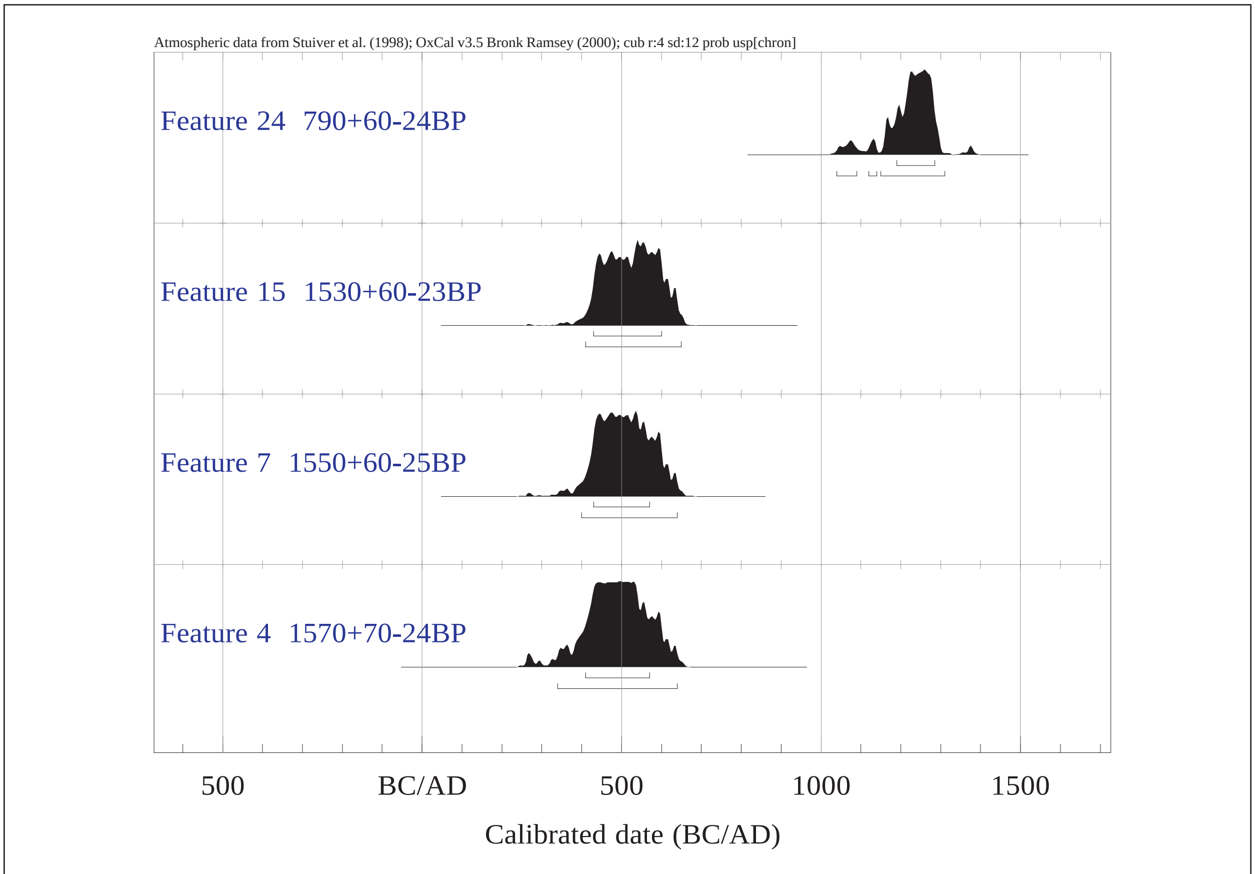

Figure 13.13 Radiocarbon dates from LA 126181.

occupations, and perhaps an El Paso-phase presence as well. The most prominent archaeological remains at the site consist of two ceramic concentrations, one within the right-of-way and one outside. Thermal features were also present, but no structures were uncovered. This is perhaps due to the generally deflated conditions at the site, although it may also be that the occupations involved ephemeral structures that left no long-lasting archaeological traces. The artifact assemblage from the site is somewhat curious, in that it includes a relative abundance of ceramics but a stark paucity of lithic debris.

Located high on the alluvial fans of the Jarilla Mountains, this locality may have attracted prehistoric peoples because of its proximity to both upland and lowland resource zones, and precipitation runoff from the nearby mountains. Exploitation of the nearby mountain zone may have included collecting of agave or other succulents, which may have been processed on the site.

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The Mesilla phase occupation of the site does not appear to have been especially intensive, and left only thermal features and a very small amount of ceramics. Although pithouses may have been constructed at the site (and their traces subsequently destroyed by surface erosion), the sparse nature of the remains associated with this component suggests a more ephemeral camp or series of short-term, seasonal camps.

The Late Formative component is marked by decorated ceramics, and appears to date from the Doña Ana phase, and perhaps extending into the early El Paso phase. The ceramics occur mostly in the two distinct, high-density concentrations (both containing Late Formative sherds), but sherds are also scattered elsewhere on the site. The ceramic concentrations may mark food-processing areas, or dumps immediately adjacent to such task-specific localities. Alternatively, they may be formal trash disposal areas associated with intensive, long-term occupations, but this does not seem to accord well with the small amount of lithic debris and lack of structure remains (although, again, the lack of structures may be due to preservation factors). Unfortunately, deflation has destroyed any subsurface deposits that might originally have been present within Ceramic Concentration 1, and biological remains do not shed much light on the kinds of activities carried out at this site, because of poor preservation. The Late Formative component appears to have involved a specialized seasonal occupation, one that included cooking or other processing activities involving a large number of ceramic vessels, yet did not include tasks that would have resulted in high rates of fabrication, maintenance, and discard of stone tools.

Recommendations

Investigations at LA 126181 have fulfilled the goals outlined in the data recovery plan. No further work is necessary within the right-of-way. Fencing along the right-of-way edge is recommended to ensure that sensitive features documented immediately to the east of the right-of-way are not removed during construction. Some of these features outside the right-of-way probably contain significant, subsurface remains that could shed additional light on this site's occupational history. Accordingly, any future ground-disturbing activities in the site east of the right-of-way, which fall under appropriate federal or state regulations, should be preceded by further testing and, if necessary, a data recovery plan.

Chapter 14

OROGRANDE 1 (LA 128699)

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Introduction

LA 128699 is a large, prehistoric occupation site, located on the lower bajada apron of the Jarilla Mountains, to the south-southeast of this small range in the Tularosa Valley. The site's terrain ranges from nearly level to slightly sloping with a southern grade. Much of the site surface is covered by 0.5–1.0 m-high, mesquite stabilized coppice dunes with broad, uneven interdunes. Toward the southern end of the site, the coppice dunes are larger (2–3-m high), and there are a few shallow, broad arroyos that drain to the south toward White Sands War Road. Sheet sand deposits cover many portions of the interdunes. Interdunal areas lacking sheet sands contain a low density of gravel and caliche nodules on the surface. Dunes and sheet sands obscure nearly 50 percent of the site surface.

Surface soils are mainly loose, eolian sands, although in the deeper interdunal areas some sandy loam deposits are exposed. The flora on the site consists of mesquite, fourwing saltbush, broom snakeweed, narrowleaf yucca, dropseed grass, grama grass, and various weeds (Figure 14.1).

LA 126899 is on the western side of US 54, within a proposed water detention area that will be used in the construction operations. It also extends beyond the right-of-way onto private lands and federal property administered by the BLM. The private lands cover the northernmost part of the site; portions of the site to the west of the impact area lie on BLM property.

Figure 14.1 Excavations at Orogrande 1 (LA 128699).

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Previous Investigations

LA 128699 was initially recorded August 1, 1999, during a cultural resource inventory by Michalik (2000). This recording identified the site as a Jornada Mogollon artifact scatter with eight fire-cracked rock (FCR) features. The site area was reported as 9,100 m^2 (130 m north-south x 70 m east-west). A Late Formative Period component (A.D. 1100–1400) was identified. The eight FCR features range from 0.30–2.0 m in diameter and included two with subsurface FCR and one with deposits to a depth of 3 cm below ground surface (bgs). The features contained from six to more than 100 pieces of FCR. Two of the features contained metate fragments. The initial recording identified 70–80 artifacts on the site, and these included lithic artifacts, ground stone, and two ceramics. The ceramics included one El Paso Brownware body sherd and one possible El Paso Bichrome sherd. The ground stone included a complete mano, a mano fragment, and approximately 10 metate fragments. The lithic artifacts were primarily chert, limestone, and quartzite flakes. Other lithic artifacts recorded included five chert cores and two chert bifaces.

Testing Investigations

TRC crews carried out site testing in the late summer of 2000 (Graves *et al.* 2000). The testing phase included a detailed surface inspection, mapping with a total station, limited collection of surface artifacts, documentation of surface features, and shovel testing. Testing found the site to retain considerable data potential.

Surface Investigations

During testing, the site boundaries were expanded considerably and many cultural features were documented. The surface cultural materials were found to extend over an area 325 m north-south, with the east-west dimension averaging 93 m, with a maximum of 180 m (Figure 14.2). The entire site surface was documented, including the far northern end of the site on private land. Total site area was calculated as 31,590 m^2. Impacted portions of the site due to the water detention pond include 27,302 m^2, or 86 percent of the entire site area. Interdunal areas appeared to be only slightly eroded, consisting of a thin stratum of historic sands overlying an Ab horizon in the northern portion of the site, with an Organ III stratum preserved throughout the majority of the site.

The density of surface artifacts varies across the site, and 15 discrete artifact concentrations were identified (Table 14.1), along with 21 features (Table 14.2). Features 2 and 7, originally recorded by Michalik (2000), were not relocated, whereas Features 1, 3–6, and 8 were relocated and documented during the testing phase (see Figure 14.2). The current site testing defined 15 new features, with four of the newly defined features north, and outside, of the impact area. Most of the surface artifact concentrations and features were located in the northern and central portions of the site, with a small cluster near the southern end. The features recorded during testing included one US General Land Office Survey quarter section marker from 1937 (Feature 14), four ash and/or charcoal stains (with or without FCR/BC), and 16 FCR/BC concentrations or scatters that lacked associated stains.

Six surface artifacts were collected during testing; these included one El Paso Brownware rim, two undifferentiated brownware ceramics, two marginally retouched lithic tools, and a unifacially shaped tool.

Subsurface Testing Results

Subsurface testing at Orogrande Site 1 involved excavation of 25 shovel tests (STs), each measuring 50 x 50 cm (Table 14.3). These were placed near features, artifact concentrations, and in areas covered by sheet sands that might have concealed shallow subsurface remains (see Figure 14.2). STs 1, 4–6, 13, and 17–19 were placed in the vicinity of features to investigate their subsurface context. STs 3, 8, 9, 15, 16, 21, 22, 24, and 25 were placed in areas covered by sheet sands or

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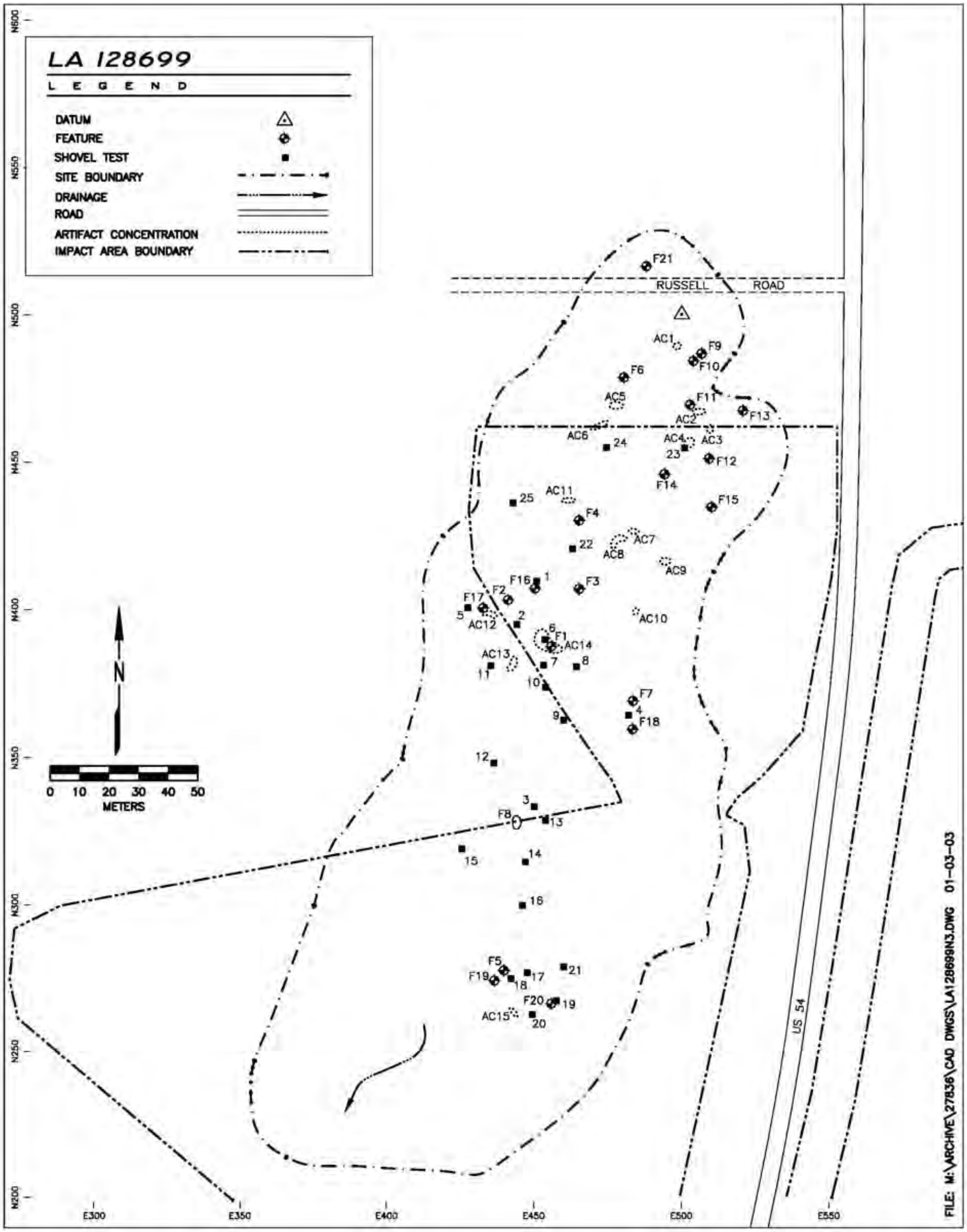

Figure 14.2 Orogrande 1 (LA 128699), testing phase map.

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Table 14.1 Artifact Concentrations at LA 128699, Identified During the Testing Phase

Artifact Concentration	Location	N/S	E/W	Cultural Materials
1	Northeastern portion of site	2.0 m	2.0 m	6 EPB body sherds (2 worked), 1 chert secondary flake, 2 limestone FCR, 1 rhyolite marginal flake tool, 1 granite wedged mano
2	Northeastern portion of site	1.0 m	5.0 m	15+ EPB body sherds, 3 granite FCR
3	Northeastern portion of site	10.0 m	6.0 m	1 large UB sherd, 2 siltstone flakes, 1 granite metate fragment, 10+ limestone FCR, and 5+ granite FCR
4	Northeastern portion of site	8.0 m	6.0 m	6 UB sherds, 50+ limestone FCR, 1 chert flake
5	Northern end of site	4.0 m	6.0 m	8 UB sherds, 7 granite FCR
6	Northern end of site	4.0 m	15.0 m	15 limestone and granite FCR, 2 siltstone flakes, 1 sandstone metate fragment
7	Center of site	3.0 m	3.0 m	2 granite FCR, 3 UB sherds, 1 chert core, 2 quartzite cortical flakes, 1 siltstone flake, 1 chert utilized flake
8	Center of site	6.0 m	3.0 m	10 limestone and granite FCR, 4 siltstone flakes, 2 quartzite flakes, 1 siltstone core, 1 utilized quartzite flake
9	Center of site	5.0 m	3.0 m	9 limestone FCR, 2 sandstone ground stone fragments
10	Center of site	6.0 m	4.0 m	15+ limestone and granite FCR, 3 chert flakes, 1 siltstone flake, 1 granite ground stone fragment
11	Center of site	6.0 m	3.0 m	10+ FCR, 1 quartzite FCR, 4 siltstone flakes, 1 chert flake, 2 sandstone metate fragments
12	Center of site	4.0 m	10.0 m	20+ granite FCR, 1 chert flake, 2 sandstone metate basin fragments
13	Center of site	5.0 m	3.0 m	20 FCR, 1 limestone hammerstone, 5 chert flakes, 1 granite metate fragment
14	Center of site	0.6 m	8.0 m	30+ FCR, 3 large granite FCR, 3 flakes
15	Southernmost portion of site	6.0 m	3.0 m	1 limestone FCR, 1 sandstone metate fragment, 1 tan chert flake, 1 black chert flake, 2 rhyolite flakes, 2 siltstone flakes

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Table 14.2 Surface Features at LA 128699, Documented During the Testing Phase

Feat. No.	Location	Type	N/S	E/W	Depth	Cultural Materials
1	Center of site	FCR concentration	1.2 m	1.1 m	0.05 m	Michalik (2000) Feature 1: 50+ limestone and granite FCR, 1 sandstone FCR
2	Center of site	FCR scatter	6.0 m	3.0 m	None	Michalik (2000) Feature 2: 30 limestone and granite FCR, 1 sandstone two-sided mano
3	Center of site	FCR/ ash stain	1.0 m	2.0 m	0.10 m	Michalik (2000) Feature 3: 30 limestone, 3 granitic FCR
4	Center of site	FCR concentration	1.0 m	1.0 m	Some subsurface FCR	Michalik (2000) Feature 4: 25+ limestone FCR, 1 sandstone mano fragment
5	Southern portion of site	FCR scatter	3.0 m	1.0 m	0.10 m	30+ limestone and granite FCR, 1 granite metate fragment
6	Northeastern portion of site	FCR scatter	2.0 m	3.0 m	None	Michalik Feature 6: 5 unidentified brownware (UB), 4 flakes, 20+ limestone and granitic FCR, 1 siltstone core, 2 sandstone flakes, 4 chert flakes
7	Center of site	FCR hearth	2.0 m	1.0 m	None	17 limestone FCR
8	Southern end of site	FCR hearth	0.8 m	0.8 m	None	Michalik (2000) Feature 8: 50+ small limestone FCR, 3 sandstone FCR, 1 granite FCR, 2 metate fragments
9	Northeastern portion of site	FCR/ ash stain	1.1 m	0.9	0.10 m	13 granite and limestone FCR
10	Northeastern portion of site	FCR hearth	2.0 m	1.8 m	Surface possibly eroding out of sheets ands deposits	19 granite, limestone and quartzite FCR, 1 El Paso Brownware (EPB) body sherd, 1 granitic two-sided mano fragment, 2 granite and limestone two-sided mano fragments
11	Northeastern portion of site	FCR hearth	>0.6 m	>0.3 m	0.05–0.15 m	5 FCR, 1 UB
12	Northeastern portion of site	FCR scatter	3.5 m	3.0 m	0.05–0.10 m	40+ granite and limestone FCR, 1 EPB body sherd
13	Northeastern portion of site	FCR scatter	2.0 m	2.25 m	0.04 m	25 granite and limestone FCR, 2 UB body sherds
14	Northeastern portion of site	Historic marker	0.8 m	1.2 m	Surface	1937 USGS Survey marker reads "1/4 523/526 1937," 8 large granite cobbles
15	Northeastern portion of site	FCR concentration	0.64 m	0.30 m	None	10 granitic FCR, 1 sandstone FCR
16	Center of site	FCR scatter	3.0 m	2.0 m	0.10 m	30+ limestone and granite FCR, 1 quartz primary flake
17	Center of site	FCR concentration	0.5 m	0.6 m	None	10 limestone FCR, 1 large utilized siltstone flake
18	Center of site	FCR concentration	2.0 m	1.0 m	>0.10 m	16 limestone FCR

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Table 14.2 Surface Features at LA 128699, Documented During the Testing Phase (continued)

Feat. No.	Location	Type	N/S	E/W	Depth	Cultural Materials
19	Southern-most portion of site	FCR concentration	1.0 m	0.5 m	0.10 m	10 limestone FCR
20	Southern-most portion of site	Ash stain	1.2 m	1.0 m	>0.20 m	1 chert utilized flake, 1 tertiary "Rancheria Chert" flake
21	Russel Road; northern-most portion of site	Ash stain	1.5 m	1.5 m	0.30–0.50 m	12-cm-thick stain with no associated artifacts

along dune edges. In addition to shovel tests, all features were trowel tested to investigate their subsurface potential. Shovel tests collectively exposed 6.25 m^2. Three of the 25 shovel test pits produced subsurface materials. The depth of these materials ranged from just below the surface to as much as 42 cm bgs.

An Ab horizon overlies the Organ III deposits in the north portion of the site. Cultural features appear to extend into the Organ III sediment (100–1,100 B.P.) and many are located at the contact of historic eolian deposits and the Organ III sediment. Formative-period features in the north portion of the site appear to be associated with the Ab horizon.

Twenty-one features were documented including nine (Features 3–5, 7, 14, 15, and 18–20) within the detention pond impact area. The remaining features (Features 1, 2, 6, 8, 13, 16, 17, and 21) are outside of the impact area on BLM and private lands. Twenty-five 0.5 x 0.5-m shovel tests were excavated at this site. Seven of the 25 shovel tests produced seven lithic debitage, four ground stone, four fire-cracked rocks, and a projectile point tip from subsurface contexts.

Site Stratigraphy and Geomorphology

Orogrande Site 1 is located at the base of an alluvial fan of the Jarilla Mountains. The accumulations of alluvial sands and eolian reworking of these sediments characterize the recent geologic history of the site. One outcome of eolian reworking is the formation of mesquite coppice dunes, which are approximately 1-m high over most of the site. In addition, interdunal areas with grass or other vegetation have significant amounts of preserved eolian and alluvial deposits, which contain the potential to yield archaeological materials. Although archaeological visibility is overall higher in the interdunal areas, a thin (ca. 10 cm or more) blanket of historic sands is often present that obscures surface visibility.

Investigations of shovel test pits during the testing phase investigations suggested that the site had the potential to contain intact strata and in situ cultural materials. This potential was confirmed during the data recovery phase. Backhoe trenching during data recovery revealed that Holocene-aged sediments are thickest in the central to southeastern portions of the site, often being more than 2-m deep in these areas. Toward the western and northern margins of the site, these deposits are thinner, with the middle Pleistocene calcrete much nearer to the surface, often at a depth of approximately 1 m (Figure 14.3).

The surficial deposit at the site (Unit 1) consists of historic sands, which occur as a thin (0–20-cm thick) veneer in interdunal areas, and are up to 1-m thick in some coppice dunes. These sediments are generally light brown (7.5YR6/4, d) and have a loamy sand texture. In general, the Unit 1 sediments are coarsely laminated and lack a significant gravel component. These surficial sediments appear to be historic in origin and probably date to within the last 100 years. For this reason they are considered to have low archaeological potential. It is possible, however, that some historic cultural materials may be incorporated into the sands, especially given the close proximity of this

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Table 14.3 Shovel Test Results for LA 128699

Test No.	Location	Depth	Stratum 1	Cultural Evidence	Stratum 2	Cultural Evidence	Stratum 3	Cultural Evidence
1	Center, near Feature 16	0.45 m	Eolian, loamy sands (7.5YR6/6), surface to 0.12 m	None	Semi-compacted, eolian sand, possible A horizon, depth 0.12–0.22 m	None	Compacted, strong brown, sandy loam (7.5YR5/6) with few caliche filaments, BK II horizon, 0.22–0.45 m	None
2	Center of site	0.60 m	Historic, laminated, eolian loamy sand (7.5YR6/6), surface to 0.02 m	None	Semi-compacted, strong brown, sandy loam (7.5YR5/6), Organ III horizon, depth 0.03–0.40	None	Compacted, strong brown, sandy loam (7.5YR5/6), Organ III horizon, depth 0.40–0.60 m	1 possible limestone FCR and 1 possible silicified limestone flake
3	Southern end of site	0.50 m	Strong brown, eolian sand (7.5YR5/6), surface to 0.15 m	None	Semi-compacted, strong brown, sandy loam (7.5YR5/6) with sparse gravels, Organ III horizon, depth 0.15–0.50 m	None		
4	Center, near Feature 7 and 18	0.50 m	Reddish-yellow, historic, eolian sands (7.5YR6/6), surface to 0.20 m	None	Strong brown, semi-compacted, sandy loam (7.5YR5/6) with sparse gravels, Organ III horizon, depth 0.20–0.50 m	None		
5	Near Feature 17	0.30 m	Historic, laminated, eolian sands (7.5YR6/6) with some root disturbance, surface to 0.06 m	None	Semi-compacted, sandy loam (7.5YR5/6) with some root disturbance down to 0.15 m, Organ III horizon, depth 0.06–0.26 m	None	Compacted, sandy loam (7.5YR5/6), Organ III horizon, depth 0.26–0.30 m	None
6	Center, near Feature 1	0.35 m	Unconsolidated, historic, laminated, eolian sands (7.5YR5/6), surface to 0.04–0.10 m	None	Strong brown, compacted, sandy loam (7.5YR5/6) with caliche filaments, depth 0.10–0.35 m	None		
7	Center of site	0.45 m	Semi-compacted, eolian sand (7.5YR6/6), surface to 0.12 m	None	Compacted, sandy loam (7.5YR5/6), depth 0.02–0.40 m	None		
8	Center of site	0.40 m	Historic, laminated, eolian, loamy sand (7.5YR6/6), surface to 0.02 m	None	Strong brown, semi-compacted, sandy loam (7.5YR5/6), Organ III horizon, 0.02–0.40 m	None		
9	Center of site	0.50 m	Unconsolidated, sandy loam (7.5YR6/6), surface to 0.10 m	None	Semi-compacted, sandy loam (7.5YR5/6), depth 0.10–0.22 m	None	Compacted, sandy loam (7.5YR5/6) with slight caliche filaments, depth 0.22–0.50 m	None
10	Center of site	0.40 m	Unconsolidated historic laminated eolian sand (7.5YR 6/6), surface to 0.16 m	None	Compacted sandy loam (7.5YR 5/6) with slight caliche filaments, possibly Organ III horizon, depth 0.16–0.40 m	None		
11	Center of site	0.30 m	Unconsolidated, eolian sand (7.5YR6/6), surface to 0.06 m	None	Strong brown, hard, compacted soil with caliche filaments appearing at 0.10 m, depth 0.06–0.30 m	None		
12	Center of site	0.50 m	Semi-compacted, unconsolidated, eolian sands (7.5YR6/6), surface to 0.14 m	None	Strong brown, compacted sand (7.5YR5/6), depth 0.14–0.50 m	None		

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Table 14.3 Shovel Test Results for LA 128699 (continued)

Test No.	Location	Depth	Stratum 1	Cultural Evidence	Stratum 2	Cultural Evidence	Stratum 3	Cultural Evidence
13	South, near Feature 8	0.50 m	Historic, eolian sand (7.5YR6/6), depth surface to 0.10 m	1 sandstone FCR	Strong brown, sandy loam (7.5YR5/6) with slight gravels, Organ III horizon, depth 0.10–0.45 m	None	Compacted, sandy loam (7.5YR5/6) with sparse caliche filaments, Organ I horizon, depth 0.45–0.50 m	
14	Southern end of site	0.50 m	Reddish-yellow, laminated, historic eolian sand (7.5YR6/6), depth surface to 0.06 m	None	Semi-compacted, strong brown, sandy loam (7.5YR5/6) with slight gravels, Organ III horizon, depth 0.06–0.47 m	None	Compacted, sandy loam (7.5YR5/6) with sparse gravels and caliche filaments, Organ I horizon, depth 0.47–0.50 m	None
15	Southern end of site	0.40 m	Semi-compacted, unconsolidated, historic, eolian sand (7.5YR6/6), depth surface to 0.15 m	None	Strong brown, compacted, loam sand (7.5YR5/6) with small gravels (<1 cm wide), Organ III horizon, depth 0.15–0.40 m	None		
16	Southern end of site	0.60 m	Unconsolidated, eolian, historic sand (7.5YR6/6), depth surface to 0.10 m	None	Strong brown, compacted sand (7.5YR5/6) with few gravels, Organ III horizon, depth 0.10–0.47 m	1 schist metate fragment	Strong brown, hard, compacted sand (7.5YR5/6) with small gravels (<1 cm wide), Organ I horizon, depth 0.47–0.60 m	
17	South, near Features 5 and 19	0.60 m	Unconsolidated, eolian sands (7.5YR6/6), depth surface to 0.11 m	None	Semi-compacted, strong brown, sandy loam (7.5YR5/6), depth 0.11–0.60 m	1 FCR/ ground stone		
18	South, near Features 5 and 19	0.50 m	Unconsolidated, eolian sands (7.5YR6/6), depth surface to 0.13 m	None	Semi-compacted, strong brown, sandy loam (7.5YR5/6) with few gravels appearing at 0.40 m, depth 0.13–0.50 m	None		
19	South, near Feature 20	0.50 m	Reddish-yellow, historic, eolian sands (7.4YR6/6), depth surface to 0.10 m	None	Semi-compacted, strong brown, sandy loam (7.5YR5/6) with slight gravels, Organ III horizon, depth 0.10–0.37 m	None	Compacted, strong brown, sandy loam (7.5YR5/6) with sparse caliche filaments, Organ I horizon, depth 0.47–0.50 m	
20	Southern end of site	0.50 m	Reddish-yellow, historic, eolian sand (7.5YR6/6), depth surface to 0.08 m	None	Semi-compacted, strong brown, sandy loam (7.5YR5/6) with sparse gravels, Organ III horizon, depth 0.08–0.50 m	None		
21	Southern end of site	0.50 m	Unconsolidated, eolian sand (7.5YR6/6), depth surface to 0.10 m	None	Semi-compacted, sandy loam (7.5YR5/6), depth 0.10–0.17 m	None	Compacted, strong brown, sandy loam (7.5YR5/6), depth 0.17–0.50 m	
22	Center of site	0.70 m	Unconsolidated, eolian sand (7.5YR6/6), depth surface to 0.32 m	1 projectile point fragment, 1 lithic debitage	Semi-compacted, sandy loam (7.5YR5/6), depth 0.32–0.70 m	3 lithic debitage, 2 ground stone fragments		

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Table 14.3 Shovel Test Results for LA 128699 (continued)

Test No.	Location	Depth	Stratum 1	Cultural Evidence	Stratum 2	Cultural Evidence	Stratum 3	Cultural Evidence
23	Northern end of site	0.50 m	Reddish-yellow, historic, eolian sand (7.5YR6/6), surface to 0.10 m	None	Strong brown, semi-compacted, sandy loam (7.5YR5/6) with few gravels, Organ III horizon depth 0.10–0.50 m	None		
24	Northern end of site	0.50 m	Unconsolidated, historic, laminated, eolian sand (7.5YR5/6), surface to 0.03 m	None	Semi-compacted, sandy loam (7.5YR5/8), Organ III horizon, depth 0.03–0.13 m	None	Semi-compacted, strong brown, sandy loam (7.5YR5/6) with alluvial gravel increasing with depth, Organ III horizon, depth 0.13–0.50 m	2 chert flakes
25	Northern end of site	0.40 m	Unconsolidated, eolian sand (7.5YR6/6), surface to 0.07 m	None	Semi-compacted, strong brown, sandy loam (7.5YR5/6) with few gravels, depth 0.07–0.23 m	None	Compacted, strong brown, sandy loam (7.5YR5/6) with few gravels, depth 0.23–0.40 m	None

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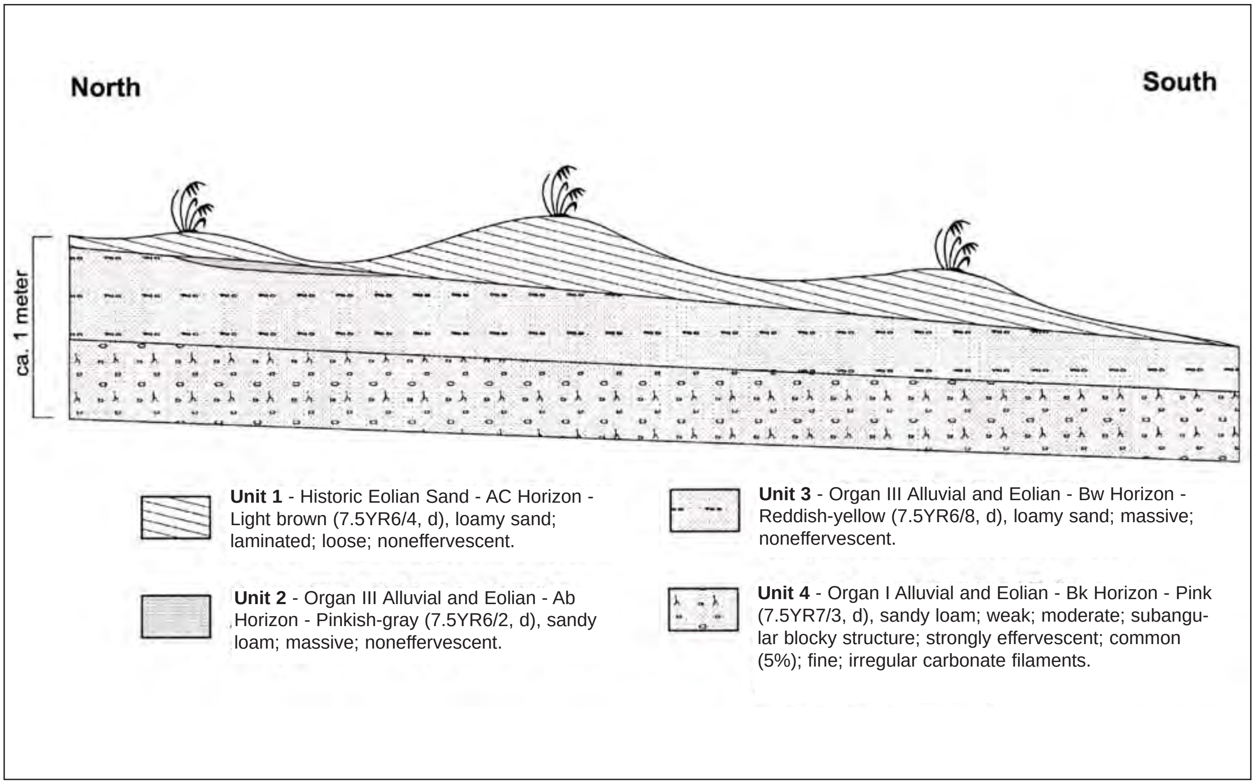

Figure 14.3 Stratigraphy at LA 128699.

site to the historic town of Orogrande. On this site, cultural features were observed only in areas where Unit 1 was absent or very thin (e.g., in interdunal areas free of sheet sands). One major problem, in terms of archaeological visibility, is that this unit forms a continuous blanket in some interdunal areas. Consequently, Formative-aged cultural components are not visible on the surface in these areas, yet may only be a few centimeters below the upper surface of the recent sands. Initial scraping with a backhoe revealed a number of previously undiscovered features and ground stone tools within 20 cm of the surface.

The second soil/sediment unit preserved on the site is a buried Ab horizon (Unit 2). This unit is typically a brown (7.5YR 5/3, d), sandy loam that is massive and non-calcareous. The humate-enriched appearance of Unit 2 makes it quite apparent when compared to the surrounding sediments. The sediments comprising the Ab horizon appear to be a mixture of alluvial slope wash and eolian deposition. Alluvial deposition introduced sparsely distributed pebbles in some portions of this unit, while some exposures do not exhibit any pebbles at all. These pebbles are often calcareous in nature, but should not be confused with carbonates resulting from pedogenesis within the soil. Instead, they are the result of alluviation that has scoured calcareous sources further upslope. Based on its stratigraphic position and association with the underlying Bw horizon (see Unit 3 below), this unit appears to correlate with the Organ III sediments (100–1,100 B.P.) described by Monger (1993) or the Q3 sediments (100–7,300 B.P.) described by Blair *et al.* (1990). The discovery of Mesilla-phase features originating within the Ab horizon suggests that it probably pre-dates Monger's suggested time frame. The Ab horizon is significant because it indicates a stable surface that supported vegetation, a surface that would have been quite suitable for intensive prehistoric occupation.

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A single shovel test encountered Unit 2 during the testing phase (ST 24), although the more extensive excavations during the data recovery phase revealed this unit to be preserved over the majority of the site. This finding underscores that the cultural materials and features typically observed during the survey and testing phases were often in the most eroded areas of the site, where surface visibility was highest. The potential for *in situ* cultural materials on the site is higher than could have been expected from the shovel testing alone. Several features occur at the contact between the Ab horizon and the underlying Bw horizon. This suggests that prehistoric people began to inhabit the site at approximately the same time that the sands were just becoming stabilized by vegetation. Radiocarbon dates from these features help to assess when sediment stabilization occurred and may also indicate a climatic change that could have resulted in stabilization (primarily through increased vegetative growth) and made the site more favorable for occupation. These issues are discussed further in subsequent sections of this chapter.

Underlying the Ab horizon in most portions of the site is a 10–50-cm-thick unit of reddish-yellow (7.5YR6/6, d), sandy loam (Unit 3). This unit lacks stratification or significant pedogenic accumulations, but the high chroma of these sediments suggests that they have been subject to minor pedogenic alteration. For this reason, Unit 3 is considered a cambic Bw horizon. A Bw horizon is typically associated with the Organ III eolian sediments described by Monger (1993). Thus, Unit 3 is tentatively correlated with Organ III sediments, but the Mesilla and Late Archaic-aged cultural features within and on the upper contact of this unit contradict Monger's proposed age range. In Monger's model, the 2,200–1,100 B.P. time frame is represented by Organ II sediments while the 1,100–100 B.P. time frame is represented by Organ III sediments. The problem is that Organ II sediments are rarely encountered in the basin (e.g., Monger and Buck 1995; Smith 2001). In instances where Organ II sediments are absent, it is possible that the Organ II/Organ III sediments are represented by a single paleosol that spans the 2,200–100 B.P. time frame. It is possible that the environmental de-stabilization that occurred at 1,100 B.P. on the alluvial fans, where the Organ chronology originated (Gile and Grossman 1979; Gile *et al.* 1981), varies according to local circumstances. In such a situation, it would be expected that the sediments would have the pedogenic characteristics of Organ II sediments, namely a weak Bk horizon. From our investigations, it does not appear that the horizon in question has visible carbonate accumulations and is classified as a cambic Bw horizon. The reasons for this are not entirely clear, as Orogrande 1 lies on alluvial fan sediments. The results from this site appear to suggest that the 2,200–100 B.P. time frame is represented by a single soil/sediment unit at this locale. Unit 3 appears to be at its thickest (50+ cm) in the central portions of the site and thins to ca. 30 cm on the northern and southern margins.

Unit 3 has a sharp contact with an underlying calcareous Bk horizon (Unit 4) that is reddish-yellow (7.5YR7/6, d) to pink (7.5YR7/3, d), depending on the amount of visible carbonate, and has a sandy loam texture. This unit is typically at least 40-cm thick and was more than 100-cm thick in BT 3. The depth below surface is also variable, with a depth of 50 cm bgs in BT 3 and nearly 100 cm bgs in BT 2. These differences in thickness and depth probably reflect the variability in topography and erosion on the site prior to the deposition of the Organ III eolian and alluvial sediments. It appears that at the beginning of Organ III deposition the site was a broad depression that served as a trap for eolian and alluvial sediments. The pedogenic carbonate accumulations in this unit are equivalent to Stage I development (after Gile *et al.* 1966). Within the region, Stage I carbonates are typically considered to be middle Holocene in age. In Monger's (1993) chronology this results in correlation to the Organ I unit (2,100–7,000 B.P.) and in the chronology of Blair *et al.* (1990) this horizon is considered to be part of unit Q3 (100–7,000 B.P.).

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No cultural materials were observed in association with this unit during our study.

The basal unit at LA 128699 is the La Mesa calcrete, a pinkish-white (7.5YR8/1–8/2, d), clay loam with a Stage III+ calcium carbonate accumulation. The calcrete provides a barrier that cannot easily be breached by the backhoe and is very difficult to penetrate by hand. Previous work in the region (Gile *et al.* 1981; Blair *et al.* 1990; Monger 1993) has proposed that the calcrete is Mid-Pleistocene in age (ca. 250,000 B.P.) and, thus, predates accepted dates for the human occupation of North America. For this purpose, the calcrete is considered to be the sterile level for archaeological excavations.

Data Recovery Strategy

TRC conducted data recovery investigations at Orogrande Site 1 during the spring of 2001, with assistance from Taschek Environmental Consultants (TEC) personnel. Data recovery at this site involved surface collection, hand excavation blocks, backhoe trenching, and machine stripping. During data recovery, the remainder of the surface assemblage was mapped and collected, within both the impact area and on BLM property to the west (Figure 14.4). Seven excavation blocks, ranging in size from 2 x 2 m–7 x 9 m, were placed over features identified during site testing and data recovery. An additional excavation block (Block 6) was established later, over features exposed from mechanical scraping at the site. Table 14.4 summarizes the data recovery excavations by number, size, location, features encountered, and depth. A total of 198.25 m^2 were hand excavated during data recovery and an additional 6.25 m^2 during the testing phase. Backhoe trenches (n=4) excavated an additional 127.9 m^2 (Table 14.5). Eight cultural features were encountered in the trench excavations. Hand and trench excavations uncovered just over one percent of the site area within the impact area. After hand and trench excavations were completed, areas within the impact area were scraped with mechanical equipment. This scraping was estimated to cover an additional 90 percent of the site area within the impact area. Given that a backhoe was used, and also due to the depth of overburden, it was not feasible to scrape the entire portion of the site within the right-of-way. Some areas were severely deflated and were not machine stripped. As a result of the data recovery investigations, the site boundaries were expanded further to encompass 33,602 m^2.

Data Recovery Results

During testing and data recovery, 130 features were identified at Orogrande 1 (Figure 14.5; Appendix H). One hundred twenty-four of the 130 features were within the boundaries of the impact area, as they were estimated in the field.[1] Trowel testing had previously indicated that 10 of 22 features (Features 3, 20, 22–26, 43, 79, and 106) identified on the surface and within the impact area exhibited potential for intact remains. These ten features were investigated within seven of the excavation blocks. The remaining 12 surface features within the impact area (Features 1, 2, 4, 5, 7, 8, and 14–19) were all completely deflated and were not excavated. Seven of the eight excavation blocks placed over surface features uncovered 19 additional features (Features 23.1, 23.2, 26.1–26.4, 27–35, 43.1, 80, 85, and 87), amounting to a total of 28 features within these seven blocks. Backhoe Trenches 2–4 uncovered an additional eight features (Features 36–42 and 56). Three of these features (Features 40–42) were located in BHT 4 along the northern edge of the impact area. They were only recorded and not excavated. Sixty-five features (Features 44–55, 57–73, 75–78, and 89A, 89B, 90–98) were

1 Because the boundaries of the impact area were not staked in the field, there was some uncertainty among the field crew as to the precise location of the northern boundary during data recovery. To avoid the possibility of trespassing onto private land, the features exposed in BHT 4 were not hand excavated. Also, three features (Features 105, 113, and 114), uncovered in Scraped Area 2, proved to be just outside the impact area on BLM property.

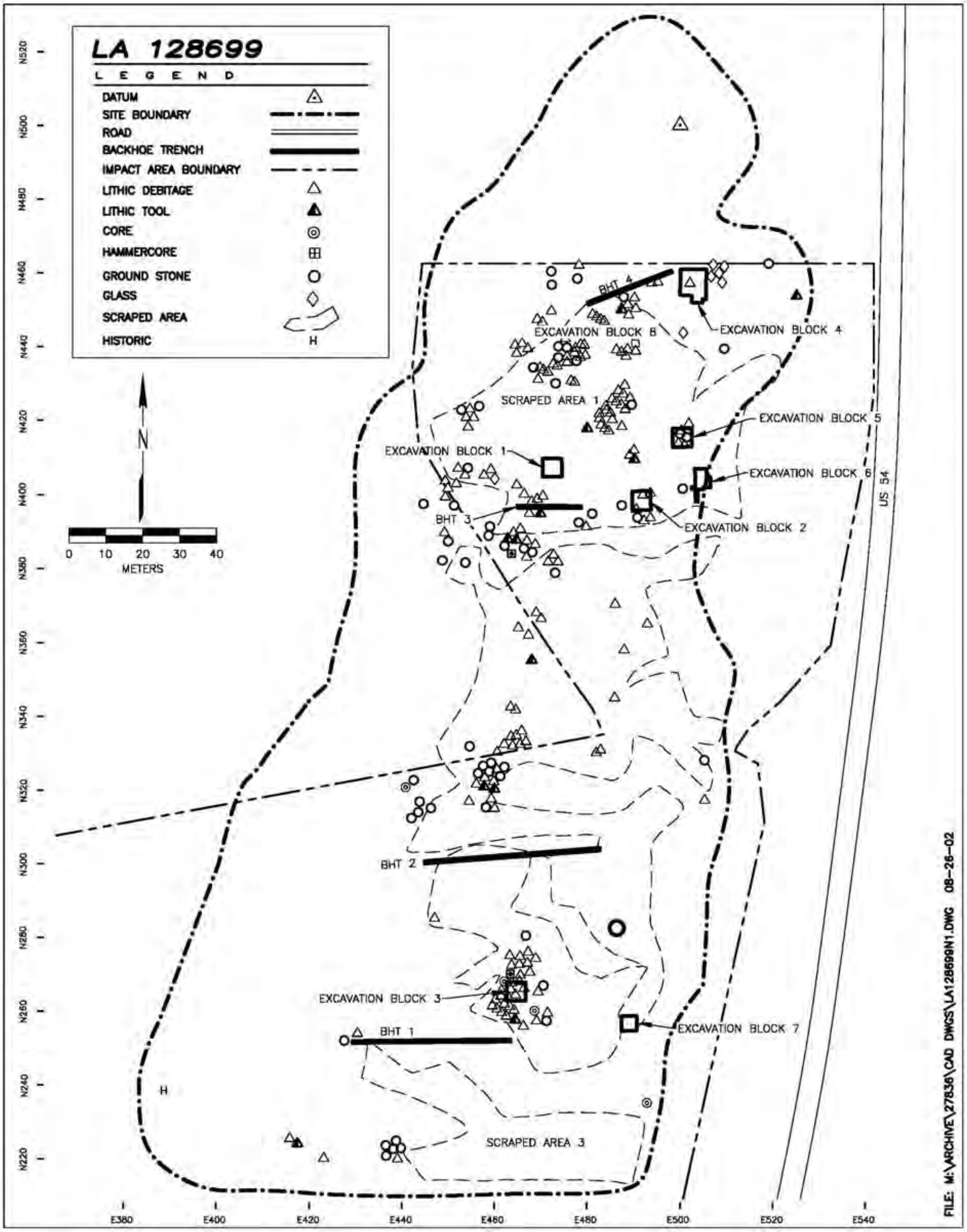

Figure 14.4 Orogrande 1 (LA 128699), showing surface artifacts and data recovery excavations.

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Table 14.4 All Excavation Units at Orogrande 1 (LA 128699)

Type	Unit No.	Size (m^2)	Northing	Easting	Feature	Depth Below Datum (100 m)	Comment
Trowel Test	BHT2	0.22	301.69	446.04	36	97.13–97.11	100% of feature excavated
Trowel Test	BHT3	0.43	396.83	468.93	37	97.93–97.79	100% of feature excavated
Trowel Test	BHT3	0.52	396.97	466.87	38	97.92–97.80	100% of feature excavated
Trowel Test	BHT3	0.06	397.63	460.42	39	97.42–97.34	100% of feature excavated
Trowel Test	44	0.5	228.53	470.22	44	96.04–95.95	100% of feature excavated
Trowel Test	45	0.16	259.84	458.7	45	96.74–96.71	100% of feature excavated
Trowel Test	46	0.15	259.63	459.37	46	96.74–96.71	100% of feature excavated
Trowel Test	47	0.87	267.73	462.8	47	97.00–96.50	100% of feature excavated
Trowel Test	48	0.2	261.03	447.28	48	96.76–96.65	100% of feature excavated
Trowel Test	49	0.21	393.16	467.72	49	97.95–97.89	100% of feature excavated
Trowel Test	50	0.22	390.74	458.91	50	98.13–98.09	100% of feature excavated
Trowel Test	51	0.42	394.23	471.81	51	97.95–97.91	100% of feature excavated
Trowel Test	52	0.7	390.3	472.23	52	97.90–97.78	100% of feature excavated
Trowel Test	53	0.18	395.43	479.72	53	97.66–97.63	100% of feature excavated
Trowel Test	54	0.47	395.3	485.92	54	97.55–97.41	100% of feature excavated
Trowel Test	55	0.71	403.35	479.79	55	97.85–97.71	100% of feature excavated
Trowel Test	BHT3	0.18	397.61	465.85	56	97.93–97.88	100% of feature excavated
Trowel Test	57	0.6	413.54	474.48	57	98.00–97.98	100% of feature excavated
Trowel Test	58	1.06	414.92	477.86	58	98.00–97.69	100% of feature excavated, 1 LD
Trowel Test	60	0.35	407.52	478.59	60	97.88–97.77	100% of feature excavated
Trowel Test	62	0.1	410.51	474.71	62	98.03–97.94	100% of feature excavated
Trowel Test	63	0.03	414.59	458.41	63	98.37–98.34	100% of feature excavated
Trowel Test	64	0.66	407.06	450.74	64	98.30–98.25	100% of feature excavated, 1 GS
Trowel Test	65	0.52	415.88	475.82	65	98.17–98.02	100% of feature excavated
Trowel Test	66	0.2	419.68	476.56	66	98.18–98.12	100% of feature excavated, 7 LD, 1 core, 1 brownware ceramic
Trowel Test	67	0.1	419.5	485.79	67	97.98–97.92	100% of feature excavated
Trowel Test	69	0.71	414.48	464.33	69	98.31–98.18	100% of feature excavated
Trowel Test	70	1.46	419.66	458.46	70	98.47–98.29	100% of feature excavated, 12 LD, 1 LT
Trowel Test	73	0.2	421.66	501.65	73	97.74–97.65	100% of feature excavated
Trowel Test	75	0.5	435.89	496.38	75	98.13–98.04	100% of feature excavated
Trowel Test	76	0.2	296.61	448.6	76	97.18–97.14	100% of feature excavated
Trowel Test	77	0.17	299.1	452.88	77	97.20–97.16	100% of feature excavated
Trowel Test	78	0.63	434.56	495.57	78	98.11–97.88	100% of feature excavated
Trowel Test	78A	0.28	434.5	495	78A	98.11–98.09	100% of feature excavated
Trowel Test	78B	0.32	435.15	495.6	78B	98.11–98.09	100% of feature excavated
Trowel Test	89A	0.41	263.71	471.42	89A	96.89–96.81	100% of feature excavated
Trowel Test	89B	0.45	264.63	471.05	89B	96.89–96.78	
Trowel Test	90	0.18	257.47	479.63	90	96.70–96.64	100% of feature excavated
Trowel Test	91	0.37	259.39	462.44	91	96.68–96.62	100% of feature excavated
Trowel Test	92	1.03	256.44	473.06	92	96.84–96.17	100% of feature excavated, 1 LD
Trowel Test	93	0.2	254.22	483.27	93	96.51–96.47	100% of feature excavated
Trowel Test	94	0.9	402.56	500.57	94	97.57-97.55	100% of feature excavated
Trowel Test	96	0.4	280.63	458.84	96	97.24-97.14	100% of feature excavated
Trowel Test	97	0.22	277.86	457.92	97	97.15-97.07	100% of feature excavated
Trowel Test	98	1.17	261.08	473.09	98	96.89-96.21	100% of feature excavated
Trowel Test	99	0.64	391.35	476.08	99	98.01-97.89	100% of feature excavated, 2 LD

Table 14.4 All Excavation Units at Orogrande 1 (LA 128699) (continued)

Type	Unit No.	Size (m^2)	Northing	Easting	Feature	Depth Below Datum (100 m)	Comment
Trowel Test	100	0.3	362.28	480.8	100	97.38–97.36	100% of feature excavated
Trowel Test	101	0.2	361.48	480.35	101	97.37–97.34	100% of feature excavated
Trowel Test	102	0.6	360.47	480.83	102	97.36–97.23	100% of feature excavated
Trowel Test	103	0.17	346.45	483.03	103	97.29–97.25	100% of feature excavated
Trowel Test	104	0.37	332.03	473.43	104	97.47–97.41	100% of feature excavated
Trowel Test	105	0.9	334.72	467.15	105	97.48–97.39	100% of feature excavated
Trowel Test	106	0.61	319.77	483.25	106	97.25–97.10	100% of feature excavated
Trowel Test	107	0.09	329.73	448.22	107	97.58–97.57	100% of feature excavated
Trowel Test	108	0.32	281.69	479.77	108	97.03–96.99	100% of feature excavated
Trowel Test	109	0.26	281.57	482.68	109	97.05–96.98	100% of feature excavated
Trowel Test	110	0.43	391.65	479.37	110	97.70–97.60	100% of feature excavated
Trowel Test	111	0.63	390.95	472.54	111	98.02–97.92	100% of feature excavated
Trowel Test	112	0.32	310.69	464.84	112	97.65–97.57	100% of feature excavated
Trowel Test	113	0.47	336.88	441.96	113	97.61–97.34	100% of feature excavated
Trowel Test	114	0.06	332.64	438.73	114	97.70–97.68	100% of feature excavated
Trowel Test	115	0.1	315.08	438.49	115	97.59–97.50	100% of feature excavated
Trowel Test	116	0.2	263.39	485.97	116	96.82–96.73	100% of feature excavated
Trowel Test	117	0.32	259.8	481.75	117	96.78–96.71	100% of feature excavated
Trowel Test	118	0.57	259.26	480.52	118	96.74–96.57	100% of feature excavated
Trowel Test	119	0.92	255.78	482.98	119	96.66–96.53	100% of feature excavated
Block	1	25	405–409	463–467	3, 29, 30	98.64–98.06	28 LD
Block	2	25	396–400	487–491	25, 27, 28	97.82–97.38	27 LD, 2 LT,1Core, 2 GS
Block	3	25	263–267	453–457	20	97.03–96.50	173 LD, 1 core
Block	4	57	452–460	500–506	22, 23, 23.1, 23.2, 26, 26.1, 26.2, 26.3, 26.4, 34	98.72–97.70	148 LD, 48 UB ceramics, 2 El Paso Brown rims, 1 El Paso Bichrome, 1 UB scoop, 8 LT, 4 GS, 1 HS
Block	5	25	413–417	498–502	24, 31-33	98.19–97.36	66 LD
Block	6	21.25	398–406	503–507	74, 81-84, 86, 86.1, 88	97.52–96.79	10 LD
Block	7	16	255–258	484–487	43, 43.1, 80, 85, 87	97.15–96.38	16 LD, Red Ochre
Block	8	4	440–441	487–488	79	98.72–98.33	1 LD

Table 14.5 Backhoe Trenches at Orogrande 1 (LA 128699)

BHT No	EDM Shot	North/East	North/East	EDM Elevation	Length (m)	Width (m)	Depth (m)	Size (m^2)	Volume (m^3)	Feature
1	2	252.01/411.19	252.57/453.74	96.57/97.94	42.55	1	1.8	42.55	76.59	-
2	2	300.41/431.08	304.36/478.08	97.57/97.39	47.16	1	1.78	47.16	83.94	36
3	2	397.06/456.26	396.95/473.18	98.21/98.26	16.92	1	0.95	16.92	16.07	37–39, 56
4	2	451.95/475.26	460.41/497.78	98.93/98.87	21.27	1	1.2	21.27	25.52	40–42

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uncovered in mechanically scraped areas not subject to hand or backhoe trench excavations. All but eleven of these features were excavated, recorded, and their fill collected. The exceptions include stains that proved not to be cultural features, but rather decayed roots (Features 68 and 103), pockets of the Ab soil horizon (Features 59, 71, 72, 86, and 95), rodent burrows, (Features 107, 114, 115, and 117), and decaying root stains (Features 68 and 103). Eliminating the 11 non-cultural features leaves 119 cultural features documented at the site, 113 of which were within the impact area. Note that not all of these features were fully investigated and documented; during the final days of the fieldwork at Orogrande 1, machine scraping uncovered a large number of features, many of which were only quickly cross-sectioned. These locations were plotted within the site, and their horizontal dimensions and depths were recorded, but formal feature forms and maps were not completed. As a result, information on profile shape and plan morphology is lacking for a large number of excavated features at this site (see Appendix H).

Cultural Features

Of the 119 cultural features identified at the site, the vast majority were thermal features (n=101). The investigation also uncovered five pithouse structures (including several intramural features), six possible postholes (none inside identified structures), three pits of unknown function (two within Structure 2), a structure entryway, and a 1937 USGS marker.

Structures

Five pithouses (Structures 1–5) were uncovered at Orogrande 1. Three of the five pithouses are in Block 4 (Structures 1–2 and 4) at the northern end of the site (Figure 14.6), one is adjacent to Excavation Block 4 in the east end of BHT 4 (Structure 5), and the other pithouse (Structure 3) is at the southern end of the site in Block 7 (see Figures 14.4 and 14.5). Three of the pithouses (Structures 1–3) were either completely or mostly uncovered, so that their plan shapes are known: one is rectangular (Structure 2) and one is oval (Structure 3). Only very small portions of two structures were unearthed along the edges of Block 4. Structure 4 appears to be oval in plan, but this is not certain given the limited exposure of this structure. Data on the five pithouses are presented in Table 14.6, with artifact contents provided in Table 14.7.

Structure 1 (Feature 23)

Structure 1 was a sub-rectangular, simple basin pithouse with rounded corners (see Figures 14.6 and 14.7). The structure dates from the Mesilla phase. The location of Structure 1 was first detected as a small ash stain observed on the surface during the testing phase. A hand excavation block was laid out over this and three other stains were observed during data recovery, with the north wall of the block along the northern boundary of the impact area. Upon excavation, it was discovered that the subsurface portion of Structure 1 extended beyond the north wall of the excavation block and outside the impact area; thus this structure was not fully excavated. The excavated north-south dimension of the structure was 2.88 m. Although an unknown portion along this axis extended outside the excavation block, this appears to be the long axis of this rectangular house basin. The east-west dimensions measure 2.90 m. The excavated portion of the structure measures approximately 8.5 m^2, although it w as not fully excavated and its total floor area remains unknown. Structure 1 was 31-cm deep, which is slightly less than the average depth of Mesilla phase structures (33 cm). It exhibited a simple pit-type profile (i.e., there is a discernable break between the pithouse walls and floor). This structure contained two small, internal hearths (Features 23.1 and 23.2). Other internal features may or not be present in the unexcavated portion of this structure.

Dating: A charcoal sample from this structure yielded a two-sigma, calibrated radiocarbon date of A.D. 610–880 (Beta-161799). This date, combined with a small amount of brownware sherds from the feature (and the absence of decorated

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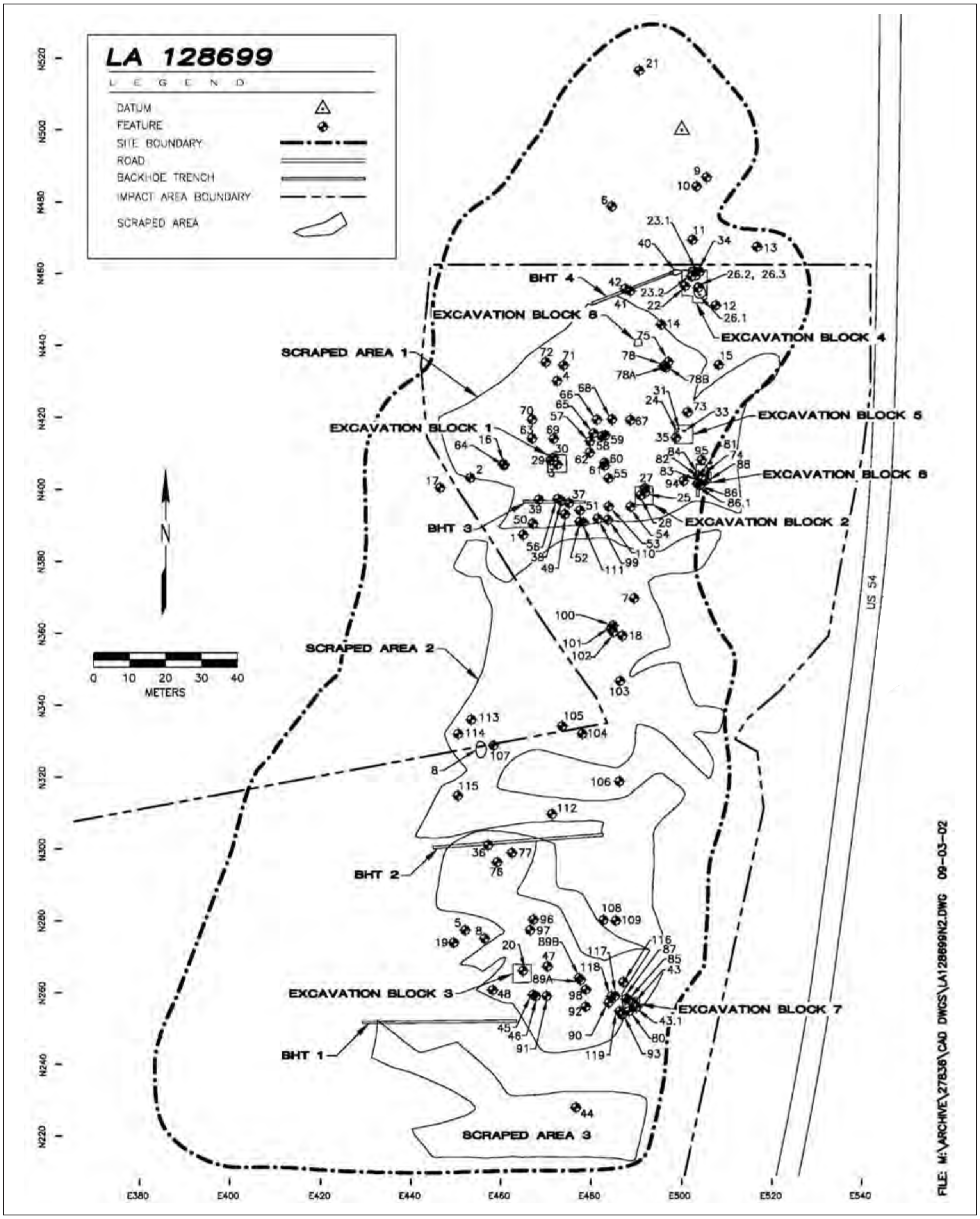

Figure 14.5 Orogrande 1 (LA 128699), showing all features and data recovery excavations.

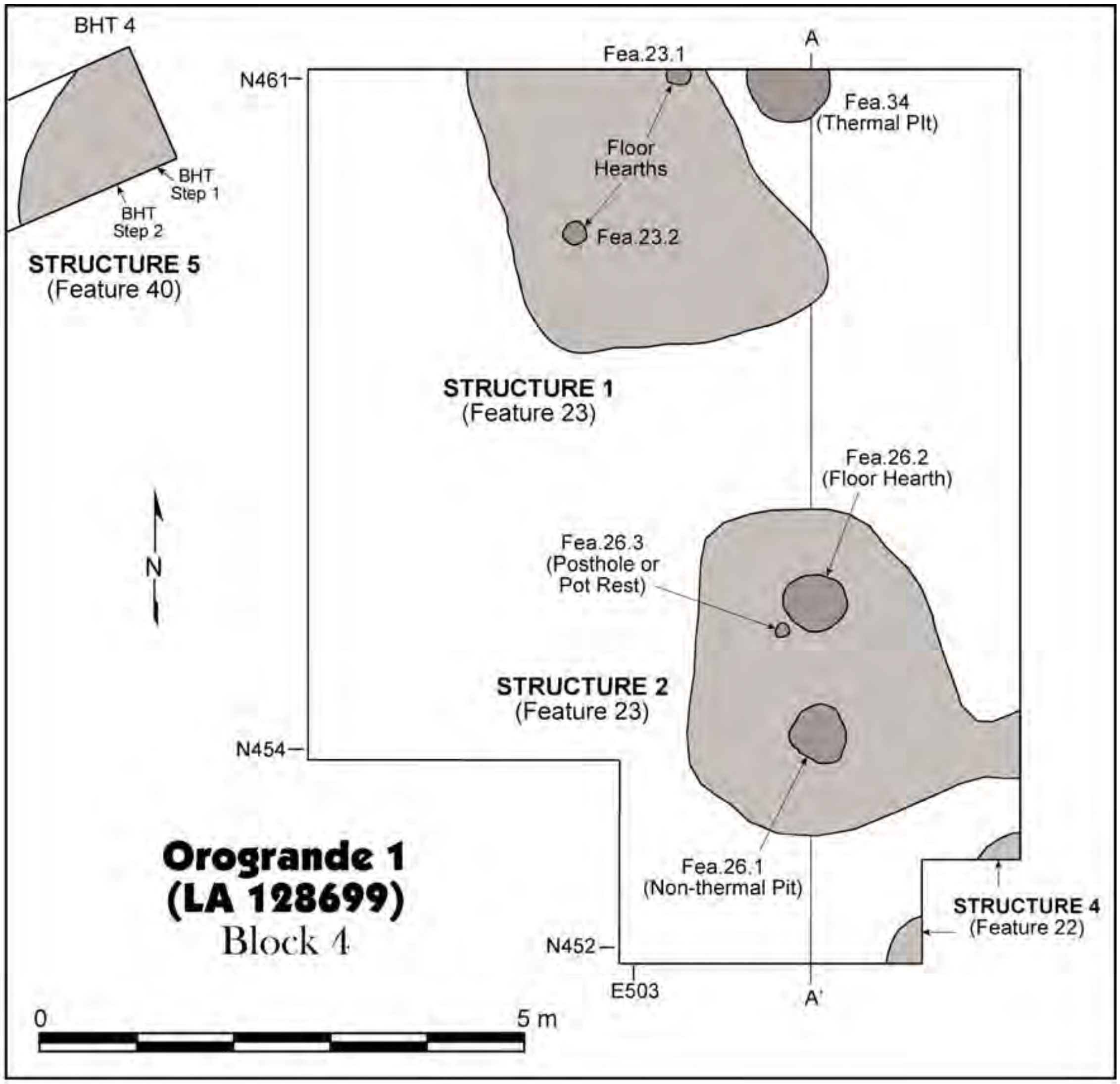

Figure 14.6 **Excavation Block 4 and east end of BHT 4 at Orogrande 1 (LA 128699), showing locations of Structures 1, 2, 4, and 5. See Figure 14.7 for A-A' Profile.**

Table 14.6 **Orogrande Site 1 (LA 128699) Pithouse Characteristics**

Structure No.	Fea. No.	Type	Plan	Length (m)	Width (m)	Orienta-tion	Floor Area (m^2)	Depth (m)	Floor Hearths	Other floor features	Entry	% excav
1	23	Simple Pit	Rectangular	2.88+	2.9	NNW-SSE	8.5+	0.31	2	0	No	~ 90
2	26	Simple Pit	Sub-rectangular	3.22	2.64	N-S	8.5	0.37	1	2	Yes	100
3	43	Simple Basin	Oval	2.9	2.15	N-S	6.2	0.22	1	0	No	100
4	22	Unknown	Oval?	?	?	Unknown		0.05+	?	?	?	< 10
5	40	Unknown	Unknown	?	?	Unknown	>2.62	?	?	?	?	< 10

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Table 14.7 Artifacts Recovered from Pit Structures at Orogrande 1 (LA 128699)

Structure	Ceramic Sherds	Debitage	Chipped Stone Tools*	Ground Stone
1 (Feature 23)	4	32	0	1
2 (Features 26, 26.4)	15	65	0	1
3 (Features 43, 43.1)	0	43	0	0
4 (Feature 22)	0	0	1	0
5 (40)	1	0	0	0

* All are informal tools (either retouched or utilized flakes).

wares), indicates a middle Mesilla-phase affiliation. The Mesilla-phase component at the site is also indicated by several radiocarbon dates and El Paso Brown ceramics distributed across mostly the northern half of the site.

Internal Stratigraphy: The fill within the structure consisted of a uniform, dark brown (10YR3/3), ash-stained sand/sandy loam with scattered charcoal. The feature originated within (or perhaps even above) the Ab horizon and was dug into the underlying strong brown (7.5YR5/6), sandy loam, culturally sterile B-horizon; some of the feature fill includes redeposited, Ab horizon matrix. No *in situ* artifacts were encountered on the floor of the structure. The structure fill contained four ceramic sherds, 32 pieces of debitage, and a ground stone artifact.

Floor Features: Two interior floor hearths (Features 23.1 and 23.2) were uncovered within the house pit. Both were small, circular, basin-shaped pits, 23–30 cm in diameter and 8–15 cm

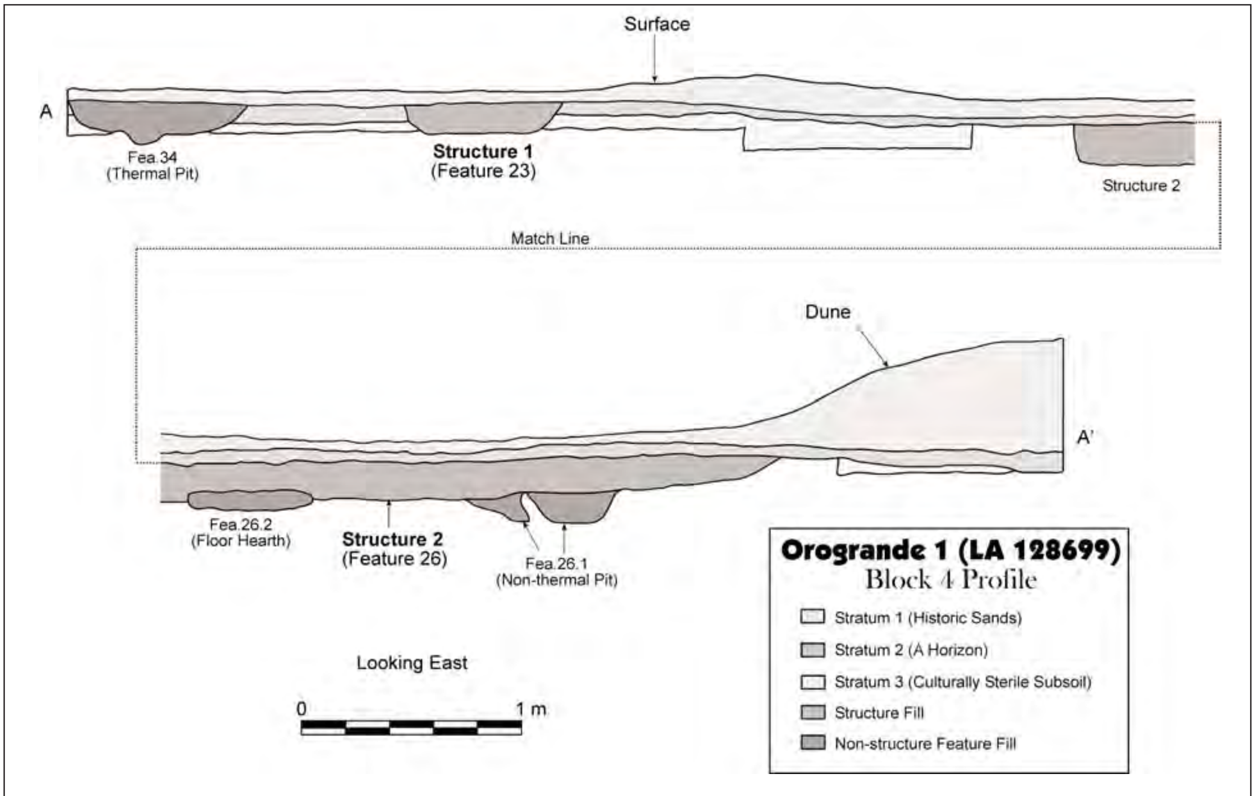

Figure 14.7 Profiles through Block 4 at Orogrande 1 (LA 128699), showing cross-sections of Structures 1 and 2.

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in depth. A portion of Feature 23.1 extended outside the excavation block to the north, but enough of the feature is present to infer its overall shape and dimensions. This feature was filled with dark gray to black (10YR4/1–2/1), ash-stained sand with large charcoal chunks. The fill of Feature 23.2 was lighter in color, consisting of brown/dark brown (10YR4/3), sandy loam with small charcoal flecks. The structure lacked any visible postholes; it is possible that posts were located along the exterior margins of the house pit, but had been previously destroyed by erosion or that this small structure did not require posts, or at least none that left any discernable traces.

Construction and Remodeling Evidence: The builders of Structure 1 dug a simple house pit that was likely more than 31 cm in its original depth. The house was set in a simple pit, with walls that sloped down, with a sharp break to a floor that was nearly level. No evidence of an entryway was located and daub was not observed. The superstructure was likely made from locally available brush (mesquite, narrowleaf yucca, and fourwing saltbush).

Abandonment Evidence: Structure 1 does not appear to have been hastily abandoned. The lack of cultural materials on the floor indicates a planned departure. The small amount of charcoal present in the house pit fill suggests the structure may have burned upon or after abandonment, although the charcoal may also be simply a fortuitous inclusion of the feature fill.

Structure 2 (Feature 26)

Structure 2 was a sub-rectangular, simple basin pithouse with rounded corners (see Figures 14.6 and 14.7). The structure dates from the Mesilla phase. This feature was discovered within Excavation Block 4, which had been laid out in this area after three faint stains were observed on the surface during data recovery. This structure was oriented north-south, with the long axis measuring 3.22 m and was 2.64-m wide, with a floor area of 8.5 m^2. This is slightly smaller than the average floor area of Mesilla phase structures in the Jornada Mogollon (9.7 m^2; see Chapters 3 and 31). Structure 2 was 37-cm deep, which is slightly greater than the average depth of Mesilla-phase structures (33 cm). This structure contained three interior features and a narrow entry ramp that extended off the southeast corner of the house pit and beyond the eastern wall of the excavation block.

Dating: A charcoal sample from this structure yielded a two-sigma, calibrated radiocarbon date of A.D. 620–880 (Beta-161800). This date, along with recovery of brownware sherds in the house pit fill and the absence of decorated wares, suggests a middle Mesilla-phase affiliation. The Mesilla-phase component at the site is also indicated by several radiocarbon dates from extramural features (see below) and El Paso Brown ceramics distributed mostly across the northern half of the site.

Internal Stratigraphy: The fill within the structure consisted of a uniform, grayish-brown (10YR5/2), ash-stained, sand/sandy loam with scattered charcoal. The feature originated within, or at the base of, the Ab horizon and was dug into the underlying strong brown (7.5YR5/6), sandy loam, culturally sterile B-horizon; some of the feature fill includes redeposited, Ab horizon matrix. No in situ artifacts were encountered on the floor of the structure. The structure fill contained 15 ceramic sherds and 67 pieces of debitage. No daub or other evidence of superstructure materials were observed in the house pit fill.

Floor Features: Three floor features (Features 26.1, 26.2, and 26.3) were uncovered within Structure 2. Feature 26.1 was a shallow, roughly oval basin measuring 60 x 52 cm in plan and 14 cm in depth. This feature was filled with the same matrix as was the overlying house pit (i.e., grayish-brown (10YR5/2), ash-stained, sand/sandy loam with scattered charcoal), and there was no evidence that this was a hearth or some other thermal facility. The function of this small non-thermal feature is unknown, although it may be a storage bin.

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Feature 26.2 was apparently the floor hearth for this structure and was located in the north-central portion of the house pit. It was a shallow (8-cm deep), roughly circular (58 x 56 cm) basin filled with very dark grayish-brown (10YR3/2), ashy, sandy loam with scattered charcoal pieces. No plastering or other indicators of formal preparation were evident.

Feature 26.3 was a small (20 x 20 cm), circular, and shallow (5 cm) depression, located along the southwestern edge of the floor hearth (Feature 26.2). It was filled with very dark grayish-brown (10YR3/2), sandy loam with a trace of charcoal. Although this matrix is very similar to that of the adjacent floor hearth, the small size of this feature seems to preclude its use as a thermal facility. Rather, it appears to be a small pot rest, or perhaps even the base of a posthole. If the latter inference is correct, then this feature probably post-dates Structure 2 and is intruded through the fill of the structure, terminating just below the pithouse floor.

Structure 2 lacked any visible postholes; it is possible that posts were located along the exterior margins of the house pit, but had been previously destroyed by erosion. Allernatively, this small structure may not have required posts, or at least none that left any discernable traces.

Feature 26.4 is the structure entry ramp or possible ventilator. This narrow, linear feature extends off the southeastern corner of the structure.

Construction and Remodeling Evidence: The builders of Structure 2 dug a simple house pit, 37 cm or more in depth, and an entryway or ventilator was dug off the southeast corner of the house pit. The superstructure was likely made from locally available brush (mesquite, narrowleaf yucca, and fourwing saltbush).

Abandonment Evidence: Structure 2 does not appear to have been hastily abandoned. The lack of cultural materials on the floor indicates a planned departure. The small amount of charcoal present in the house pit fill suggests the structure may have burned upon or after abandonment, although the charcoal may also be simply a fortuitous inclusion of the feature fill.

Structure 3 (Feature 43)

This was a small, oval, simple-basin pithouse, located in the far southeastern portion of the site (Figure 14.8). This pithouse dates from the Late Archaic Fresnal phase. The remains of this structure were uncovered within Block 7, where some ash staining was observed on the surface during the data recovery phase (this locality was outside the site boundaries as defined during the testing phase). Structure 3 was oriented roughly north-south, with the long axis measuring 2.90 m, and was 2.15-m wide. The floor area covers 6.2 m^2, which is comparable to the average size of the large Late Archaic structures at Keystone Dam (6.4 m^2), and is roughly comparable to Late Archaic structures in desert-floor settings including those on the West Mesa (which average 4.4 m^2) and in Hueco Bolson (average 5.0 m^2) (see Chapters 3 and 31). Structure 3 was set in a shallow basin, with a maximum extant depth of 22 cm.

Dating: Charcoal samples from this structure yielded two AMS radiocarbon determinations. Although both of these dates fall within the middle portion of Fresnal phase (early Late Archaic), they do not overlap in their two-sigma, calibrated age ranges, with the earlier of the two dating 2140–1920 B.C. (Beta-161806) and the later one falling at 1910–1700 B.C. (Beta-161807). The discrepancy is curious and may represent materials dating from different times that were redeposited together in the pithouse fill. Although no diagnostic artifacts were recovered from this feature, the charcoal sample dates are consistent with the absence of ceramic sherds within this feature and also with a well-dated Fresnal phase component with remains distributed across the site.

Internal Stratigraphy. The fill within the structure consisted of a uniform, very dark brown (10YR2/2), sandy loam with scattered small gravels. The Ab horizon was not present in this portion of the site, and Structure 3 originates on a deflated

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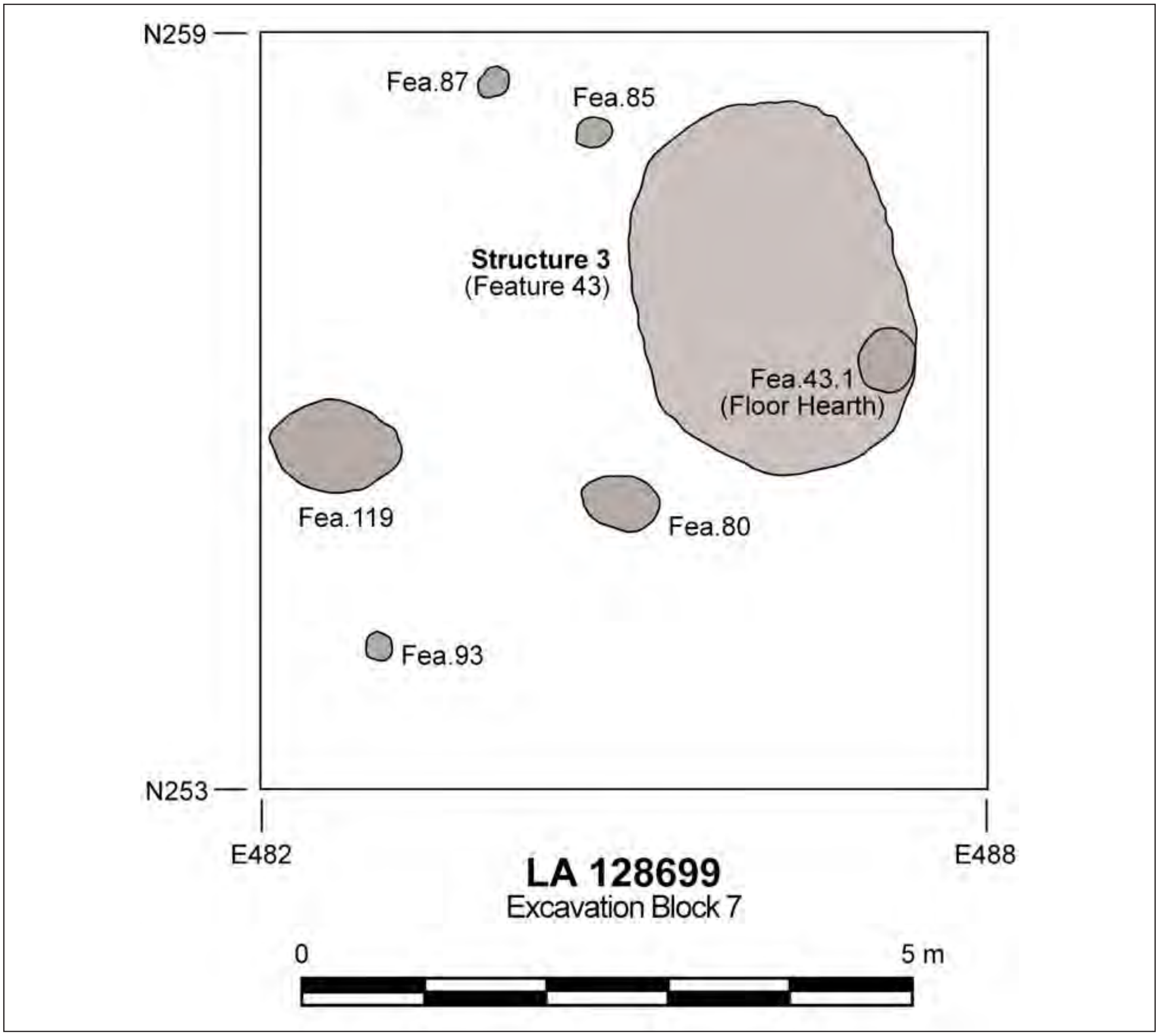

Figure 14.8 Excavation Block 7 at Orogrande 1 (LA 128699), showing location of Structure 3 and nearby features (all but Structure 3 are thermal pits).

surface covered by recent sands. The house pit was excavated into a reddish-yellow (7.5YR6/6), sandy loam (a culturally sterile B-horizon). No *in situ* artifacts were encountered on the floor of the structure. The structure fill contained 42 pieces of debitage, but no other cultural artifacts.

Floor Features: Structure 3 contained one feature (Feature 23.1), an interior hearth. This hearth was situated along the extant margin of the house basin, near the southeast corner. This feature was circular in plan, with a diameter of 55 cm. It was basin in cross-section, with steeply sloping sides and a flat floor, and a depth of 12 cm. It was filled with a very dark brown (10YR2/2), ash-stained, sandy loam and contained burned rock. The structure lacked any visible postholes; it is possible that posts were located along the exterior margins of the house pit, but had been previously destroyed by erosion. On the other hand, it may be that this small structure did not require posts, or at least none that left any discernable traces.

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Construction and Remodeling Evidence: The house was set in a simple basin, with walls that sloped down gradually to a floor that was nearly level. This structure yielded a high frequency of grass pollen (see below and Chapter 25), suggesting the use of grass as a bedding or cushioning, and/or superstructure material. No evidence of an entryway was located and daub was not observed. The superstructure was likely made from locally available brush (mesquite, narrowleaf yucca, and fourwing saltbush).

Abandonment Evidence: Structure 3 does not appear to have been hastily abandoned. The lack of cultural materials on the floor indicates a planned departure. There is no evidence to suggest the structure burned.

Partially Exposed Structures

In the far northern portion of the site, two features that appeared to be structures were partially uncovered. These are designated here as Structure 4 (Feature 22) and Structure 5 (Feature 40). Structure 4 was exposed in the southeastern corner of Excavation Block 4, the same block where Structures 1 and 2 were excavated (see Figure 14.7). Because there was some uncertainty over the precise location of the impact area's northern boundary at the time of excavation (the impact area limits were not staked in the field), this excavation block was not expanded further, nor was the area around it stripped. Thus, only small portions of the corner of Structure 3 were uncovered, and there is no way to estimate its overall shape and size. Based on the excavation block profiles, the structure appears to represent a simple-basin, possibly oval or circular-shaped pithouse. The structure basin was excavated into the culturally sterile B horizon, with the house pit itself filled with grayish-brown (10YR5/2), sandy loam with charcoal and some small gravel inclusions.

Structure 5 was encountered near the northeast end of BHT 4, immediately west of Excavation Block 4 (see Figure 14.6) and very close to the northern edge of the impact area. Due to uncertainties in the field as to the precise location of the impact area boundary here, no hand excavations were carried out to expose this feature. As a result, no structure dimensions can be provided. Based on the exposed portion and backhoe trench profile (Figure 14.9), Structure 5 appears to be the remains of a simple, oval-shaped pithouse. The structure remains were covered by up to 40 cm of historic sands, and the house pit was filled with brown (7.5YR4/2), semi-compact ash with charcoal flecking. Unlike nearby Excavation Block 4, no Ab horizon was noted in this portion of the backhoe trench profile, and the structure remains appear to originate on a deflated surface.

Thermal Features

Thermal features (n=101) were the most numerous feature category at Orogrande 1 (Figures 14.10–14.13). Of these, 20 were not excavated, including two exposed in BHT 4 and 18 others that were either completely deflated and/or located outside of the impact area. Of the 81 excavated thermal features, 23 were located within hand excavation blocks, 54 were uncovered in scraped areas, and four were encountered in backhoe trenches. As with other thermal features excavated as part of the US 54 project, those from Orogrande 1 were divided into small and large categories, with the discriminating criteria being a maximum diameter of less or more than 70 cm, respectively. At Orogrande 1, 61 thermal features fell into the small category (two of which were exposed in BHT 4 and were not excavated), 23 were classified as large, and one had no horizontal dimensions recorded and was not placed within a size classification. Data on thermal features are summarized in Table 14.8.

As with thermal features at the other US 54 sites, most of those from Orogrande 1 are basins with circular or oval plan shapes. The fill of these features also varies; some are simply pits filled with ash-stained sediment (with charcoal concentrations varying from none to heavy), others include FCR or burned caliche in their fill, and one was a simple FCR concentration without an associated

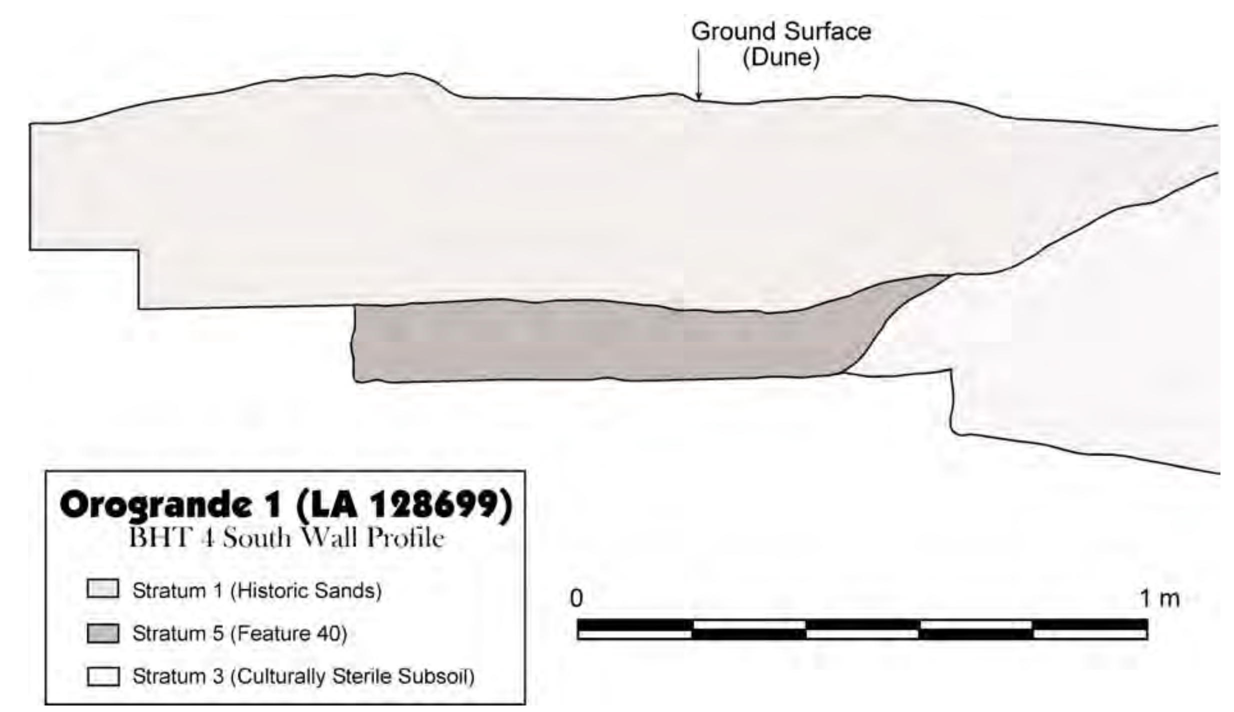

Figure 14.9 Orogrande 1 (LA 128699), profile of BHT 4 east end, showing cross-section of Structure 5. See Figure 14.6 for location.

stain. Many of the unexcavated thermal features (not otherwise included in this discussion) were marked by FCR concentrations, with or without an associated stain. Thermal features include both hearths and roasting pits (see Chapter 30).

Most of the thermal features lacked any durable artifacts (other than burned rocks). Only Feature 66 contained any ceramics, a single sherd of El Paso Brown. Most of these features date from the Late Archaic period, however. Table 14.9 provides a summary of artifacts recovered from thermal features at the site.

The nearly complete lack of diagnostic artifacts from the thermal features at this site frustrates attempts to date these remains, although a series of 20 radiocarbon determinations from these features provides a good deal of temporal information from the site (see below). Of these 20 radiocarbon determinations (referring here to the two-sigma calibrated ranges), 12 fall within the Late Archaic period, with all but one of these dating from the early Late Archaic Fresnal phase, and the other from the subsequent Hueco phase. Eight of the radiocarbon samples from thermal features yielded Formative-period dates, with five of the dates falling within the early to middle Mesilla phase time frame, one from the middle to late Mesilla, and two whose calibrated dates span the late Mesilla to early El Paso phases. The complete absence of decorated ceramics at the site suggests the latter two determinations date Mesilla-phase remains. In addition to radiocarbon-dated features, a ceramic sherd was recovered from Feature 66, bringing the total number of Formative-period thermal features to nine. Thermal feature size categories do not appear to have any relationship to temporal affiliation; of the 12 Late Archaic features, nine are large and three are small, while the dated Formative-period thermal features include five large and four small.

Feature 81, a large Mesilla-phase thermal pit, yielded a high frequency of grass pollen. The sig-

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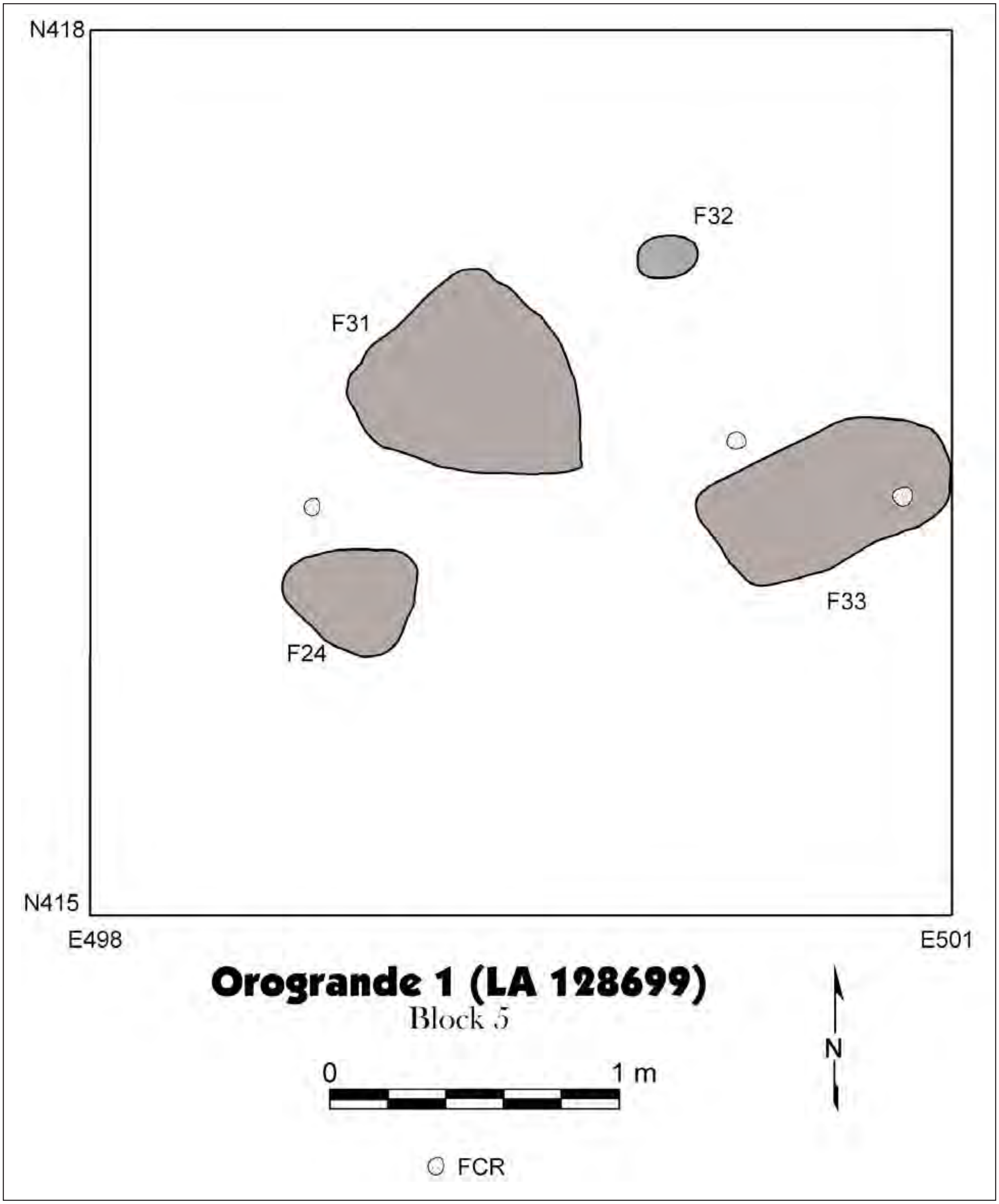

Figure 14.10 Cluster of features in Excavation Block 5 at Orogrande 1 (LA 128699).

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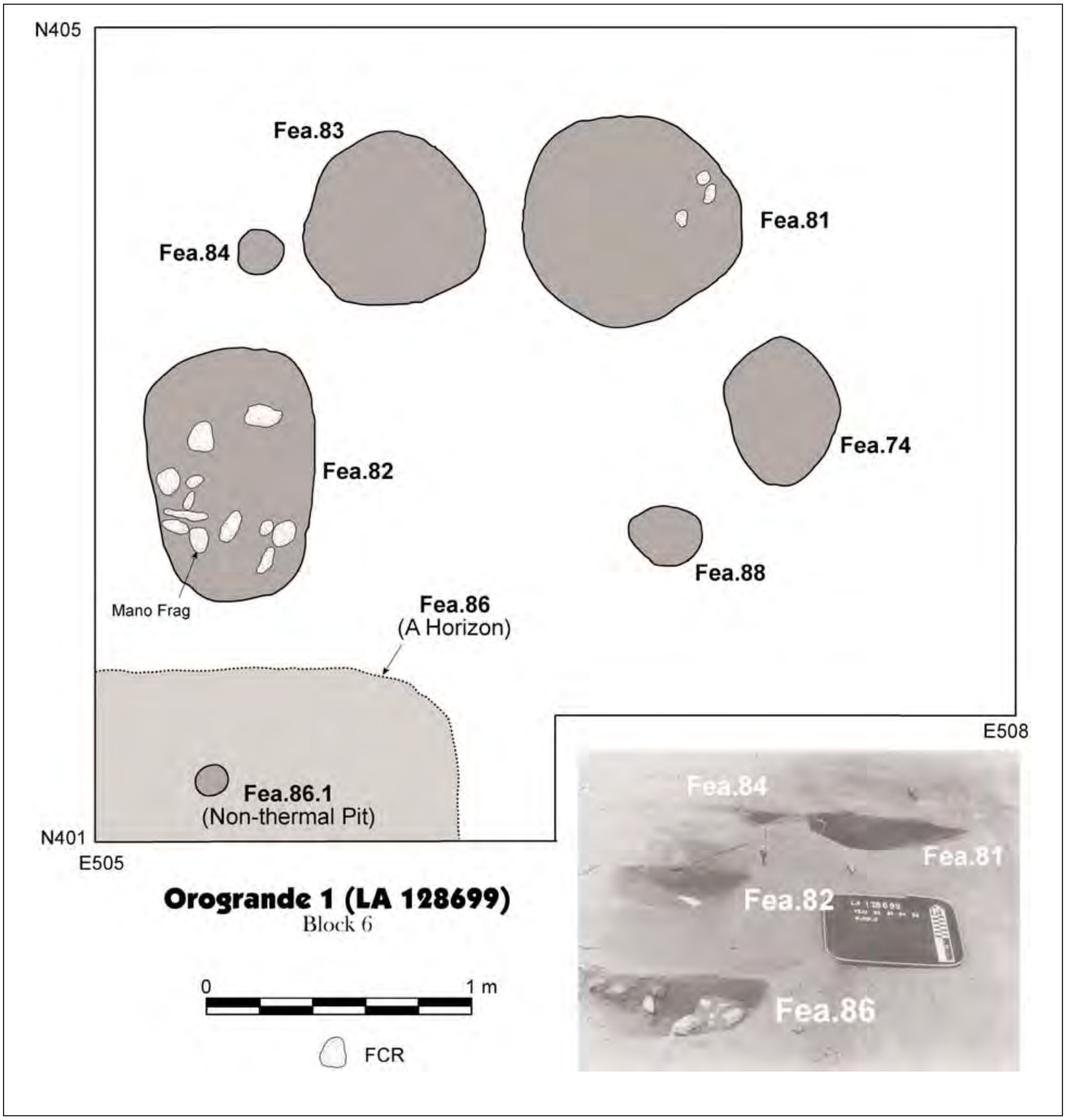

Figure 14.11 Cluster of features in Excavation Block 6 at Orogrande 1 (LA 128699). All are thermal pits unless otherwise designated.

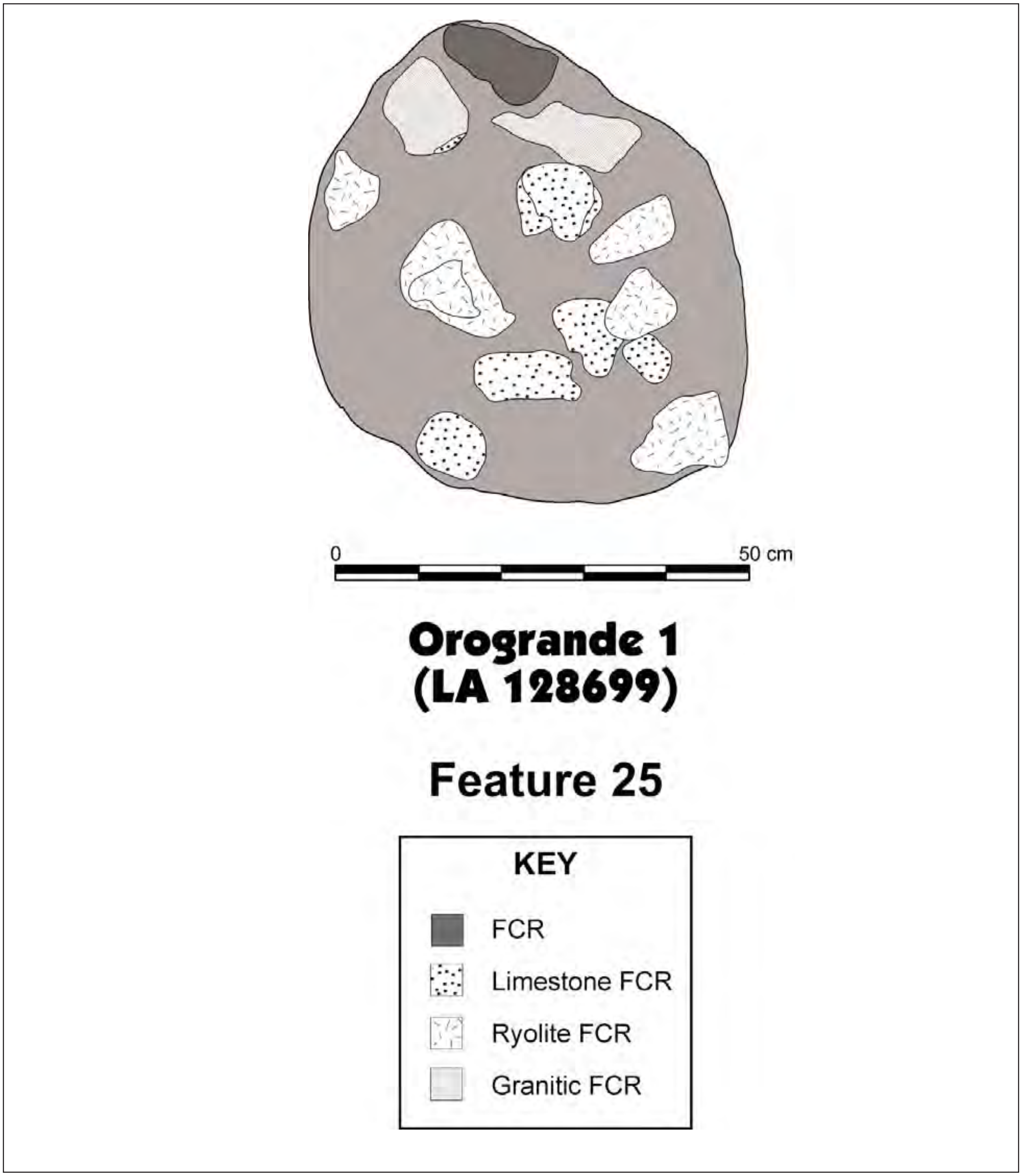

Figure 14.12 Feature 25 at Orogrande 1 (LA 128699), a thermal pit with a large quantity of fire-cracked rock.

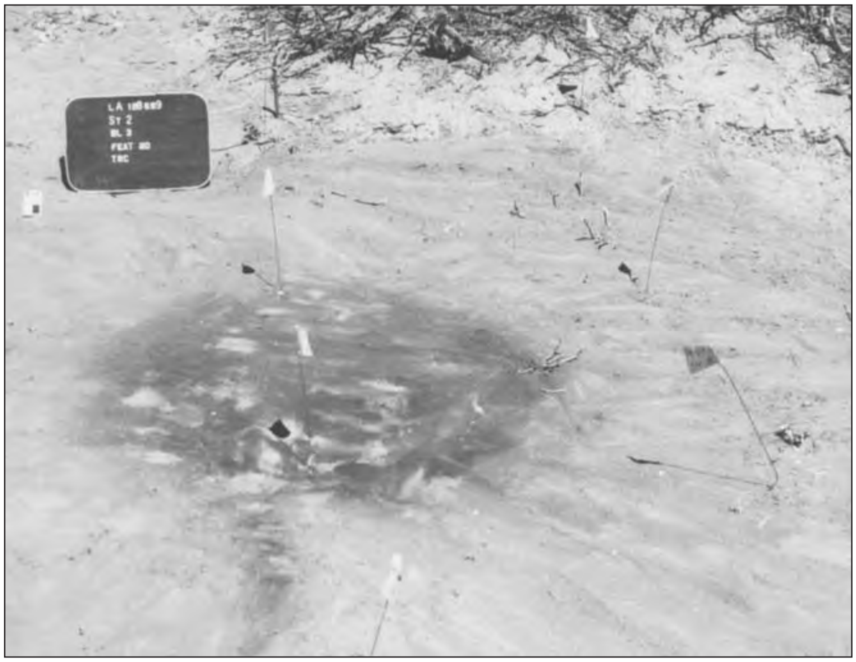

Figure 14.13 Large thermal features at Orogrande 1 (LA 128699). Top: Feature 20. Bottom: Feature 92, a cylindrical roasting pit.

Table 14.8 Summary Data for Thermal Features at Orogrande 1 (LA 128699)

Type	Max. Diameter (Range & Average, in meters)	Depth (Range & Average, in cm)	Profile/Plan Shapes (n=)
Small Thermal Features	0.15–0.68 (0.38)	1–27 (9.1)	Basin/Circular (12), Basin/Oval (6), Cylindrical/Circular (1), Irregular/Oval (1), ?/Circular (2), ?/Oval (1), No Data (38)
Large Thermal Features	0.72–1.63 (1.0)	2–68 (24.4)	Basin/Circular (10), Basin/Oval (4), Basin/Irregular (3), Cylindrical/Circular (1), Cylindrical/Oval (1), ?/Circular (1), No Data (3)

Table 14.9 Artifacts Recovered from Thermal Features at Orogrande 1 (LA 128699)

Feature	Type	Ceramic Sherds	Debitage	Chipped Stone Tools*	Ground stone
3	Large	0	7	0	0
8	Deflated	0	1	0	7
20	Large	0	11	0	0
24	Small	0	6	0	2
25	Small	0	15	0	1
27	Small	0	1	0	0
29	Small	0	1	2	0
33	Large	0	3	0	1
34	Large	0	1	1	0
58	Large	0	4	0	0
64	Large	0	0	0	2
66	Small	1	6	0	0
70	Large	0	12	0	0
74	Small	0	4	0	0
79	Small	0	1	0	0
80	Large	0	6	0	0
82	Large	0	1	0	0
87	Small	0	4	0	0
92	Large	0	1	0	0
99	Small	0	3	0	0

* All are informal tools (either retouched or utilized flakes)

nificance of this finding is unclear; it may suggest that this feature was actually a storage pit that burned, that grass was used in the roasting process associated with this feature, or that some grass-thatched facility was located in the immediate vicinity, with the pollen incorporated into the secondary fill of this feature.

Lipid residues recovered from FCR samples (see below and Chapter 28) yielded additional evidence pertaining to the functions of thermal features at Orogrande 1. Feature 28 (small thermal feature, age unknown) yielded a residue from a very high fat content material, probably seeds. Residues from a moderate-high fat content source (possibly including Texas ebony) were recovered from Features 15 (a deflated FCR concentration of unknown age), 70 (a Fresnal phase, large thermal feature), and 82 (an early to middle Mesilla phase, large thermal feature). Two samples yielded

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residues from a medium fat content source, such as mesquite or maize: Features 33 (a Hueco phase large thermal feature) and 81 (an early to middle Mesilla phase, large thermal feature). Given the absence of any identified maize remains at the site, it would seem the latter residues probably derive from roasted mesquite pods.

Other Features

Besides structures and thermal features, the investigations at Orogrande 1 documented six potential postholes, three pits of unknown function, and one historic USGS marker. The six possible postholes were all extramural and spatially isolated from one another. Four of the six are circular in plan, while the other two are oval. Profile shapes include four cylinders and two basins. Maximum diameter ranges 3–20 cm (average 10.8 cm), while depths range 3–8 cm (average 5.7 cm). It is likely these posts mark extramural facilities such as drying racks or other aboveground facilities. Only one posthole, Feature 35, contained any durable artifacts; this feature yielded a single sherd and seven pieces of debitage.

The three pits of unknown function include two inside of Structure 2, which are discussed above. The third, Feature 86.1, was an extramural feature. It was a small (12-cm diameter), circular, shallow (5 cm) basin that lacked ash staining, and thus was not classified as a thermal feature. One historic feature, a 1937 USGS marker (Feature 14), was located in the northern portion of the site.

Spatial and Temporal Relationships of Site Features

Based on radiocarbon dates and diagnostic artifacts (see below), Orogrande 1 (LA 128699) appears to have up to four components represented by features at the site. These date from the following time frames: 1) Fresnal phase (early Late Archaic); 2) Hueco phase (late Late Archaic); 3) early to middle Mesilla phase (Early Formative); and 4) Late Mesilla to Doña Ana phases (early late Formative Period). Most of the site's remains, however, date from the Fresnal and the early-to-middle Mesilla phases. While a Fresnal-phase pithouse and several temporally equivalent thermal features were found in the south edge of the site, the distribution of Fresnal-phase lithics (see discussion below) and radiocarbon-dated features indicate this component was scattered across the entire site. In contrast, the Mesilla-phase occupation is concentrated in the northern portion of the site.

Fresnal Phase Occupation: According to Whalen (1994a), Late Archaic period, lowland Jornada pit structure sites can be classified into two size categories, large and small. At large-house sites, the pit structures, such as those found at the Keystone Dam site (O'Laughlin 1980), have floor areas of approximately 6 m^2, with ephemeral internal hearths and a few scattered exterior roasting pits. This category of site was deemed to represent the remains of short-term, seasonal base camps, likely winter occupations because of the larger floor area, the presence of internal and external features, the lack of definite storage features, and the ephemeral, hut-like nature of the structure. Small-house sites during the Late Archaic period have pit structures with much smaller floor areas (average 3.8 m^2), very ephemeral interior hearths, and no external features. These structures appear to represent occupations of shorter duration than the Keystone Dam pit houses. A third Late Archaic period site type, represented by structureless, thermal feature sites with few artifacts, appear to represent very short-term occupation episodes (perhaps a few days or less).

Whalen (1994a) notes that these different site types tend to correspond with different site locations. The large-house sites are situated along the Rio Grande, and the small house sites and structureless sites are found in interior basin locations. At LA 128699, the Fresnal phase Structure 3 (Feature 43) was 22-cm deep, had a floor area of 6.2 m^2, and contained a single shallow, internal hearth. Several external thermal and storage features were found close to this structure (see Figures 14.5 and 14.8 above). Four of these fea-

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tures (Features 20, 47, 92, and 98) were also radiocarbon-dated to the Fresnal phase; Features 92 and 98 (Fresnal phase features nearest to Structure 3) share almost identical radiocarbon dates with Structure 3. All of these features were large, deep roasting pits. Based on Whalen's (1994a) data, Structure 3 and its associated external roasting pits would seem to represent the remains of a short-term, possibly seasonal, base-camp occupation. Although the Orogrande 1 site is far from the Rio Grande, and technically not in a basin-edge location, it is situated on an alluvial fan near the foot of the Jarilla Mountains. Thus, the site is in a location that is analogous to basin-edge localities, where precipitation runoff could be captured and concentrated, and valuable resources such as succulents could be exploited seasonally. Thus, at least that portion of the Fresnal phase occupation marked by Structure 3 would appear to be part of a Late Archaic base-camp. Whether this was a single-structure camp, or part of a more dispersed settlement that extended beyond the site boundaries, remains unknown.

Elsewhere in Orogrande 1, a general scatter of artifacts and individual features across the site marks the Fresnal phase (Figure 14.14). Outside of the immediate area of Structure 3, these features are not clustered in any definitive way. This general scatter appears to correspond to Whalen's (1994a) structureless sites. Human settlement in the Jornada Mogollon, especially during the early, non-Formative periods, often involved high mobility foraging and resource procurement strategies. By nature, high mobility foraging involves small nuclear or extended family groups that consistently, if only seasonally, move across the landscape to procure homogenously distributed, non-patchy resources (Binford 1980). This strategy produces ephemeral sites that, at best, contain the remains of a few thermal features and a sparse artifact scatter. Expedient structures were probably built at these sites but left no archaeological traces. Although resources are considered to be non-patchy at a low resolution of analysis, higher resolutions of examination do indicate areas of better resource distribution, slightly more abundant water, and specialized procurement. These represent areas of first choice: locations that are returned to every season, time and time again, if only for a short time. In the case of Orogrande 1, the resources in question may have been succulents located in the nearby uplands of the Jarilla Mountains. The site formation processes that result from the re-occupation of first choice locations take the form of palimpsests of overlapping, temporary occupations. Over time, with the addition of a few isolated, non-contemporaneous pit structures, these sites may falsely appear as village occupations. The Fresnal phase remains at Orogrande 1, however, should probably not be viewed as contemporaneous; rather, the evidence indicates the site resulted from repeated reoccupations of varying intensity and duration.

The Early to Middle Mesilla Phase Occupation: The early-to-middle Mesilla remains at this site are concentrated in a cluster of four pit structures and several thermal features in the northeastern site area, along with a ceramic scatter in this same general area (see Figure 14.14). Structure 2 (Feature 26), which represents the only completely excavated Mesilla-phase structure at the site, had a floor area of 8.5 m^2 and contained three internal features, a hearth and two non-thermal pits. The partial excavations of Structure 1 (Feature 23) suggests that it had spatial dimensions similar to Structure 2. Structure 4 (Feature 22) and 5 (Feature 40) were not fully excavated and their floor areas remain unknown. In sum, the excavation evidence indicates a cluster of small-to-medium–sized pit structures, each of which likely contained one or two internal features. No post molds were found in association with these structures. Dense occupation middens and unambiguous storage features were also not found. While areas immediately adjacent to these structures were not excavated, more southerly areas, specifically Excavation Blocks 5 and 6, did contain relatively dense clusters of external thermal features. Several of these features (Features 31, 81, 82 and 83) have been radiocarbon-dated to the early to

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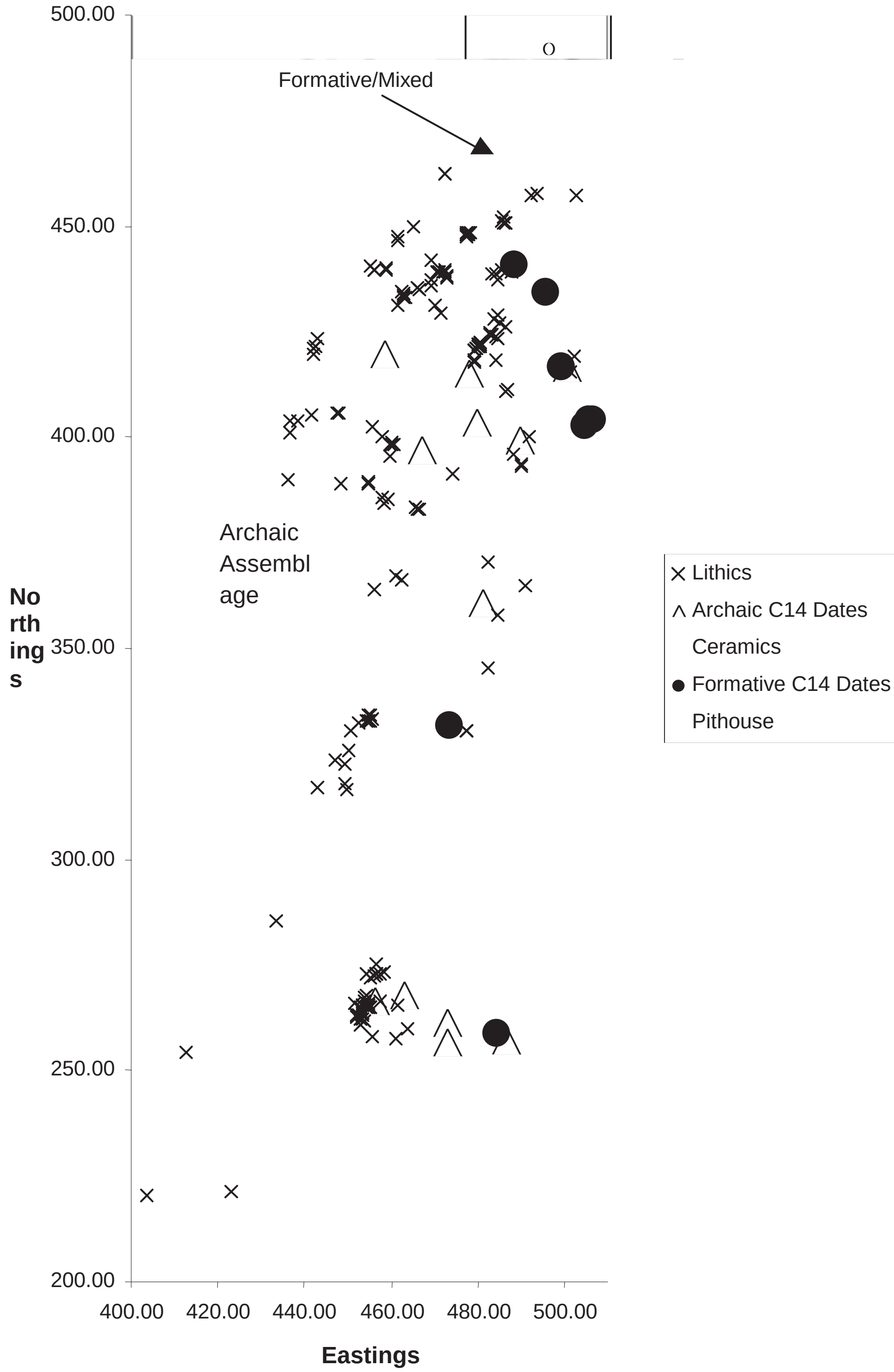

Figure 14.14 Total station point-plotted data from Orogrande 1 (LA 128699), showing the distribution of ceramics, lithics, radiocarbon dates, and pithouses. The box within the chart indicates the separation between the Archaic and Formative periods.

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middle Mesilla phase. The large dimensions of these thermal features suggests that they may have functioned as large hearths and/or roasting pits. In Whalen's (1994b) terminology, the early to middle Mesilla-phase occupation at Orogrande 1 is best defined as either a Class 2 or Class 3 small-house site (see Chapter 3 for a detailed description of these site classes). Thus, the early-to-middle Mesilla phase occupation of Orogrande 1 was of a somewhat greater intensity overall than was the earlier Fresnal phase occupation of the site. The differences in occupation intensity between these two components may reflect temporal changes in the social fabric, such as greater population densities, and more territorial circumscription during the Mesilla phase. The nature of the two occupations, however, was likely very similar, each reflecting repeated seasonal occupations of intermediate duration (Whalen 1994a).

Artifact Assemblage

A total of 898 durable artifacts was recovered during data recovery investigations at Orogrande 1, including 21 from the testing phase. These include 60 ceramics and 838 lithic artifacts (chipped and ground stone). In addition, biological remains were recovered from among the many samples collected from the field, and lipid residues were extracted from selected pieces of FCR.

Ceramic Artifacts

A total of 60 sherds, weighing 296.6 grams, was recovered from LA 128699 during data recovery excavations (Table 14.10). The sherds were recovered from seven proveniences including surface collection, non-feature units, and cultural features (23, 26, 35, 40, and 66). Sampling strategy for this assemblage consisted of eliminating all brownware sherds smaller than 2 cm in diameter. Sherds classified as too small were counted and weighed; no further analysis was conducted on these sherds. A cursory examination suggested that the too-small sherds were all most likely El Paso Brown. As shown in Table 14.10, the too-small sherds represented 25 percent of the total sherd count, but only 5.8 percent of the total sherd weight. The remaining ceramics (larger than 2 cm in diameter) were identified as El Paso Brown. No evidence of decorated pottery was identified in the LA 128699 assemblage.

All of the El Paso Brown sherds were tempered with coarse angular granite and had semi-friable paste fractures, brown paste colors, and brown surface colors. Two sherds had polished surfaces (one bowl fragment and one jar neck sherd). The remaining 43 sherds had plain interior and exterior surfaces. Although vessel surfaces are most typically scraped plain, to the point of leaving a rough surface with protruding temper grains (Miller 1989; Runyan and Hedrick 1987), lightly polished surfaces occasionally occur as well. Both bowls (n=1) and jars (n=44) were identified including body, rim, and neck fragments. Based on rim lip shapes (Figure 14.15), temper size, and surface treatment, it appears that at least three El Paso Brown jars are represented in the assemblage. Because the jar rim fragments are small, specific jar forms (e.g., necked jar, seed jar) could not be determined. No use-wear or residues were noted; therefore, vessel use can only be surmised. It is likely that the pottery was used for cooking and/or storage.

Table 14.10 Summary of Ceramic Types and Vessel Data for Orogrande 1 (LA 128699)

Ceramic Type	Vessel Form	Vessel Part	Count		Weight	
			n	%	g	%
El Paso Brown	Bowl	Body	1	1.7	8.1	2.7
	Jar	Body	39	65	241.6	81.5
		Neck	2	3.3	21.8	7.3
		Rim	3	5	7.9	2.6
Too small	Not analyzed	Not analyzed	15	25	17.2	5.8
Total			60	100	296.6	100

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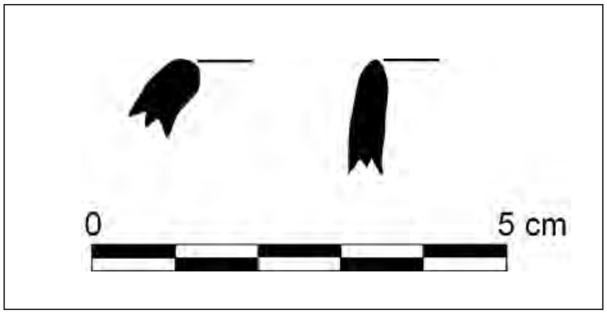

Figure 14.15 Ceramic rim profiles from Orogrande 1 (LA 128699).

The distribution of El Paso Brown sherds shows that the majority are from non-feature units (Table 14.11). The El Paso Brown rims shown in Figure 14.15 correspond to Whalen's (1993) rim morphology as tapered/pinched and tapered/flattened. The rim having a more flattened profile is from Feature 66. The other two rims, one of which is shown in Figure 14.15, are from subsurface contexts in non-feature excavation units. Nevertheless, all of the rims appear to be tapered from the neck to lip corresponding to Whalen's (1993) rim seriation as Mesilla phase. Only two of the features containing ceramics produced absolute chronometric dates; both Structures 1 and 2 produced middle Mesilla-phase dates. Most of the Formative-period radiocarbon dates from the site fall within the early to middle Mesilla phase time frame, although the calibrated dates from the site range up to A.D. 1290. Given the complete absence of decorated sherds from the site, however, along with observed rim morphology (see Seaman and Mills 1988; Whalen 1993), the ceramic assemblage suggests the Formative-period occupation at the site is restricted to the Mesilla phase. The absence of particular ceramic types frequently used to date assemblages (e.g., Chupadero Black-on-white, El Paso Polychrome, or Mimbres Classic Black-on-white) may, however, be a result of site function or sample size and vessel breakage rates rather than chronology. These issues are difficult to assess without better chronometric control gained from sources such as dendrochronological or archaeomagnetic dates, which are not available from this site.

Table 14.11 Summary of Ceramic Types by Provenience Data

Provenience	Feature Type	Ceramic Type	Count	Weight
23	Structure 1	El Paso Brown	2	18.4
		Too small to analyze	2	2.3
26	Structure 2	El Paso Brown	10	93.3
		Too small to analyze	5	6.6
35	Posthole	Too small to analyze	1	0.4
40	Structure	El Paso Brown	1	29.8
66	Thermal Feature	El Paso Brown	1	1.2
Units	N/A	El Paso Brown	22	82
		Too small to analyze	4	4.7
Surface Collection	N/A	El Paso Brown	9	54.7
		Too small to analyze	3	3.2
Total			60	296.6

Lithic Artifacts

Investigation at LA 128699 recovered 838 chipped stone and ground stone artifacts. Based on the radiocarbon dates from this site, there are at least two major components, one dating to the Late Archaic (primarily Fresnal phase) and one dating to the Formative period (primarily early to middle Mesilla phase). By plotting the distribution of surface lithics and ceramics, along with the location of pithouses and radiocarbon dates, it was possible to separate the two components into relatively discrete areas (see Figure 14.15). Based on the lithic analysis in Chapter 21, support for this distinction between the Archaic and Formative period was found in the site assemblage. For the purpose of this analysis, the Formative period component was determined to include all lithics greater than N450 and E480. In Chapter 21 this area is referred to as 128699F (for Formative) while the remainder is referred to as 128699A (for Archaic). This division is used here in the presen-

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tation lithic data for this site. Counts of lithic artifact types by material are given in Table 14.12. As this table shows, the vast majority of lithic artifacts from the site date from the Late Archaic component.

Chipped Stone and Tools

Investigations at LA 128699 recovered one projectile point, one biface, ten cores, and twenty retouched tools. The majority of these were recovered from the Late Archaic portion of the site, including the point, the biface, and nine of the cores. The projectile point is a whole chert dart point consistent with the Late Archaic San Pedro type initially identified by Sayles and Antevs (1941) and found throughout the Southwest during the Late Archaic (Huckell 1988, 1995; Mary 1998; Sliva 1999; Van Hoose 2000). Also recovered was a distal fragment of a chert biface. The biface is classified as Stage V, exhibiting advanced reduction with regular margins and pressure flaking.

Twenty retouched tools were recovered, dominated by chert (Table 14.13). The 14 retouched tools recovered from the Archaic (128699A) portion of the site are dominated by scrapers of various configurations (n=6) and more expedient retouched pieces (n=6). Also present were a chopper of igneous material and a chert projection (a flake showing formal retouch that isolates a projecting bit possibly used as a graver). Tools analyzed from the Formative/Mixed portion of the site (128699F) show a similar distribution, including two scrapers, two retouched pieces, and a chopper.

Cores and Core Tools

All but one of the ten cores collected from LA 128699 were recovered from the Archaic portion of the site. These include mostly multidirectional and bi-directional cores (Table 14.14), suggesting an opportunistic core reduction strategy.

While chert dominates the debitage assemblage (see below) and outnumbers silicified shale by an approximately three-to-one ratio, these materials make up equal portions of the core assemblage (Table 14.15). Core materials are dominated by silicified shale (n=4) and cherts, including local Rancheria chert (combined n=4). One bi-directional silicified shale core shows battering wear consistent with use as a chopper.

Two possible limestone cores are also present. These artifacts are extremely weathered and eroded, but maintain a vaguely faceted appearance that strongly suggests that they are cores. The limestone observed in all US 54 assemblages is quite soft and appears weathered to greater or lesser degrees.

Debitage

A total of 735 pieces of lithic debitage was analyzed from LA 128699. A little over one-quarter of the debitage was collected from the surface (n=195), while the majority (n=540) was collected from subsurface contexts. These are discussed according to the spatial component of the site from which they were recovered (i.e., LA 128699A and LA 128699F).

A total of 577 pieces of lithic debitage were analyzed from LA 128699A, a medium-sized Late Archaic assemblage. About one-third of the debitage was collected from the surface (n=187), while the majority (n=390) was collected from subsurface contexts. Material types include 57 percent chert (n=327), 18 percent silicified shale (n=105), 14 percent rhyolite (n=79), and five percent quartzite (n=28). The remaining six percent of lithic debitage was derived from granite, igneous material, limestone, obsidian, and quartz crystal. As with the other medium-sized Archaic-period assemblage (LA 128700A), flake sizes were very small, with high-quality material and is consistent with tool manufacture and bifacial reduction.

A total of 158 pieces of lithic debitage were analyzed from LA 128699F, a medium-sized mixed assemblage (Late Archaic mixed with the Formative period). Only five percent of the debitage was collected from the surface (n=8), while the majority (n=150) came from the subsurface. Material types include 60 percent chert (n=95), 13 percent silicified shale (n=20), nine percent rhyo-

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Table 14.12 Lithic Artifacts Recovered from LA 128699, Separated by Artifact-Based Spatial Component

Spatial Component	Grouped Materials	Proj. Point	Biface	Core	Retouched Tool	Debitage	Mano/ Handstone	Metate/ Grinding Slab	Unknown Ground Stone	Row Total
Archaic (128699A)	Unknown material					1				1
	Chert	1	1		11	319				332
	Granite					3	1	6	2	12
	Igneous				1	21	1		1	24
	Limestone			2		10	1			13
	Obsidian					1				1
	Quartz crystal					2				2
	Quartzite					28				28
	Rhyolite				2	79				81
	Rancheria chert			3		1				4
	Sandstone						7	29	19	55
	Silicified shale			4		101				105
Archaic Total		*1*	*1*	*9*	*14*	*566*	*10*	*35*	*22*	*658*
Formative/ Mixed (128699P)	Chert			1	3	103				107
	Granite							1		1
	Igneous				1	13				14
	Limestone					3	1		1	5
	Quartz crystal					1				1
	Quartzite					12				12
	Rhyolite				1	14				15
	Sandstone								1	1
	Silicified shale				1	23				24
Formative/Mixed Total				*1*	*6*	*169*	*1*	*1*	*2*	*180*

Table 14.13 Retouched Tools recovered from LA 128699

Spatial Component	Tool Type	Chert	Igneous	Rhyolite	Silicified Shale	Total
Archaic	Chopper		1			1
	Projection	1				1
	Retouched piece, miscellaneous	5		1		6
	Side scraper, single edge	1				1
	Side scraper, double edge	2				2
	Scraper, three edges			1		1
	Scraper, miscellaneous	2				2
Archaic Total		*11*	*1*	*2*		*14*
Formative/Mixed	Chopper			1		1
	Ovoid scraper	1				1
	Retouched piece, miscellaneous	2	1			3
	Side scraper, single edge				1	1
Formative/Mixed Total		*3*	*1*	*1*	*1*	*6*
Total		*14*	*2*	*3*	*1*	*20*

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Table 14.14 Directionality of Cores Collected from LA 128699

Spatial Component	Bidirectional	Multidirectional	Unidirectional	Unknown	Grand Total
Archaic	3	4	1	1	9
Formative/Mixed		1			1
Total	3	5	1	1	10

Table 14.15 Core materials at LA 128699

Materials	Bidirectional	Multidirectional	Unidirectional	Unknown	Total
Chert		1			1
Limestone		1		1	2
Rancheria chert	1	2			3
Silicified shale	2	1	1		4
Total	3	5	1	1	10

lite (n=14), eight percent igneous material (n=13), and eight percent quartzite (n=12). Additionally there were three pieces of limestone and a piece of quartz crystal. Compared to 128699A, the material is larger and thicker but the types are similar. This might be because the Formative occupants opportunistically reused the abundant high-quality material left by the Archaic inhabitants, or because most of the mixed portion of this site is actually Archaic in age. The lithic assemblage is consistent with tool manufacture and general lithic usage. See Chapter 21 for more information on this site and how it compares to the other sites in the study area.

Ground Stone

Seventy-one pieces of ground stone were recovered from LA 128699; only four of these were recovered from the portion of the site tentatively identified as Formative/Mixed. This does not necessarily mean that all ground stone is attributable to the Archaic component, but mano forms and ground stone materials suggest a possible Late Archaic origin for these materials (see below). Twenty-four pieces of ground stone were too small and fragmentary to assign to an artifact class.

Manos and Other Handstones

Only eleven artifacts identified as handstones were recovered, and all but one of these were within the "Archaic" portion of the site. Of these, one was too incomplete to assign to a specific artifact class but was identified as a handstone on the basis of a convex grinding surface, and four more were identified as manos but were too fragmentary to make further morphological assessments. One piece of abraded limestone was recovered, which was too small to be a mano; the function of this artifact is undetermined. The remaining five artifacts were classified as manos and were sufficiently complete to determine cross-sectional shape. These include three wedge-shaped cross-sections, one triangular cross-section, and one with an ovate cross-section exhibiting parallel grinding surfaces.

Metates and Other Grinding Slabs

Thirty-six fragments of metates and netherstones were recovered and analyzed from LA 128699, the large majority of these originating from the "Archaic" portion of LA 128699; only one was recovered from the "Mixed/Formative" area of the site (Table 14.16). Most of these are fragmentary (less than 33 percent complete). These artifacts are divided into two main kinds of grinding slabs: metates (including basin, slab, flat, and indeterminate metate forms) and netherstones. Metates are large grinding stones used with manos for large-scale or intensive grinding purposes, usually involving food processing. Netherstones are smaller stones, usually quite thin (approximately 10 mm or less), with grinding surfaces too small to represent significant food preparation; these may have been used for grinding minerals and pigments. Basin forms (n=6) are identified on the

Table 14.16 Grinding Slab Forms Represented in LA 128699 Assemblage, by Completeness

Spatial Component	Completeness	Basin Metate	Flat Metate	Slab Metate	Metate (indeterminate)	Netherstone	Total
Archaic	Low	2	1	7	3	17	30
	Medium	4				1	5
Archaic Subtotal		6	1	7	3	18	35
Formative/Mixed	Low			1			1
Formative/Mixed Subtotal				1			1
Total		6	1	8	3	18	36

basis of markedly concave grinding surfaces, while slab forms (n=8) are those metates with relatively flat grinding surfaces on otherwise unprepared tabular stone slabs. Forms of three metate fragments could not be determined, and one metate fragment was simply identified as "flat-surfaced" but could not confidently be assigned to the slab metate category because of its extremely fragmentary nature. The netherstone fragments identified here are almost all small, very thin (approximately 10 mm) tabular pieces of sandstone showing flat grinding surfaces; only one was made of granite (Table 14.17).

None of the metates exhibit a high degree of preparation; most were relatively unprepared slabs. Most of the basin forms identified in the US 54 assemblages likely began as simple slab metates, acquiring their deeply concave grinding surfaces through extensive use. These forms are consistent with the dominance of small one-hand manos.

Temporal Placement of the Ground Stone Assemblage

Carmichael (1986) indicates possible associations between certain mano forms, ground stone materials, and time. He notes two patterns: Archaic ground stone assemblages appear to have more manos with wedge-shaped and triangular cross-sections and also appear to use more sandstone than later Formative sites. The ground stone assemblage at LA 128699 conforms to this Archaic pattern. Despite the small mano sample, those that were recovered are overwhelmingly wedge-shaped and triangular in cross-section. In addition, sandstone dominates the grinding slab assemblage. These data suggest that the LA 128699 ground stone assemblage is largely attributable to the Late Archaic component of the site, although it is certainly possible that later occupants reused earlier ground stone artifacts. This is particularly likely due to the generally large and bulky nature of these implements. Further discussion of mano morphology and ground stone materials in the greater context of the US 54 project sites can be found in Chapter 21.

Biological Remains

Biological remains from LA 128699 derive from 14 pollen samples, 28 flotation samples, nine lipid residue samples, and 12 faunal remains.

Archaeobotanical

A total of 14 pollen samples from LA 128699 was examined, representing a variety of features, including both thermal features and two of the pithouses. Pollen preservation at the site was generally quite poor, with concentration values ranging 540–15,882 fossil grains/ml of sediment. It appears that sediments at this site have been oxidized to a greater degree than any other site in the project area. Interpretations must be made with

Table 14.17 Grinding Slab Forms Represented in LA 128699 Assemblage, by Material

Material	Basin Metate	Flat Metate	Slab Metate	Metate (indeterminate)	Netherstone	Total
Granite		1	4	1	1	7
Sandstone	6		4	2	17	29
Total	6	1	8	3	18	36

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caution because of differential preservation demonstrated by the low concentration values.

Dominating the pollen assemblages were native species whose grains were probably introduced into the site sediments primarily through natural agency (*Artemisia*, low spine Asteraceae, Cheno-Ams, Poaceae, and *Juniperus*, along with lower frequencies of high spine Asteraceae, *Cirsium*, Liguliflorae, *Boerhaavia*, *Ephedra*, Fabaceae, Gentianaceae, Lamiaceae, Liliaceae, Polygonaceae, Sphaeralcea, *Acacia*, *Pinus*, *Quercus*, and *Salix*).

Possible economic species include Brassicaceae (mustard family), *Eriogonum*, *Vitis*, *Prunus*, and *Rhus*, but occur in low frequencies (1.0–3.0 percent). The presence of *Prunus* pollen is especially interesting, as this species is not native to the immediate area, and its pollen is not easily transported. Also of interest are two samples (one from Structure 3, the Fresnal-phase pithouse, and another from Feature 81, a Mesilla-phase large thermal feature) that contained relatively high percentages of grass pollen. A number of grasses have important economic uses in the region, for both food and matting, and increases in pollen from these plants may indicate the past use of these materials. A sample from Feature 33 (a large thermal feature, and the only Hueco phase feature from the site), yielded a relatively high percentage (3.5 percent) of high spine Asteraceae (sunflower type) pollen. This type is normally rare in pollen samples, and its occurrence in the sample may signal its use by the ancient site inhabitants. See Chapter 25 for more information on the pollen remains from this site and how they compare with those from the other US 54 sites.

Macrobotanical remains were recovered from the 28 flotation samples that were processed. Preservation was not good, and 21 of the samples did not contain economic species. All samples contained charcoal and the majority of the charcoal found was *Prosopis glandulosa* with low amounts of *Atriplex canescens* and Gramineae stem. Three different species of potential plants identified include four *Amaranthus* sp., three *Portulaca* sp., and one *Echinocereus* sp. seed. No evidence of domesticated plants was found at the site. See Chapter 24 for more information on the macrobotanical remains from this site and how they compare with those from the other US 54 sites.

Lipids

Lipid residues were extracted from eight of nine fire-cracked rock samples submitted for analysis. The samples yielding detectable residues came from Features 3, 25, 28, 33, 55, 70, 81, and 82. Residue identifications included one prepared from foods of very high fat content suggesting seeds (Feature 28, age unknown), three from foods of moderate-high fat content likely from species such as Texas ebony (Feature 15, age unknown; Feature 70, Fresnal phase; and Feature 82, early to middle Mesilla phase), and two from foods of medium fat content suggesting species such as mesquite or maize (Features 33, Hueco phase; and Feature 81, early to middle Mesilla phase). All of the above six samples are likely from plant materials as each had a moderate to high frequencies of very long chain saturated fatty acids (VLCS). The remaining three residues fell on the border between medium and moderate-high fat content foods (Features 3, 33, and 55; all Fresnal phase). The sample from Feature 33 contains a level of C16:1 greater than 10 percent suggesting the combination of bird and plant remains was utilized, but the preparation and simulated long term decomposition of an experimental cooking residue is necessary to make this designation conclusive.

Faunal Remains

Preservation at Orogrande 1 was poor, and only a small amount of faunal remains was recovered from the site (Table 14.18). The majority of the remains were unidentified bird/small mammal; most of these are likely mammal and probably include at least some rabbit remains. The two identified fragments include one jackrabbit and

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Table 14.18 Faunal Remains from Orogrande 1 (LA 128699)

Taxon	NISP	Wt (g)	Burned
UID Bird/Small Mammal	10	0.1	10
Lepus californicus (Black-tailed jackrabbit)	1	0.4	
Odocoileus sp. (Mule or White-tailed deer)	1	N/A	

one deer. Given the paucity of faunal remains from the site, little can be said concerning patterns of hunting and meat subsistence associated with this site's occupations, although it is likely the focus was on rabbits, with occasional hunting of deer, which were probably more plentiful in the uplands near this site as opposed to the more open, desert-floor setting below.

Site Chronology

As already discussed above, radiocarbon dates and ceramics indicate up to four phase-level components at the Orogrande 1 site. These include two Late Archaic components, including both Fresnal- and Hueco-phase occupations, and one or two Formative-period components, one dating from the early to middle Mesilla phase, and another dating anywhere from the late Mesilla phase to the early El Paso phase. Based on the age distribution of the radiocarbon dates (Table 14.19, Figure 14.16), analysis of lithic debris, and absence of decorated ceramics, most of the remains from the site date from the Fresnal phase, with a secondary occupational peak during the early to middle Mesilla phase. The two other components represent extremely minor occupation of the site during the Hueco phase and, probably, late Mesilla phase.

Site Interpretation and Summary

Orogrande 1 (LA 128699) is the second largest of the US 54 sites and had a long and complex occupational history. Use of the site began early in the Late Archaic Fresnal phase and continued through the time span of this phase. Much of this occupation appears to have been small-scale and short-term with archaeological remains mostly in the form of thermal features, chipped stone debris, and burned rock. Ephemeral shelters were probably constructed as part of these occupations but left no archaeological traces. At some point during the Fresnal phase, at least one small pithouse was constructed at the southeastern end of the site, and surrounding it is a cluster of features, at least some of which are probably associated with the structure occupation. This event marks a somewhat greater investment in the occupation of this locality than is evident in the Fresnal-phase remains scattered elsewhere across the site. The Fresnal-phase structure is similar in size to those from the Keystone Dam site in El Paso, which includes remains from Fresnal-phase base-camps and is larger on average than Late Archaic pithouses known from basin floor settings (see Chapter 3). Only one pithouse dating from this phase was encountered at Orogrande 1, indicating that pithouse construction was a very limited, historically momentary episode during the Fresnal-phase occupation of this site. The builders' purpose remains unknown. Possibilities include attempting to found a somewhat larger and longer-term, base-camp type settlement; being part of a more dispersed settlement that included contemporary pithouses located outside the LA 128699 boundaries; or establishing a somewhat more substantial structure in their isolated camp. Judging from the range of radiocarbon dates and the archaeological remains themselves, the Fresnal-phase component at the site appears to have formed through many repeated, small-scale, seasonal encampments over a long span of time, perhaps over more than a millennium.

During the subsequent Hueco phase, there was almost no occupation at this site. Only a single feature at Orogrande 1 dates from this time frame. Why this occupational hiatus occurred is unknown, but during the succeeding Mesilla phase utilization of the site once again picked up. Like the earlier Fresnal phase, the Mesilla-phase component may have formed as a result of repeated, small-scale occupations. Yet this occupation

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Table 14.19 Radiocarbon Dates from LA 128699

Feature	Beta #	Date type	Conventional Radiocarbon Age (B.P.)	Calibrated (2-Sigma)
87	161808	Standard	810 ± 60	A.D. 1050–1100/1140–1290
79	161809	Extended count	870 ± 90	A.D. 1000–1290
104	161817	Standard	1120 ± 60	A.D. 780–1020
26 (Structure 2)	161800	Standard	1310 ± 70	A.D. 620–880
23 (Structure 1)		Standard	1330 ± 70	A.D. 610–880
83	161805	Standard	1420 ± 60	A.D. 540–690
81	161803	AMS	1490 ± 40	A.D. 460–480/520–650
82	161804	AMS	1550 ± 40	A.D. 420–610
78	161815	Extended count	1630 ± 100	A.D. 220–640
31	161802	AMS	1650 ± 40	A.D. 330–460/480–520
33	161801	AMS	2010 ± 50	160 B.C.–A.D. 90
3	161796	AMS	3010 ± 40	1390–1120 B.C.
43 (Structure 3)	161807	AMS	3490 ± 40	1910–1700 B.C.
70	161814	AMS	3490 ± 40	1910–1700 B.C.
47	161819	Standard	3520 ± 60	2010–1690 B.C.
98	161811	Standard	3580 ± 60	2130–2080/2060–1760 B.C.
25	161797	AMS	3600 ± 50	2120–2090/2050–1870/1840–1780 B.C.
20	161798	Standard	3600 ± 80	2190–2170/2150–1740 B.C.
92	161818	Standard	3610 ± 60	2140–1770 B.C.
43 (Structure 3)	161806	AMS	3660 ± 40	2140–1920 B.C.
38	161810	AMS	3720 ± 40	2210–2010 B.C.
55	161812	AMS	3750 ± 60	2330–1970 B.C.
102	161816	AMS	3750 ± 50	2300–2020 B.C.
58	161813	Standard	3870 ± 60	2480–2140 B.C.

was much more spatially restricted, with almost all of the Mesilla-phase remains concentrated in the northern portion of the site. Moreover, during the middle portion of the Mesilla phase, the site's occupants constructed several pithouses in this locality and radiocarbon dates indicate that at least two of these (Structures 1 and 2) are probably contemporary or at least very close in time. These structures are both larger than the Fresnal phase pithouse at the opposite end of the site, and this apparent pithouse hamlet during the Mesilla marks a more substantial investment in site architecture. This in turn suggests that the group inhabiting the site at this time was perhaps somewhat less mobile than their Frensal-phase predecessors and may have operated in smaller, more circumscribed group territories. Still, the occupation appears to have been short-term and seasonal, judging from the low density of Mesilla-phase debris on the site and the absence of midden deposits associated with this occupation.

Following the middle Mesilla phase, there was a later Formative presence at the site, as indicated by radiocarbon determinations that, in the absence of diagnostic artifacts, may be dating materials falling anywhere from the late Mesilla to early El

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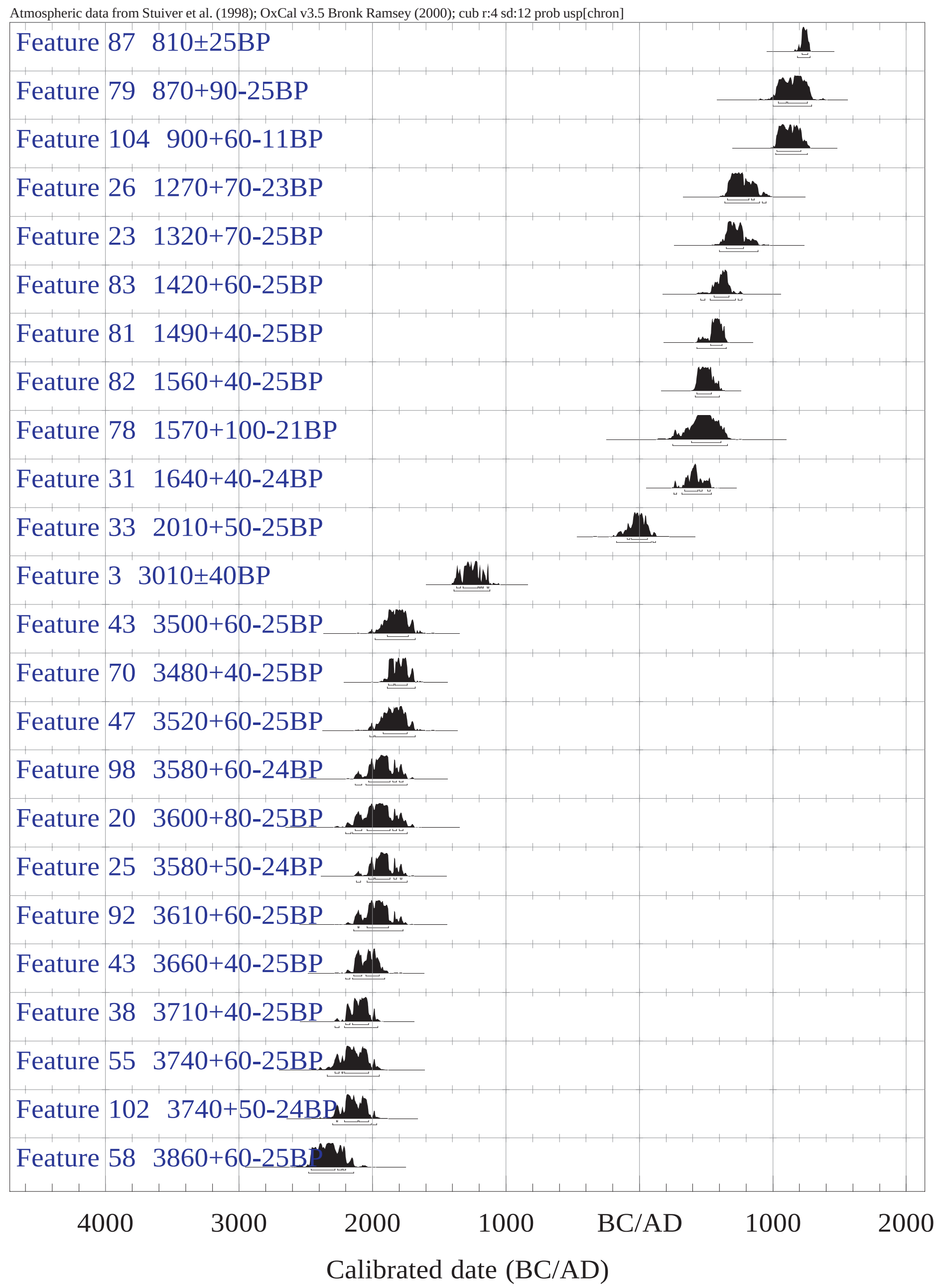

Figure 14.16 Radiocarbon dates for Orogrande 1 (LA 128699).

Paso phases. Like the earlier Hueco-phase component, this later Formative episode involved only extremely small-scale, perhaps transitory, use of the site.

All of the site's occupants were involved in food processing. As part of these tasks, they dug hearths and roasting pits and cooked many meals at the site. Perhaps they used some of these pit facilities for other purposes as well (such as warming fires, sweat baths, etc.). Judging from lipid residues extracted from selected specimens of FCR, at least some of these thermal pits were

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used to cook a variety of foods, including both plant and animal species that were probably hunted and collected in the site's vicinity.

What were the factors that attracted people to this locality, and that kept them coming back? A complete answer to this question remains elusive, but one key factor probably had to do with local drainage patterns. Orogrande 1, Orogrande 2 (LA 128700, see Chapter 15) and LA 128701 (see Chapter 18) are situated in a locality where precipitation runoff from two sources is concentrated. Here, the main bajada apron of the Jarilla Range, which approaches these sites from the northwest, converges with a smaller alluvial fan that blankets the lower slopes of an unnamed, outlying spur of the Jarillas located immediately to the east of these sites (see topographic maps in Volume 3). This landform configuration was such that occupations here were positioned especially well to take advantage of runoff from these two alluvial fan sources. Given that water was the most critical resource in this desert environment, even a slightly greater accumulation of precipitation runoff in any one locality would have made the sites especially attractive to prehistoric inhabitants of this arid landscape.

These sites were also located within easy reach of three different environmental zones, each of which offered a somewhat distinct range of resources. These include the rugged uplands of the Jarillas (and its nearby, outlying spur just east of these sites), where key resources such as succulents, deer, and bighorn sheep were probably concentrated. The alluvial fan zone is comparatively resource-poor, but does contain some of the same plants and animals present on the basin floor (in generally lower frequencies), along with high concentrations of the medicinal plant, creosote bush. Finally, the desert floor is located only approximately 2 km from these sites, and it was to this zone that these sites' occupants probably moved in the summer, when monsoonal rains produced a relative abundance of edible plants and made possible the rudimentary form of horticulture practiced during the Late Archaic period and Mesilla phase.

Recommendations

Investigations at Orogrande 1 (LA 128699) have fulfilled the goals outlined in the data recovery plan, and the proposed construction activities will have no effect on cultural resources at this site. Fencing along the right-of-way edge is recommended to ensure that sensitive features documented immediately to the west and north of the impact area are not disturbed during construction. Some of these features outside the right-of-way contain significant, subsurface remains that could shed additional light on this site's occupational history. Accordingly, any future ground-disturbing activities in the site outside the impact area, which fall under appropriate federal or state regulations, should be preceded by further testing and, if necessary, a data recovery plan.

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Chapter 15

OROGRANDE 2 (LA 128700)

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Introduction

LA 128700 is a Jornada Mogollon occupation site in the south-central Tularosa Valley (Figure 15.1). Situated on the lower bajada of the Jarilla Mountains, the site's surface ranges from nearly level to a slightly sloping southern grade.

Mesquite-stabilized coppice dunes (0.50–1.0 m high) cover much of the site, interspersed with uneven interdune surfaces. A few shallow, broad arroyos drain the surface towards the south-southwest. Dunes and sheet sand obscure nearly 50 percent of the site surface. Interdunal areas without accumulated sheet sand deposits contain a low density of gravel and caliche nodules on the surface. Surface soils are mainly eolian sands, though in the deeper interdunal areas some sandy loam deposits are exposed.

Flora on the site consists of mesquite, creosote, tarbush, fourwing saltbush, broom snakeweed, narrow leaf yucca, dropseed grass, gramma grass, and various weeds.

LA 128700 lies on both federal (BLM) and private lands. A planned water detention pond, designed and situated so as to support the highway construction project, defined the impact area at this site. An effort was made to record the entire site; however, because the site extends onto private land to the north the site boundary is not certain. The northern half of the site, outside of the impact area, was not investigated as part of testing and data recovery efforts.

Figure 15.1 Investigations at Orogrande 2 (LA 128700).

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Previous Investigations

Michalik (2000) initially recorded the site as a small, sparse Late Formative Jornada Mogollon lithic and ceramic scatter, measuring roughly 15 m north-south x 20 m east-west (300 m^2). Thirty-seven artifacts were reportedly observed on the site surface, although only 35 were described in the report, including 30 El Paso brownware body ceramics, one Chupadero Black-on-white, two possible El Paso Bichrome sherds, one black chert secondary flake, and one gray chert secondary flake. No surface features were documented.

Testing Investigations

TRC undertook testing at LA 128700 during the late summer of 2000 (Figure 15.2). During testing, the surface was carefully inspected to determine the actual extent and distribution of surface artifacts and features. At this time, the site boundaries were greatly expanded and numerous features were documented. A site datum was then established, and a topographic map of the site was produced using a total station. All surface artifacts were analyzed in the field, and features were described and trowel tested to determine their depth potential. Test excavations, involving shovel testing, were carried out. A total of 10 shovel tests, each measuring 50 x 50 cm, was excavated on the site.

Surface investigations

Site boundaries were expanded considerably as a result of the testing phase, and numerous surface features were documented. Cultural materials extended over a 253 m north-south x 188 m east-west area. The total site area was determined to be 24,211 m^2; 16,330 m^2 was within an area to be impacted by the water detention pond. Twenty-six features were identified, including eight within the impact area (Features 4–10 and 22) and 18 outside of the impact area (Features 1,2, 11–21, and 23–26) on BLM and private land (Table 15.1).

Nineteen artifact concentrations were also identified on the site (Table 15.2). The majority of these concentrations were documented in interdunal areas between mesquite-stabilized coppice dunes. The depth of deposits within these concentrations was not systematically evaluated. Some artifacts were observed eroding out of dunes or sheet sand deposits, and it appeared possible that these were indicators of more substantial, subsurface deposits.

Subsurface Testing Results

Ten 0.5 x 0.5-m shovel tests were excavated at LA 128700 (Table 15.3). The shovel tests exposed an area totaling 2.5 m^2. Cultural material was present only in one of the shovel tests (ST 8) and included one piece of fire-cracked granite at 30 cm bgs. A buried A horizon was, however, documented throughout the central portion of the site. This was considered to be an indicator of a stable land surface, one that might be associated with the Late Formative-period materials observed on the site.

Site Stratigraphy and Geomorphology

The site lies at the juncture of two alluvial fans, one that forms the bajada apron of the Jarilla Mountains to the northwest, and another that blankets the flanks of a detached spur of hills, located immediately east and southeast of the site. As such, the site has been subject to substantial deposition of alluvial sediments, although eolian reworking probably occurred between depositional events. Today, several small alluvial rills cut through the site. In addition, recent eolian activity has resulted in the development of mesquite coppice dunes that are generally less than one meter in height. Archaeological visibility is highest in the interdunal areas where the historic sands are the thinnest (or absent). Eolian deflation appears to have removed some of the prehistoric sediments in the interdunal areas, but preservation appears to be good beneath, and on the flanks of, the coppice dunes. Thus, the potential exists for cultural features to be buried in the subsurface.

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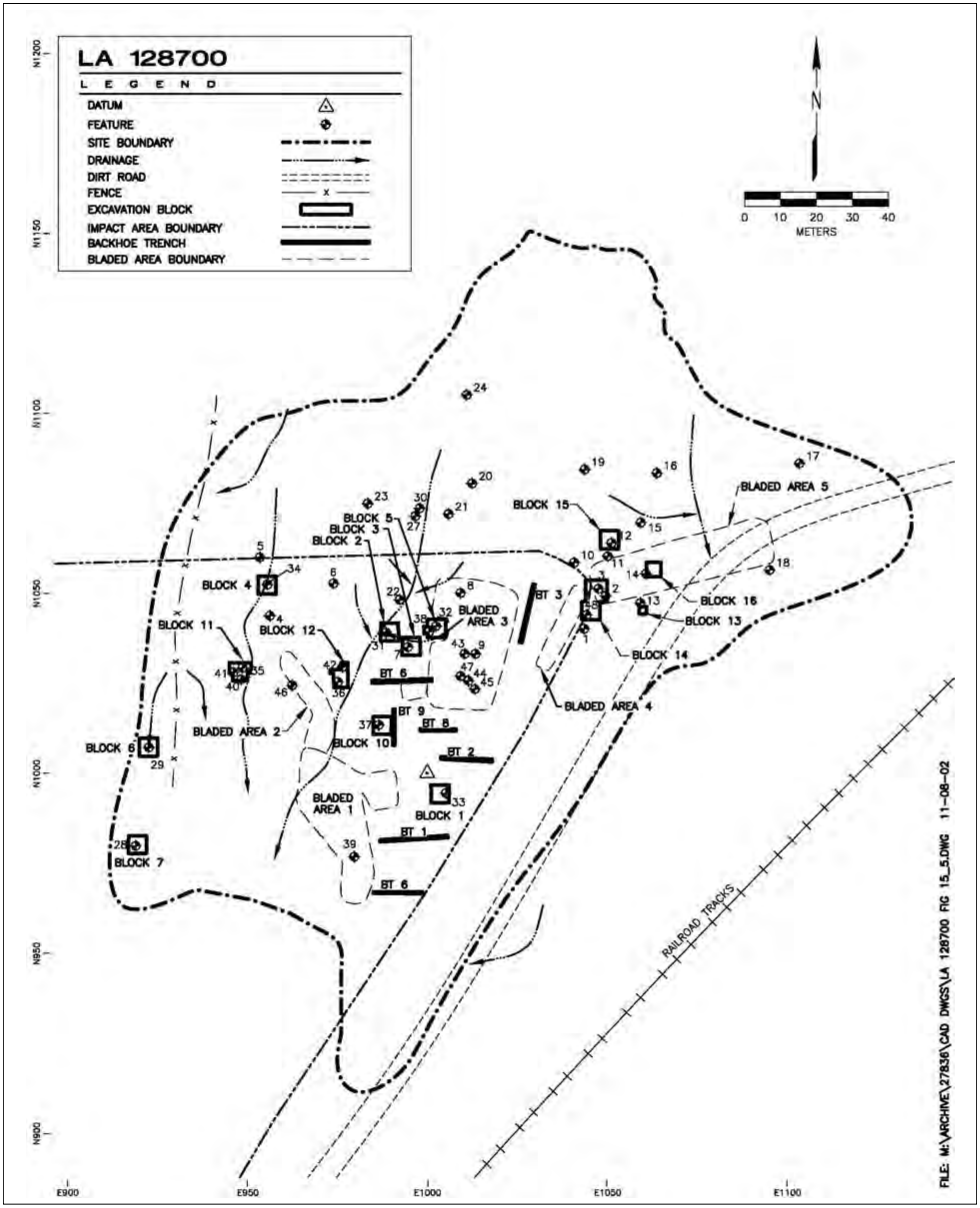

Figure 15.2 Orogrande 2 (LA 128700), testing phase map.

Table 15.1 Features Identified During Testing at LA 128700

Fea. No.	Location.	Type	NS (m)	EW (m)	Depth (m)	Inside ROW?	Cultural Materials
1	NE	Ash stain—potential structure	2	2	0.30+	No	20+ limestone and granite FCR
2	NE	Ash stain—potential structure	1.0+	2	0.15	No	1 tertiary chert flake
3	NE	Historic artifact scatter/midden	4	5	0.3	No	2 unspecific glass fragments, 7 clear bottle glass, 5 brown bottle glass, 5 purple bottle glass, 5 opaque bottle glass, 5 window glass, 3 wire fragments, 10 finishing nails, 1 railroad spike, 2 earthen wares, 1 crockery fragment
4	NW	FCR hearth	4	4	Surface	Yes	30 limestone, granite, and sandstone scattered FCR, 2 chert flakes, and 2 sandstone ground stone fragments
5	NW	FCR hearth	3	2	Surface	Yes	30+ limestone and granite FCR, and 1 purple chert secondary flake
6	NW	FCR hearth	0.4	0.6	0.10+	Yes	20+ FCR
7	Center	Ash stain	~1.0	>1.0	0.15+	Yes	1 limestone FCR
8	Center	FCR hearth	2	2	0.1	Yes	30+ limestone and granite FCR (1 limestone is >20 cm), 1 granite ground stone fragment, and 1 granite metate fragment
9	Center	FCR hearth	1	1.5	Semi-buried	Yes	15 FCR—large cobbles eroding out of dunal sands
10	NE	FCR hearth	2	3	Surface	Yes	40+ limestone and granite FCR
11	NE	FCR ash stain	3	3	0.05 m	No	100+ limestone and granite FCR (possible more than one feature)
12	NE	Ash stain	0.5	0.5	0.03	No	Stain adjacent to Feature 11
13	NE	Ash stain	0.5	0.5	0.12	No	Adjacent to dirt road
14	NE	FCR hearth	3	4	Surface	No	20+ large cobble FCR, 3 EPB ceramics, 2 flakes, and 1 granite ground stone fragment
15	NE	FCR hearth	0.5	0.7	0.25	No	20+ limestone FCR, and I limestone flake
16	NE	Ash stain	0.6	0.6	0.07	No	Ash stain> 1 m diameter with associated artifacts: 200+ scattered limestone FCR, IEPB ceramic and I black chert graver with spur
17	NE	Historic trash dump	2	2	Surface	No	Coal, brick, nails, porcelain, bottle glass (30+ clear, frosted, and 1 purple), metal fragments, bottle caps, bolts, and wood fragments
18	NE	Historic trash dump	6	4	Surface	No	200+ cans (meat, hole-in-top, sanitary, syrup), 30+ ceramic plate,10 aqua glass, 5 sun altered amber, 40 brown bottle glass, 20+ purple bottle glass, 2 corrugated tin, 10+ mason jar, 1 gallon jar, and I spoon
19	NE	FCR hearth	1	1.5	0.1	No	12 limestone FCR
20	Center	FCR hearth	2.5	2.5	Surface	No	50+ limestone and granite FCR, and 1 clear bottle base
21	Center	FCR hearth	2	2.5	Surface	No	40+ FCR
22	Center	FCR hearth	2	1	Surface	Yes	15+ limestone and granite FCR, and EPB ceramic
23	NW	FCR hearth	2	1	0.05	No	30+ limestone FCR
24	N	FCR hearth	1	1	0.1	No	20+ limestone and granite FCR
25	N	FCR ash stain	4	1.5	0.20+	No	50+ limestone and granite FCR, ash stain, EPB, estimated at>1.0 m diameter
26	N	FCR ash stain	5	3	0.15	No	Ash stain > 0.20 m diameter area with associated FCR: 50+ limestone FCR, and 15+ insulator glass in overall scatter of associated materials

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Table 15.2 Surface Artifact Concentrations at LA 128700

Artifact Concentration	Location	N/S (m)	E/W (m)	Cultural Materials
1	Southern end of site	2	2	10 EPB ceramics, I El Paso Polychrome body ceramic,1 El Paso Bichrome, and 1 Chupadero body ceramic
2	Southern end of site	4	2	6 EPB ceramics
3	Southern end of site	5	4	40+ EPB ceramics, and 2 El Paso Bichrome rim
4	Southern end of site	4	5	20+ EPB ceramics, and 1 Chupadero body ceramic
5	Southern end of site	4	2	12 EPB ceramics, and 1 Chupadero body ceramic
6	Center of site	2	3	3 EPB ceramics, and 4 limestone FCR
7	Northwestern portion of site	5	4	1 limestone core, 1 siltstone utilized flake, and 10+ limestone and granite FCR
8	Northwestern portion of site	4	5	1 quartzite flake, and 15+ limestone, granite, and sandstone scattered FCR
9	Northwestern portion of site	3	4	10+ scattered FCR and 2 sandstone metate fragments
10	Northwestern portion of site	7	8	20+ limestone and granite scattered FCR, 1 chert utilized flake, 1 limestone flake, 1 schist ground stone, 1 sandstone metate, and 1 sandstone mano
11	Northwestern portion of site	7	15	40+ limestone and granite FCR, 1 siltstone flake, 4 metate fragments (1 limestone, 3 sandstone), and I black chert core
12	Northwestern portion of site	10	15	40+ limestone and granite FCR, 1 siltstone flake, 1 chert flake, and 2 metate fragments (1 limestone, 1 granite)
13	Northwestern portion of site	4	2	15 limestone and granite FCR, 1 EPB ceramic, 1 siltstone flake, 1 granite metate fragment
14	Northwestern portion of site	12	6	30+ limestone, sandstone, and granite scattered FCR, 1 EPB ceramic, 1 granite pestle fragment, 1 sandstone metate fragment, and 2 granite mano fragments
15	Center of site	8	5	10+ scattered limestone FCR, 10+ EPB ceramics, and 1 siltstone flake
16	Center of site	10	10	30+ FCR, 2 flakes (1 chert, 1 limestone), 1 quartzite utilized flake, I basalt metate fragment, I siltstone core, and I large chert marginal flake tool
17	Northeastern portion of site	0.15	0.15	40+ limestone and granite FCR, I EPB ceramic, 1 core, and I flake
18	Northeastern portion of site	7	7	40+ scattered FCR and historic cans (potted meat, tobacco, and lard cans)
19	Center of site	10	6	40+ limestone FCR, I granite FCR, 1 siltstone marginal flake tool, 1 limestone hammer stone, and I purple bottle base

Geomorphic observations indicate that Historic, Organ III, and Organ I alluvial deposits are present at the site. Interdunal areas appeared to be eroded and consist of a narrow stratum of historic sands overlying an eroded Organ I stratum. Beneath the dunes, however, a thin Ab (Organ III) stratum overlies the eroded Organ I. The Organ I stratum caps La Mesa calcrete, varying in depth 50 cm–2.0 m below present ground surfaces. It was not clear during testing whether cultural occupations occurred directly upon an eroded Organ I surface or on younger sediments that have since been removed by erosion. The dating of the cultural remains to the Formative period indicates the latter scenario is more likely. Features were identified on top of the Ab horizon and Organ I stratum exposed in interdunal areas, indicating that these features were excavated at least into these strata.

The surficial deposit at the site (Unit 1) consists of a thin (0–0.10 m thick) veneer of historic sands

Table 15.3 Results of Shovel Testing at LA 128700

Test.	Location	Depth	Stratum 1	Cultural Evidence	Stratum 2	Cultural Evidence	Stratum 3	Cultural Evidence	Stratum 4	Cultural Evidence 4
1	E	0.50 m	Unconsolidated, historic, laminated, eolian sands (7.5YR614), surface to 0.12 m	None	Semi-compacted, sandy loam (7.5YR6/6), Organ III horizon, depth 0.12–0.22m	None	Compacted, sandy loam (7.5YR713) with caliche filaments, Organ I horizon	None		
2	Center	0.40 m	Unconsolidated, eolian, sandy loam (7.5YR6/6), surface to 0.02 m	None	Semi-compacted, historic, laminated, eolian, sandy loam (7.5YR5/6), depth 0.02–0.17 m	None	Semi-compacted, sandy loam humus (7.5YR5/5), A horizon, Organ III horizon, depth 0.17–0.22 m	None	Semi-compacted to compacted, sandy loam (7.5YR6/6) with moderate caliche nodules, Organ III horizon, depth 0.22–0.40 m, ends at caliche floor	None
3	Center	0.45m	Unconsolidated, eolian, sandy loam (7.5YR6/4), surface to 0.02 rn	None	Semi-compacted, historic, eolian sands (7.5YR6/4), depth 0.02–0.08 m	None	Semi-compacted, sandy loam humus (7.5Y/R 5/3), A horizon, Organ III horizon, depth 0.08–0.12 m	None	Semi-compacted, sandy loam (7.5YR6/6) with moderate caliche nodules, Organ III horizon, depth 0.12–0.45 m, ends at caliche floor	None
4	S	0.40 m	Unconsolidated, eolian, sands (7.5YR6/6), surface to 0.02 rn	None	Semi-compacted, historic, laminated, sandy loam humus (7.5Y/R5/8) with moderate caliche, A horizon, Organ III horizon, depth 0.02–0.13 m	None	Semi-compacted, sandy loam (7.5YR7/4) with moderate amount of caliche nodules, Organ III horizon, depth 0.13–.22 m	None	Semi-compacted, sandy loam (7.5YR7/4) with moderate amount of caliche nodules, Organ III horizon, depth 0.22–40 m	None
5	S	0.53 m	Unconsolidated, eolian sands (7.5YR6/4) with moderate to high amounts of caliche, surface to 0.11 m	None	Semi-compacted, historic, laminated, sandy loam humus (7.5Y/R5/3), A horizon, Organ III horizon, depth 0.11–0.20m	None	Semi-compacted, sandy loam (7.5YR6/6), Organ III horizon, depth 0.20–.35 m	None	Semi-compacted, sandy loam (7.5YR7/4) with few caliche nodules inclusions, Organ I horizon, depth 0.3–0.53 m	None

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Table 15.3 Results of Shovel Testing at LA 128700 (continued)

Test.	Location	Depth	Stratum 1	Cultural Evidence	Stratum 2	Cultural Evidence	Stratum 3	Cultural Evidence	Stratum 4	Cultural Evidence 4
7	S	0.65 m	Unconsolidated, historic, sandy loam (7.5YR6/6), surface to 0.02 m	None	Semi-compacted, eolian, sandy loam (7.5YR5/6), Organ III horizon, depth 0.02–0.08 m	None	Semi-compacted, sandy loam (7.5YR5/8), caliche filaments increasing with depth, Organ III horizon, depth 0.08–0.65 m	None		
8	S	0.60 m	Unconsolidated, eolian, sandy loam (7.5YR6/6), surface to 0.15 m	None	Semi-compacted, historic, laminated, eolian, sandy loam (7.5YR5/6), depth 0.15–0.40 m	1 granite FCR at 30 cm	Semi-compacted, sandy loam, humus (7.5YR6/3), Organ III horizon, depth 0.40–0.50 m	None	Compacted, sandy loam (7.5YR6/6) with moderate caliche nodules, Organ III horizon, depth 0.50–0.60 m	None
9	Center	0.50 m	Unconsolidated, historic, laminated, eolian, sandy loam (7.5YR6/6) with moderate caliche nodules on surface, depth surface to 0.10 m	None	Semi-compacted, sandy loam (7.5YR5/6) Organ III horizon, depth 0.10–0.25 m	None	Compacted, sandy loam (7.5YR7/7) with moderate caliche nodules, depth 0.25–0.50 m	None		
10	Center	0.55 m	Unconsolidated, historic, laminated, eolian, sandy loam (7.5YR687), surface to 0.20 m	None	Semi-compacted, historic, laminated, sandy loam (7.5YR6/6), depth 0.024).40 m	None	Semi-compacted, sandy loam, A horizon, Organ III horizon, depth 0.4–0.50 m	None	Compacted, sandy loam (7.5YR7/7) with moderate caliche nodules, Organ I horizon, depth 0.50–0.55 m	None

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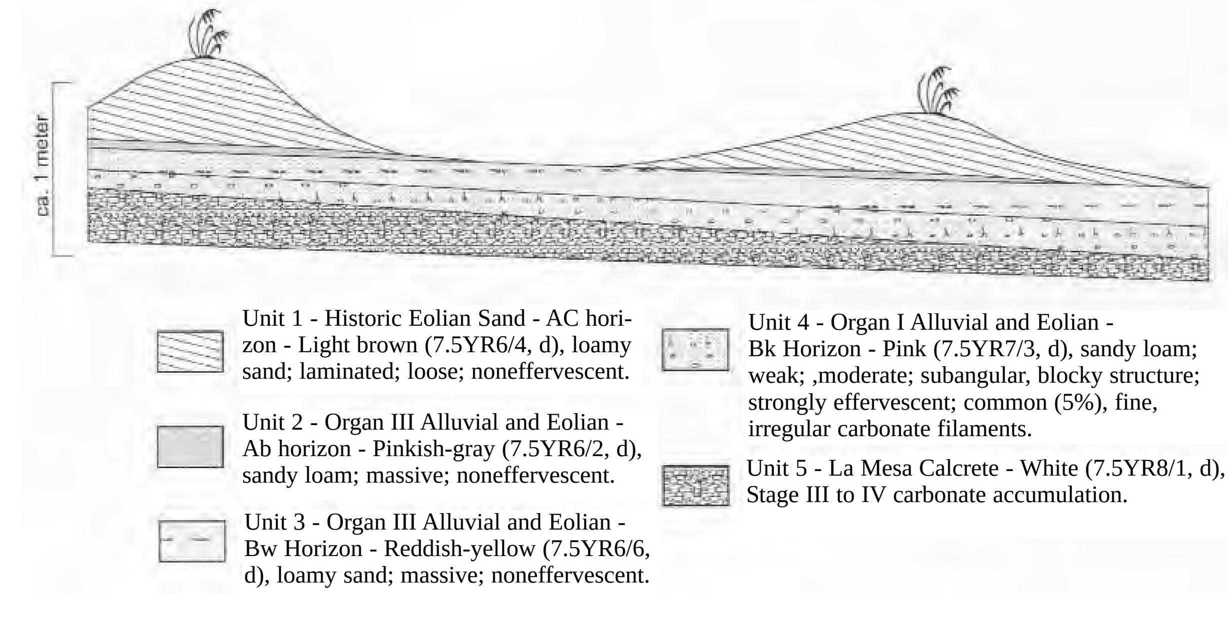

Figure 15.3 Representative Stratigraphic Profile at Orogrande 2 (LA 128700).

in interdunal areas that expands to more than one meter thick in some coppice dunes. These sediments are generally light brown to reddish-yellow (7.5YR6/4–6/6) and have a loamy sand texture. In general, the Unit 1 sediments are coarsely laminated and lack a significant gravel component. These surficial sediments appear to be historic in origin and probably date to within the last 100 years. For this reason they are considered to have low archaeological potential. It is possible, however, that some historic cultural materials may be incorporated into the sands.

On the site, cultural features were observed only in areas where Unit 1 was absent or very thin (e.g., in interdunal areas). Unlike the nearby Orogrande 1 site (LA 128699), located only a few hundred meters to the west, the interdunal areas on this site tend to be largely eroded. Only a skiff (0.03–0.05 m) of historic sand is typically present, not enough to significantly mask cultural materials or features. At the same time, exposed cultural materials are of questionable integrity.

In backhoe trenches and units that occur within or on the flanks of coppice dunes, Unit 1 is underlain by an approximately 0.10-m thick remnant of a Ab soil horizon (Unit 2). This unit is composed of a brown (7.5YR5/2) sandy loam. The A horizon was absent in the majority of the interdunal areas, probably because of alluvial and eolian erosion. The humate-enriched appearance of Unit 2 makes it quite apparent in contrast to the enclosing sediments. Sediments in the Ab horizon are a mixture of alluvial slope wash and eolian deposition. Alluvial deposition resulted in the presence of sparsely distributed pebbles throughout this unit and all other deposits lower in the profile. These pebbles are often calcareous in nature, but should not be confused with carbonates resulting from pedogenesis within the soil. Instead, they are the result of alluviation that has scoured calcareous sources further upslope. Though the majority of the sediments in this locale are likely alluvial, eolian reworking probably occurred between periods of alluvial deposition. Based on its stratigraphic position and association with the underlying Bw horizon (see Unit 3 below), this unit appears to correlate with the Organ III sediments (100–1,100 B.P.) described by Monger (1993) or the Q3 sediments (100–7,300 B.P.) described by Blair *et al.* (1990). The Ab horizon

is significant because it indicates a stable surface that supported vegetation and may have been especially suited to prehistoric inhabitants.

Underlying the Ab horizon in the coppice dunes is a 0.10–0.50-m-thick unit of light brown to reddish-yellow (7.5YR6/4–6/6) loamy sand (Unit 3). This unit lacks stratification or significant pedogenic accumulations, but the high chroma of these sediments suggests that they have been subject to minor pedogenic alteration. For this reason, Unit 2 is considered a cambic Bw horizon. In this region, a Bw horizon is typically associated with the Organ III (100–1,100 B.P.) eolian sediments described by Monger (1993). Thus, Unit 3 is tentatively correlated with Organ III sediments, but datable materials would be needed to verify this correlation. Unit 3 appears to be slightly thicker (0.50+ m) in the northern portions of the site than in the southern portions of the site (ca. 0.40-m thick).

Beneath the coppice dunes and in interdunal areas that are only moderately eroded, Unit 3 has a sharp contact with an underlying calcareous Bk horizon that is pink (7.5YR7/3) and has a sandy loam texture. In the majority of interdunal areas, this Bk horizon directly underlies the historic sands (Unit 1), an indicator that these interdunal areas are highly eroded. The pedogenic carbonate accumulations in this unit are equivalent to Stage I development (after Gile *et al.* 1966). Within the region, Stage I carbonates are typically considered to be middle Holocene in age. This corresponds to the Organ I unit (2,100–7,000 B.P.) in Monger's (1993) chronology, and part of unit Q3 (100–7,000 B.P.) in Blair *et al.* (1990). No cultural materials were observed in association with this unit during our study, but it is possible that intrusive features could be excavated into the unit.

The basal unit at site LA 128700 is the La Mesa calcrete. The calcrete was observed at the bottom of all of the backhoe trenches at a depth that varied 0.50–1.65 m below the surface. This unit is white to pinkish-white (7.5YR8/1–8/2) and has a clay loam texture. The calcrete provides a barrier that cannot easily be breached by the backhoe and is very difficult to penetrate with hand tools. Previous work in the region (Gile *et al.* 1981; Blair *et al.* 1990; Monger 1993) has proposed that the calcrete is Mid-Pleistocene in age (ca. 250,000 B.P.) and, thus, predates accepted dates for the human occupation of North America. For this purpose, the calcrete is considered to be the sterile level for archaeological excavations.

Data Recovery Strategy

TRC carried out data recovery investigations at LA 128700 in April 2001. A small follow-up phase of fieldwork was carried out in the northeastern corner of the site, beyond the impact area as originally defined, in December 2001. Both TEC and TRC staff carried out this follow-up phase. Data recovery began by relocating the datum established during testing and assigning it the grid provenience N1000 E1000, with an arbitrary elevation of 100 m. During data recovery, the surface assemblage was collected within the impact area, and a 15-m buffer zone to the east and north (Figure 15.4). Subsurface investigations involved a combination of hand-excavated trenches and blocks, backhoe trenching, and machine stripping of the entire site within the impact area (Figure 15.5). Areas not investigated by subsurface testing were all severely deflated to Organ I surfaces, were near a caliche dominated strata, or were at the margins of the site where surface archaeological remains were sparse. No features were encountered in the trench excavations.

A total of 16 excavation blocks, 11 shovel test pits, and six trowel tests were placed over and around features identified during site testing and data recovery (Table 15.4). Hand excavated areas totaled 262.25 m^2 during data recovery and an additional 2.5 m^2 during the testing phase. Backhoe trenches (n=5) excavated an additional 79.4 m^2 (Table 15.5). Hand and trench excavations excavated just over 2 percent of the site

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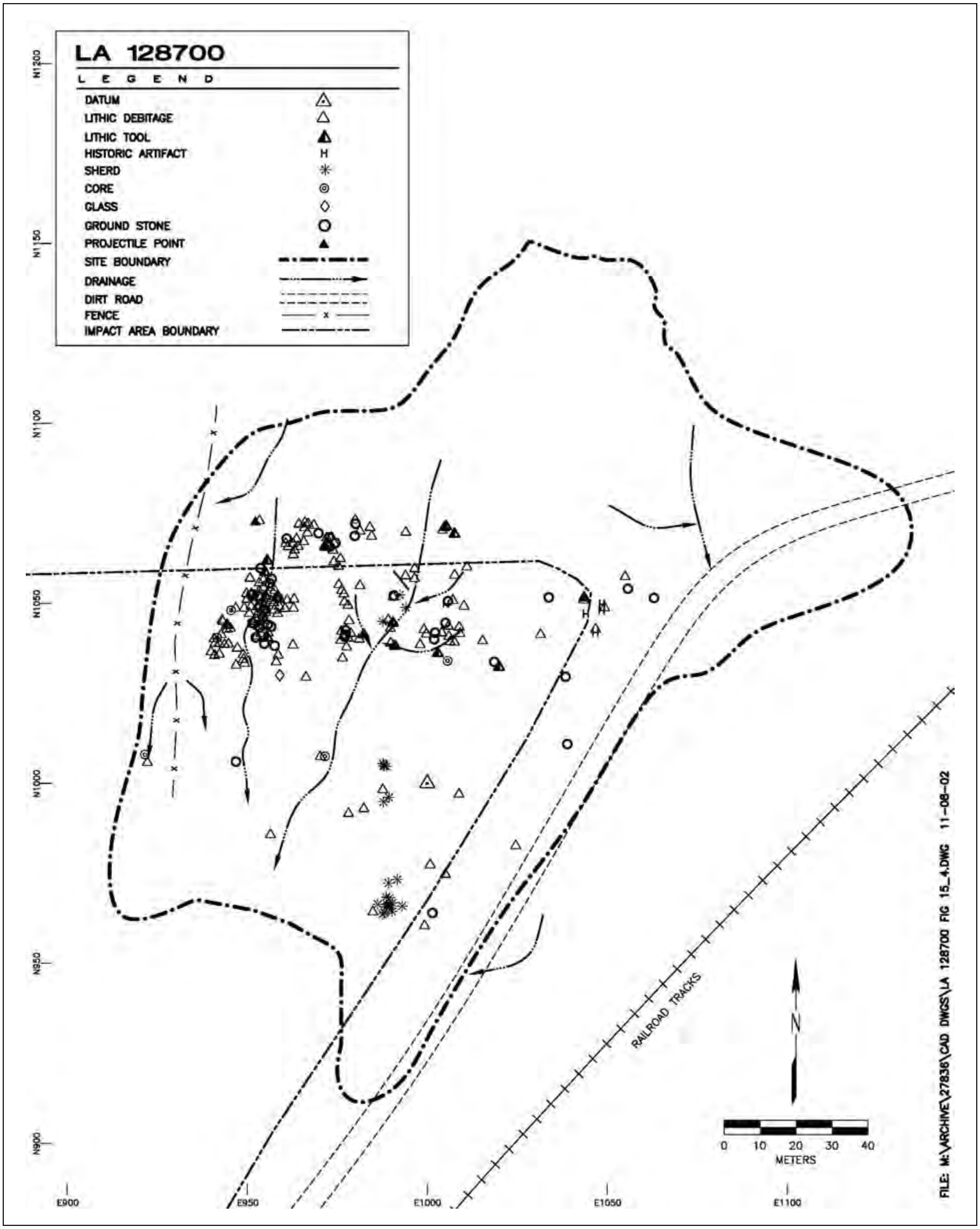

Figure 15.4 Orogrande 2 (LA 128700), showing surface artifacts.

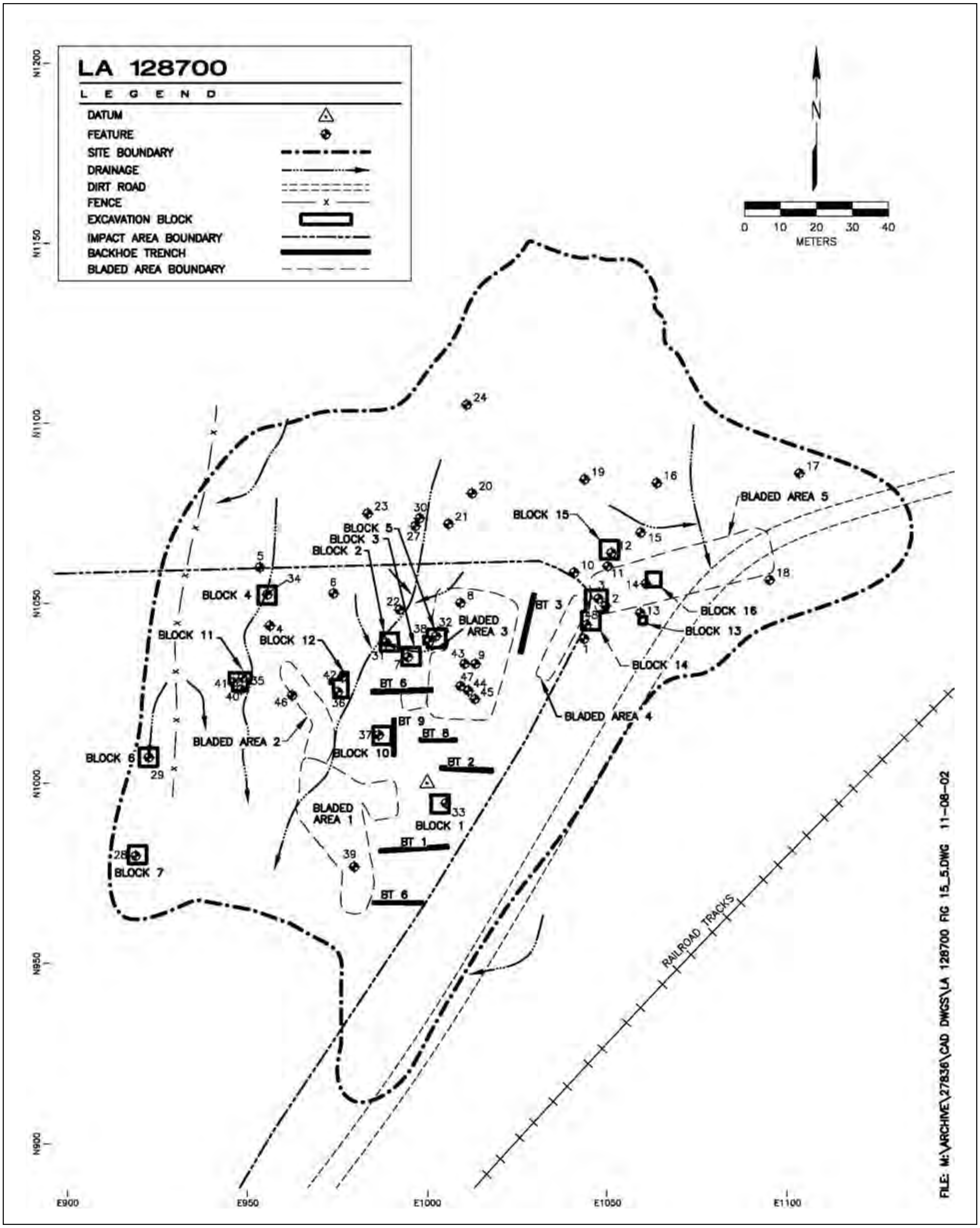

Figure 15.5 Orogrande 2 (LA 128700), showing all features and data recovery excavations.

within the impact area. After all hand and trench excavations were completed, this area was mechanically stripped. The soil stripping covered 40 percent of the site within the impact area.

During data recovery efforts, 20 additional features were encountered. Blocks measuring 5 x 5 m were excavated over Features 7, 11–12, 28–29, 31–38, and 40–42. A 2 x 2 m block was excavated over Feature 13, a 4 x 4 m block was excavated over Feature 14, and an irregular 60 m^2 block was excavated over Features 1–3 and 48. In addition, six other features (39, 43–47) exposed on eroded or stripped surfaces were excavated directly as features, without excavation blocks placed over them.

Table 15.4 All Excavation Units at LA 128700.

Type	Unit No.	Size (m^2)	Northing	Easting	Feature	Depth Below Datum (100 m)	Comment
Shovel Test	1	0.25	1011.85	1037.93	–	99.72–99.22	No cultural evidence
Shovel Test	2	0.25	1030.44	1001.37	–	99.935–99.535	No cultural evidence
Shovel Test	3	0.25	1019.23	981.94	–	99.39–98.94	No cultural evidence
Shovel Test	4	0.25	1007.12	991.8	–	99.46–99.06	No cultural evidence
Shovel Test	5	0.25	980.89	1011.15	–	99.11–98.58	No cultural evidence
Shovel Test	6	0.25	967.77	992.6	–	98.75–97.95	No cultural evidence
Shovel Test	7	0.25	978.79	986.11	–	98.91–98.26	No cultural evidence
Shovel Test	8	0.25	993.46	1001.8	–	99.56–98.96	1 FCR at 30 cm bgs
Shovel Test	9	0.25	1034.26	968.41	–	99.60–99.10	No cultural evidence
Shovel Test	10	0.25	1023.2	994.51	–	99.92–99.37	No cultural evidence
Shovel Test	11	0.25	1023.7	995.96	–	99.17–98.77	No cultural evidence
Block	1	25	992–996	1001–1005	33	99.74–99.08	45 ceramics
Block	2	25	1037–1041	987–991	31	99.93–99.56	10 ceramics, 9 LD
Block	3	25	1033–1037	993–997	7	100.10–99.65	5 ceramics, 5 LD, 1 LT
Block	4	25	1050–1054	953–957	34	99.24–99.02	248 LD, 3 LT, 1 GS
Block	5	27	1038–1042	999–1004	32,38	99.97–99.72	2 LD
Block	6	25	1005–1009	920–924	29	99.55–98.95	10LD, 2LT, 1HS, 1Core
Block	7	25	978–982	917–921	28	98.78–98.40	8 LD
Block	8	5	1012	998–1007	–	99.70–99.40	No cultural evidence
Block	9	5	1008–1017	990.5	–	99.66–99.33	2 ceramics
Block	10	25	1011–1015	985–989	37	99.80–99.20	24 ceramics
Block	11	25	1026–1030	945–950	35, 40, 41	99.84–99.06	5 ceramics, 3LD,1core,3GS
Block	12	25	1024–1030	973–977	36, 42	98.80–97.92	2 LD
Block	13	4	1044.5–1045.5	1059–1060	13	*	No cultural evidence
Block	14	60	1043–1054	1043–1050	1, 2, 3, 48	*	10 UB ceramics, 12 LD, 1 HS, 517 historic artifacts
Block	15	25	1061–1065	1048–1052	11, 12	*	144 FCR
Block	16	16	1054–1058	1060–1064	14	*	8 UB ceramics, 1 GS, 2 LD, 85 FCR/BC
Trowel Test	39	0.8	977.1	979.92	39	98.64–98.61	100% of feature excavated
Trowel Test	43	0.68	1003.47	1010.35	43	99.96–99.83	100% of feature excavated
Trowel Test	44	0.56	1026.64	1010.54	44	99.92–99.79	100% of feature excavated
Trowel Test	45	0.25	1023.7	1013.12	45	99.85–99.80	100% of feature excavated
Trowel Test	46	0.33	1024.84	963.48	46	99.40–99.31	100% of feature excavated
Trowel Test	47	0.5	1026.93	1010.35	47	99.92–99.88	100% of feature excavated

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Table 15.5 Backhoe Trenches at LA 128700

BHT No	EDM Shot	North/East	North/East	EDM Elevation	Length (m)	Width (m)	Depth (m)	Size (m2)	Volume (m3)	Feature	Comment
1	½	981.53/986.81	982.63/1005.84	99.18/99.03	19.03	1	0.55	19.03	10.47	0	
2	½	1004.49/1003.77	1003.91/1017.98	99.80/99.69	14.21	1	1.4	14.21	19.89	0	
3	½	1036.63/1025.80	1052.67/1029.51	99.97/100.10	16.04	1	1.72	16.04	27.59	0	
4	½	0	0	0	0	0	0	0	0	0	Not excavated—north of impact area
5	½	967.36/985.07	967.01/998.66	98.58/98.90	13.59	1	0.66	13.59	8.97	0	
6	½	1025.62/984.74	1026.14/1001.26	99.71/99.87	16.52	1	0.72	16.52	11.89	0	

Data Recovery Results

Forty-eight features were identified during the testing and data recovery phases at LA 128700 (Tables 15.6 and 15.7; see Figure 15.5). Thirty-five of the features were within the impact area. Twenty-eight of these exhibited potential for intact remains and were excavated; the remaining seven were deflated and lacked potential for intact subsurface remains. Fourteen features were excavated within 10 of the 12 blocks. Two 0.5 x 10-m trenches were excavated in areas where an Ab horizon was identified (Feature 31) to test for subsurface features or deposits; none were encountered. The remaining six features were uncovered by mechanical soil stripping in areas not within hand excavation blocks. These were carefully excavated and flotation and pollen samples were collected.

Table 15.6. Non-excavated Features at LA 128700

Feature.	North	East	Block	Length (m)	Width (m)	Depth (m)	Type	Function
4	1044.01	956.25	None-not excavated	4	4	Surface	FCR scatter	Deflated thermal feature
5	1060.17	953.33	None-not excavated	3	2	Surface	FCR scatter	Deflated thermal feature
6	1052.98	973.99	None-not excavated	0.6	0.4	0.1	FCR concentration	Deflated thermal feature
8	1050.41	1009.17	None-not excavated	2	2	0.1	FCR scatter	Deflated thermal feature
9	1033.23	1013.18	None-not excavated	1.5	1	0.05	FCR scatter	Deflated thermal feature
10	1058.98	1040.95	None-not excavated	3	2	Surface	FCR scatter	Deflated thermal feature
15	1069.94	1059.24	Outside Impact Area	0.7	0.5	0.25	FCR concentration	Deflated thermal feature
16	1083.85	1063.91	Outside Impact Area	0.6	0.6	0.07	FCR Ash stain	Hearth
17	1086.45	1103.27	Outside Impact Area	2	2	Surface	Trash dump	Historic trash concentration
18	1056.72	1095	Outside Impact Area	6	4	Surface	Midden	Historic trash mound/dump
19	1084.78	1043.65	Outside Impact Area	1.5	1	0.1	FCR scatter	Deflated thermal feature
20	1080.99	1012.39	Outside Impact Area	2.5	2.5	Surface	FCR scatter	Deflated thermal feature
21	1072.09	1005.82	Outside Impact Area	2.5	2	Surface	FCR scatter	Deflated thermal feature
22	1048.53	992.31	None-not excavated	2	1	Surface	FCR scatter	Deflated thermal feature
23	1074.18	983.37	Outside Impact Area	2	1	0.05	FCR scatter	Deflated thermal feature
24	1105.32	1011.01	Outside Impact Area	1	1	0.1	FCR concentration	Thermal roasting pit
25	1141.29	1049.61	Outside Impact Area	4	1.5	0.20+	FCR ash stain	Thermal roasting pit
26	1140.18	1019.23	Outside Impact Area	5	3	0.15	FCR ash stain	Thermal roasting pit
27	1071.62	996.55	Outside Impact Area	0.4	0.4	0.10+	Ash stain	Hearth
30	1073.65	997.59	Outside Impact Area	1	1	0.04	FCR ash stain	Deflated thermal hearth

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Table 15.7 Excavated Features at LA 128700

Feat.	North	East	Block	Length (m)	Width (m)	Depth (m)	Morphology	Type	Function
1	1044.2	1045.5	14	2.54	1.2	0.24	Shallow basin	Large thermal feature	Roasting pit
2	1049.03	1048.8	14	1.88	1.12	0.16	Shallow basin	Large thermal feature	Roasting pit
3	1050.58	1047.2	14	4	4	0.73	Circular	Historic artifact scatter	Trash dump
7	1035.13	994.21	3	0.43	0.26	0.02	Shallow basin	Small Thermal Feature	Hearth
11	1062.36	1048	15	4	4	0.04	Amorphous	Large Thermal Feature/FCR Scatter	Deflated roasting pit
12	1064.06	1050.9	15	2.6	0.95	lens	Oblong	Large Thermal Feature	Roasting Pit
13	1045.5	1059.8	13	0.5	0.4	0.17	Small basin	Small Thermal Feature	Hearth
14	1054.63	1060.9	16	4	3	0.03	Amorphous	Large Thermal Feature/FCR Scatter	Deflated roasting pit
28	979.59	918.61	7	0.67	0.58	0.09	Small basin	Small Thermal Feature	Hearth
29	1007.55	922.72	6	1.44	1.1	0.21	Large basin	Large Thermal Feature	Roasting Pit
31	1039.24	988.48	2	-	-	0.02	-	Ab horizon	Non-feature
32	1040.79	1001.6	5	0.65	0.6	0.15	Small basin	Small Thermal Feature	Hearth
33	994.97	1005.1	1	0.49	0.33	0.1	Small basin	Small Thermal Feature	Hearth
34	1052.85	955.47	4	0.1	0.1	0.05	-	Rodent burrow	Ash stain remnants of hearth once present
35	1027.7	948.03	11	0.85	0.7	0.14	Small basin	Large Thermal Feature	Hearth
36	1025.8	975.15	12	0.68	0.62	0.16	Small basin	Small Thermal Feature	Hearth
37	1015.05	988.25	10	0.1	0.1	0.02	-	Rodent burrow	Ash stain remnants of hearth once present
38	1039.69	1000.5	5	0.73	0.61	0.1	Small basin	Large Thermal Feature	Hearth
39	977.1	979.92	Scrape Area 1	0.08	0.08	0.03	Small basin	Small Thermal Feature	Deflated hearth
40	1026.6	947.67	11	0.6	0.55	0.02	Ash lens	Small Thermal Feature	Deflated hearth
41	1027.86	947.02	11	0.7	0.7	0.09	Small basin	Large Thermal Feature	Hearth
42	1029.9	976.5	12	0.5	0.5	0.03	Small basin	Small Thermal Feature	Hearth
43	1033.47	1010.4	Scrape Area 3	0.73	0.65	0.13	Small basin	Large Thermal Feature	Hearth
44	1026.64	1010.5	Scrape Area 3	0.62	0.5	0.13	Small basin	Small Thermal Feature	Hearth
45	1023.7	1013.1	Scrape Area 3	0.25	0.25	0.05	Small basin	Small Thermal Feature	Deflated hearth
46	1024.84	963.48	Scrape Area 2	0.39	0.26	0.09	Small basin	Small Thermal Feature	Hearth
47	1026.93	1010.4	Scrape Area 3	0.5	0.3	0.04	Small basin	Small Thermal Feature	Hearth
48	1044	1044.3	14	1.04	1	14	basin	Large thermal feature	Roasting pit

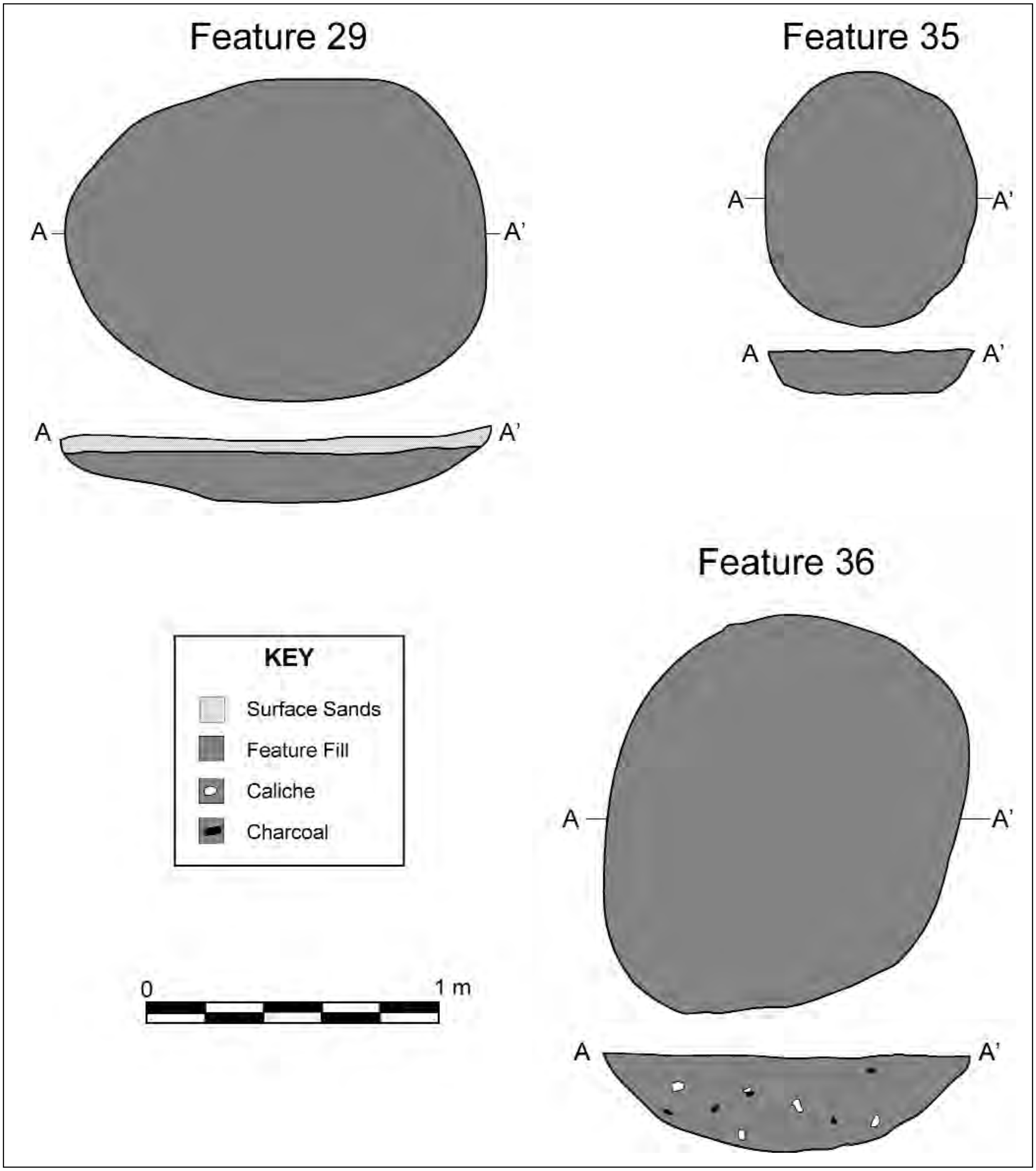

Figure 15.6 Representative thermal features from Orogrande 2 (LA 128700).

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The 28 features excavated included 13 small thermal features, 9 large thermal features, two large thermal features with associated scatter of FCR, one historic dump, two rodent burrows with ash-stained fill, and an Ab soil horizon that was determined to be non-cultural. Note that all prehistoric features within the impact area were thermal features (Figure 15.6). Although structural features may have been present outside the area investigated, none were encountered in the extensive areas hand excavated or mechanically stripped. The thermal features all contained ash stain fill with charcoal. With the exception of Feature 40 (identified as an ash lens), all of the hearths were classified as small basins. The two ash-stained rodent burrows suggest that a cultural feature may have been formerly present at these localities.

Thermal features were classed as either small or large; small thermal features were defined for this project as those with a maximum length of less than 70 cm, while large thermal features were longer than this in their maximum dimension. In general, the small thermal features are interpreted as hearths, whereas the large ones are likely roasting pits (see Chapter 30). The 13 small thermal pits averaged 0.49-m long x 0.40-m wide x 0.8-m deep. The large thermal features were considerably larger, averaging 1.39-m long x 0.90-m wide x 0.13-m deep. The two deflated large thermal features with FCR scatters each covered 4 x 3 m, and were only 3–4 cm in preserved depth.

Data recovery investigations indicate scattered thermal features within the impact zone, many of which were deflated. Based upon their association with diagnostic ceramic types and geomorphic evidence, most of the features appear to date to the Late Formative period. However, a radiocarbon date (to be discussed later) from Feature 35, also suggests the presence of a Late Archaic component. Available evidence indicates that the portion of the site investigated represents a recurring food processing area.

Artifacts Assemblages

A total of 1,603 artifacts was recovered during testing and data recovery investigations. These include 425 ceramics, 646 lithic artifacts, 524 historic items, and 34 samples.

Ceramics Analysis

The range of ceramic types from LA 128700 suggests a Doña Ana-phase assemblage. The analyzed assemblage consists of 414 sherds, weighing 1475.3 grams, for which a minimum vessel count was projected at six jars. During the follow-up phase of fieldwork at the site, in December 2001 (see above), 18 additional sherds were recovered. These are not included in the analysis presented here, but note that none were decorated, and most would have been included in the “too small” category. Typeable sherds were recovered from six excavation units and surface collection, including El Paso Brown, El Paso Bichrome, El Paso Polychrome, and Chupadero Black-on-white. Sampling strategy for the assemblage consisted of eliminating all brownware body sherds smaller than 2 cm in diameter. Sherds classified as “too small” were counted and weighed; no further analysis was conducted on these sherds. A cursory examination suggested that the too-small sherds were most likely El Paso Brown. As shown in Table 15.8, the too-small sherds represented 34 percent of the total sherd count, but only 12.9 percent of the total sherd weight. All remaining sherds from LA 128700 received a complete analysis.

El Paso Brown

A total of 229 sherds or 55 percent of the assemblage was identified as El Paso Brown. All 229 ceramics were tempered with coarse angular granite available locally in the Jarilla Mountains and surrounding ranges such as the Franklins and Organs. The paste in most of the sherds was semi-friable and brownish-colored. Both polished and plain surfaces were identified on both bowls and jars; however, most of the jar fragments had plain interior and exterior surfaces. Most of the sherds (n=235) were jar fragments including neck

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Table 15.8 Summary of Ceramic Types and Vessel Data from the LA 128700 Assemblage

Type	Vesform	Vespart	Count		Weight	
			n	%	g	%
Chupadero B/Wlack-on-white	Jar	Base	1	0.2	11.1	0.8
		Body	14	3.4	50.8	3.4
		Neck	2	0.5	6.8	0.5
Sub-total			*17*	*4.1*	*68.7*	*4.7*
El Paso Bichrome	Bowl	Body	3	0.7	9.7	0.7
	Jar	Body	8	1.9	26.5	1.8
		Neck	2	0.5	9.5	0.6
		Rim	1	0.2	6.7	0.5
Sub-total			*14*	*3.4*	*52.4*	*3.6*
El Paso Brown	Bowl	Body	3	0.7	29.5	2
		Rim	2	0.5	8.4	0.6
	Jar	Base	1	0.2	23.9	1.6
		Body	214	51.7	996.4	67.5
		Neck	6	1.4	20.1	1.4
		Rim	3	0.7	13.2	0.9
Sub-total			*229*	*55.3*	*1092*	*74*
El Paso Polychrome	Jar	Body	9	2.2	43.9	3
		Neck	2	0.5	6.8	0.5
		Rim	2	0.5	21.4	1.5
Sub-total			*13*	*3.1*	*72.1*	*4.9*
Too small for analysis	Not analyzed	Not analyzed	141	34.1	190.6	12.9
Total			414	100	1475	100

and body sherds. No use-wear, residues, or post-firing modifications were noted in the El Paso Brown assemblage. Since no attrition was noted, vessel use can only be surmised. It is likely that the pottery was used for cooking and/or storage purposes. Rim profiles (Figure 15.7) for the five El Paso Brown rims in the assemblage show that tapered rims characteristic of the Mesilla phase are absent (see Whalen 1993). All of the rims are thick with either rounded or flattened lips. Variation in rim thickness and lip form suggests that three individual El Paso Brown jars are represented in the assemblage.

El Paso Bichrome

Fourteen sherds were identified as El Paso Bichrome based on the presence of only a single paint color. Because El Paso Polychrome vessels may have portions painted with a single paint color, it is possible that some, if not all, of the El Paso Bichrome sherds may be fragments of El Paso Polychrome vessels. Eleven sherds are from jars having painted designs or remnants of slip on the exterior surface. Three sherds appear to represent bowls based on painted designs or slip on the interior surface. Because the curvature of the bowl fragments is inconclusive, it also is possible that these sherds are from the neck portion of a jar. No use-wear, residues, or post-firing modifications were noted. None of the sherds were large enough to discern specific design elements.

El Paso Polychrome

Thirteen sherds were identified as El Paso Polychrome, including rim, neck, and body fragments of a jar. El Paso Polychrome is identified by the presence of red and black painted designs on a brown surface. Because the sherds were relatively small, individual motifs could not be identified other than indeterminate geometric designs. The rim sherd, shown in Figure 15.6, appears to have triangles pendant to the rim. Based on paste and design characteristics, the sherds are probably from a single jar. All of the sherds were tempered with coarse angular granite. No use-wear, residues, appendages, or postfiring modifications were identified in the El Paso Polychrome assemblage.

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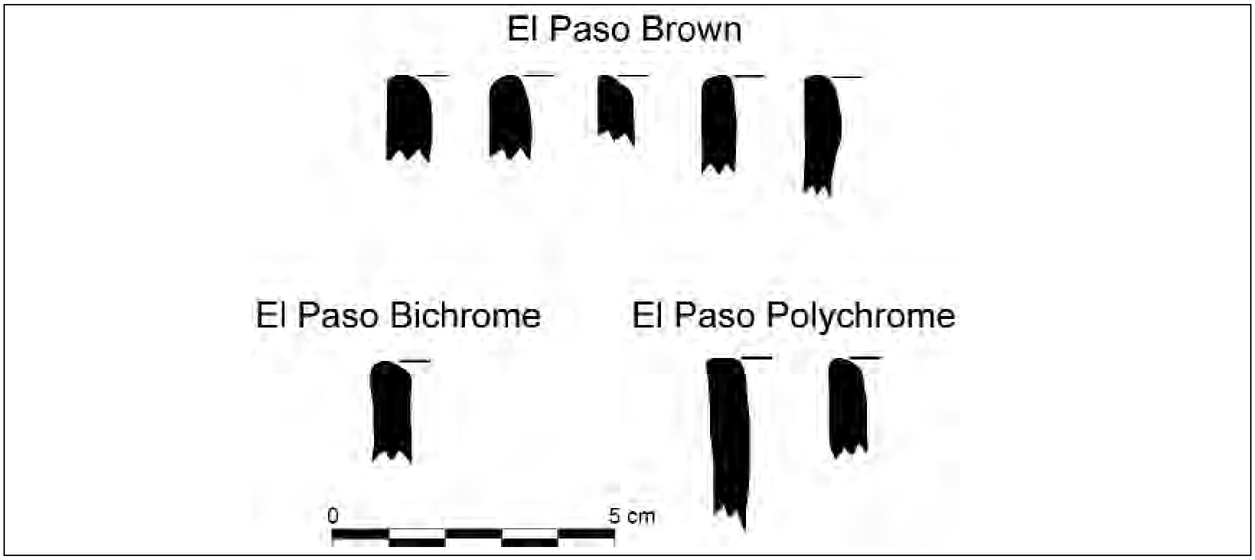

Figure 15.7 Rim Profiles of El Paso Brown ceramics from LA 128700.

Chupadero Black-on-white

Seventeen Chupadero Black-on-white fragments from two jars were recovered from surface collection. Although the designs on all the painted fragments are similar, differences in the paste, surface finish, and interior striations clearly demarcate two individual pots. The first jar, identified as Vessel A, has a Reserve style design consisting of thick, solid lines in a rectilinear pattern with appended hatchured ribbons (Figure 15.8). Distinguishing Vessel A from the other Chupadero Black-on-white jar, the paste and temper are vitrified, paste color is darker gray, and the scraping striations typical of the type are much deeper on the interior surface than Vessel B. The exterior surface of Vessel A is highly polished and has mineral painted designs. Because the paste is vitrified, identification of tempering material was difficult to discern but was tentatively classified as crushed igneous rock. Fragments of the pot include six body sherds and one base sherd with a combined weight of 25.7 g, probably less than 1 percent of the total jar. No evidence of use-wear, appendages, or postfiring modifications was identified on the jar fragments.

Vessel B is a Chupadero Black-on-white jar represented by 10 sherds including one base, one neck, and eight body fragments. A combined weight of 43 g was calculated for the sherds, comprising less than 1 percent of the jar. Similar to Vessel A, the design includes both solid and hatchured elements (Figure 15.8), but the surface color is a lighter gray to buff and the exterior texture is less polished. The interior surface striations are not as deep as those on Vessel A. Paste characteristics show that the vessel was not over-fired to a point of vitrification like Vessel B. The temper consists of small grains of igneous rock fragments in a light gray paste. No evidence of use-wear, appendages, or postfiring modifications was identified on the jar fragments.

Spatial Distribution and Ceramic Chronometry

The distribution of ceramics across the site is presented in Table 15.8 by excavation units and surface contexts. None of the ceramics were recovered from feature contexts, precluding direct association of ceramics with radiocarbon dates. Ceramics from Unit 1, however, were within the vicinity of a thermal feature (Feature 33) yielding two-sigma radiocarbon date ranges of A.D. 1060–1080 and A.D. 1150–1280. As indicated in Table 15.9, ceramics from Unit 1 include Chupadero Black-on-white, El Paso Brown, and El Paso Bichrome. A range of A.D. 1150–1280 fits well with the presence of Chupadero Black-on-white and painted brownware. Ceramics from

Figure 15.8 Decorated ceramics from LA 128700; top: El Paso Polychrome rim and body fragments; bottom left: Chupadero Black-on-white Vessel A; bottom right: Chupadero Black-on-white Vessel B.

Unit 3 in the vicinity of Feature 7 included only El Paso Brown, but the absence of radiocarbon dates from the feature precludes further chronometric evaluation of the ceramics. Finally, Chupadero Black-on-white and El Paso Brown sherds were recovered from the Level 1 contexts of Unit 11, but the radiocarbon range of A.D. 130–350 from Feature 35 (Unit 11) does not correlate with the ceramics. If the radiocarbon age for Feature 35 is an accurate temporal representation, the ceramics from the area surrounding the thermal feature are not associated with its use.

Based on the El Paso Brown rim shapes and the presence of El Paso Polychrome, Bichrome, and Chupadero Black-on-white, it does not appear that any of the ceramics are associated with contexts earlier than A.D. 1000. Although several radiocarbon dates from the site suggest that a Mesilla-phase component may be present, none of the ceramic artifacts align with an earlier temporal period.

Lithic Artifacts

Investigations at LA 128700 recovered 646 chipped stone and ground stone artifacts. Based on six radiocarbon dates of this site, there are at least two major components, one dating to the Late Archaic (A.D. 150) and one dating to the Formative period (A.D. 1000). By plotting the distribution of surface lithics and ceramics based on in-field total station plot data along with the location of radiocarbon dates, it was possible to separate the two components into relatively discrete areas (Figure 15.9). Based on the lithic analysis in Chapter 21, support for this distinction between the Archaic and Formative period was found. Formally, the Archaic period settlement was determined to include all lithics greater than 1030 north and between 940 and 970 east. In Chapter 21 this area is referred to as 128700A (for Archaic) while the remainder is referred to as 128700P (for Pueblo). This division will structure the presentation and analysis of lithic data for this site. Counts of lithic artifact types by material are given in Table 15.10.

Chipped Stone Tools

Chipped stone tools recovered from LA 128700 include one projectile point, two bifaces, and 25 retouched tools. The projectile point and biface were both recovered from the "Archaic" portion of the site, as were 11 retouched tools; the remaining 14 retouched tools were recovered from the "Formative/Mixed" portion of the site (128700P). The projectile is a fragmentary dart point with a slightly serrated excurvate blade, and the extant portion of the base is similar to published descriptions of the Late Archaic Palmillas type by O'Hara (1988b:300). The bifaces are both fragmentary chert artifacts. One is the distal fragment of a Stage III biface exhibiting regular margins and initial thinning; the other is a lateral fragment of a Stage V biface, indicating advanced reduction with regular margins and pressure flaking.

Retouched tools from 128700A, the Archaic portion of the site, are dominated by chert (n=7), fol-

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Table 15.9 Ceramics Identified by Provenience at LA 128700

Provenience	Series	Ceramic Type	Form	Count	
				n	%
Unit 1	Middle Rio Grande	Chupadero Black-on-white	Jar	1	0.24
	Jornada Mogollon	El Paso Bichrome	Jar	1	0.24
		El Paso Brown	Jar	18	4.35
	Too small to analyze			11	2.66
Sub-total				*31*	*7.49*
Unit 2	Middle Rio Grande	Chupadero Black-on-white	Jar	1	0.24
	Jornada Mogollon	El Paso Brown	Jar	3	0.72
	Too small to analyze			6	1.45
Sub-total				*10*	*2.42*
Unit 3	Jornada Mogollon	El Paso Brown	Jar	4	0.97
	Too small to analyze			1	0.24
Sub-total				*5*	*1.21*
Unit 9	Jornada Mogollon	El Paso Brown	Jar	1	0.24
		El Paso Polychrome	Jar	1	0.24
Sub-total				*2*	*0.48*
Unit 10	Middle Rio Grande	Chupadero Black-on-white	Jar	5	1.21
	Jornada Mogollon	El Paso Brown	Jar	7	1.69
		El Paso Polychrome	Jar	2	0.48
	Too small to analyze			13	3.14
Sub-total				*27*	*6.52*
Unit 11	Middle Rio Grande	Chupadero Black-on-white	Jar	1	0.24
	Jornada Mogollon	El Paso Brown	Jar	1	0.24
	Too small to analyze			1	0.24
Sub-total				*4*	*0.97*
Surface	Middle Rio Grande	Chupadero Black-on-white	Jar	8	1.93
	Mogollon	El Paso Bichrome	Bowl	3	0.72
			Jar	10	2.42
		El Paso Brown	Bowl	5	1.21
			Jar	190	45.89
		El Paso Polychrome	Jar	10	2.42
	Too small to analyze			109	26.33
Subtotal				*335*	*80.92*
Total				414	100

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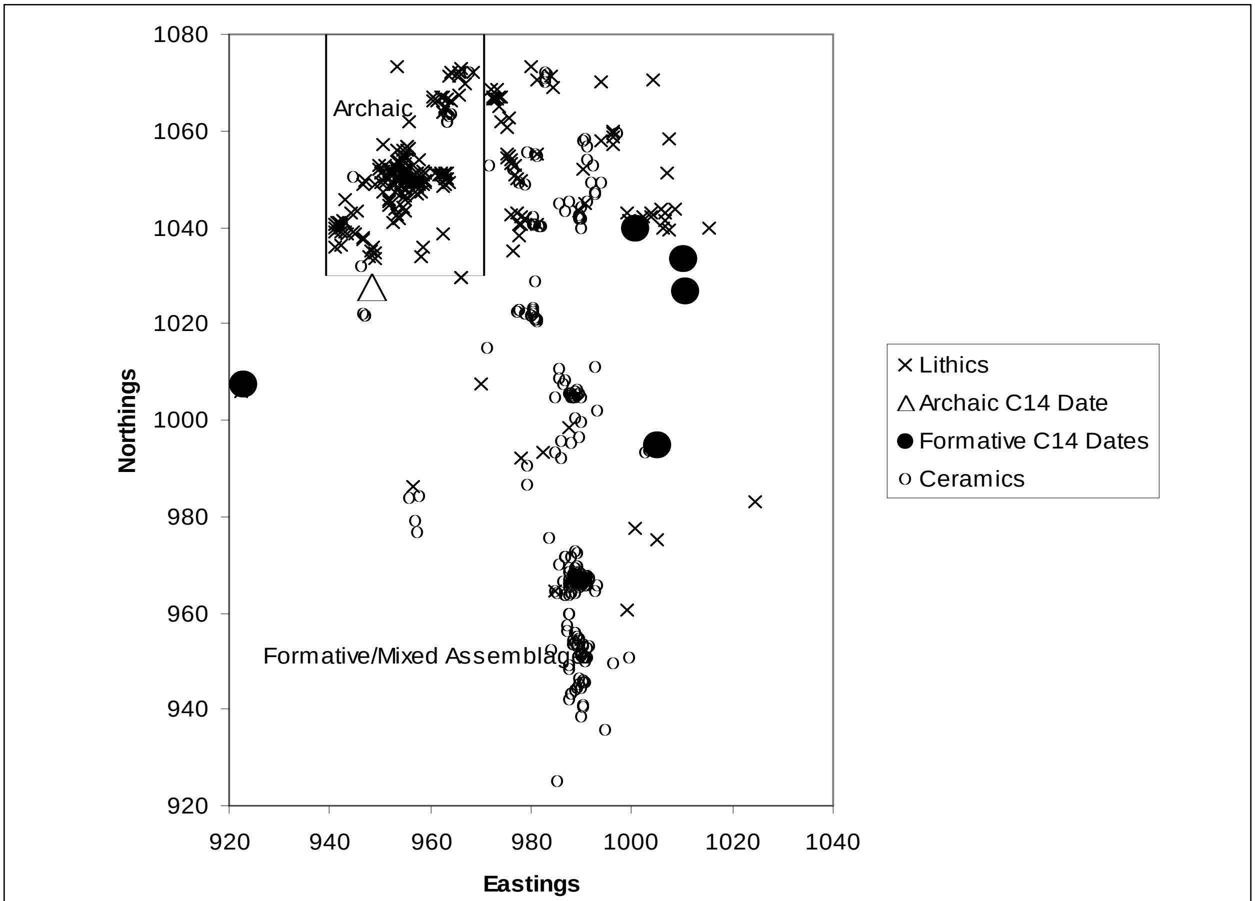

Figure 15.9 Total station point-plotted data from LA 128700, showing the distribution of ceramics, lithics, and radiocarbon dates. The box within the chart indicates the separation between Archaic and Formative period.

lowed by silicified shale (n=2), limestone (n=1), and obsidian (n=1). These tools are dominated by scrapers of various configurations (n=5) and more expedient retouched pieces (n=5). Also present is a chert projection, a flake showing formal retouch that isolates a projecting bit possibly used as a graver (Table 15.11).

Tools recovered from 128700P, or the Mixed/Formative portion of the site, are also dominated by chert (n=7), as well as silicified shale (n=3) and rhyolite (n=2). Sandstone (n=1) and granite (n=1) are also present. The range of tool types is also similar to that of the Archaic portion, with scrapers (n=8), retouched pieces (n=4), and a projection (n=1). These scrapers are mostly single- and double-edge side scrapers, while those from the 128700A sample were dominated by three-edge scrapers.

Cores

Fifteen cores were collected from LA 128700: six from the Archaic (128700A) portion of the site and nine from the Formative/Mixed (128700P) portion. Material types differ markedly between these two areas: five of the six 128700A cores are chert, while only two of the nine 128700P cores is chert. Cores from the 128700P area include silicified shale, rhyolite, quartzite, limestone, and chert, with no one material type clearly dominating the assemblage. This suggests a preferential use of chert by the Archaic inhabitants of the site, echoing a pattern noted throughout the region (cf.

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Table 15.10 Lithic Artifacts Recovered from LA 128700, Separated by Artifact-Based Spatial Component

Spatial Component	Materials:	Proj. point	Biface	Core	Retouched tool	Debitage	Mano/han dstone	Metate/grind-ing slab	Unknown ground stone	Total
Archaic (128700A)	Chert	1	2	5	7	160				178
	Granite					10			2	12
	Igneous					16				16
	Llimestone				1	5				6
	Obsidian				1					1
	Quartzite					13	1	2		16
	Rhyolite			1		30				31
	Sandstone					1		9	2	12
	Silicified shale				2	102				106
	Archaic Total	1	2	6	11	337	1	11	4	378
Formative/Mixed (128700P)	Chert			2	7	70				77
	Glass					1				1
	Granite				1	13	2		3	19
	Igneous					3			1	4
	Limestone			2		3	1			6
	Obsidian					1				1
	Quartzite			1		5				6
	Rhyolite			2	2	15				19
	Sandstone				1		1	9	3	14
	Silicified shale			2	3	34				37
	Formative/Mixed Total			9	14	145	4	9	7	184
	LA 128700 Totals	1	2	15	25	483	5	20	11	562

Carmichael 1986). No cores from this site show secondary use as tools.

An additional contrast between these two areas is in the directionality of these cores (Table 15.12). Most of the 128700A cores are multidirectional, while the 128700P cores are dominated by unidirectional (n=4) and bi-directional (n=3) forms.

Debitage

A total of 482 pieces of lithic debitage was analyzed from LA 128700. A little more than half of the debitage was collected from the surface (n=245) and almost half (n=238) was collected below the surface.

A total of 337 pieces of lithic debitage was analyzed from LA 128700A, a medium-sized Late Archaic assemblage. About half of the debitage was collected from the surface (n=167) and half (n=170) below the surface. Material types include almost 50 percent chert (n=160), 30 percent silicified shale (n=102), 9 percent rhyolite (n=30), and 5 percent igneous material (n=16). The remaining 7 percent of lithic debitage is derived from granite, limestone, and sandstone. As with the other medium-sized Archaic-period assemblage (LA 128699A), flake sizes were very small, and combined with the high-quality material and archaic nature, are consistent with tool manufacture and general lithic usage. See Chapter 21 for more information on this site and how it compares to the other sites in the study area.

A total of 145 pieces of lithic debitage was analyzed from LA 128700P, a medium-sized mixed

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Table 15.11 Retouched Tools Recovered from LA 128700

Spatial Component	Tool Type	Chert	Granite	Limestone	Obsidian	Rhyolite	Sandstone	Silicified shale	Total
Archaic (128700A)	Projection	1							1
	Retouched piece, miscellaneous	4		1					5
	Side scraper, single edge				1				1
	Side scraper, double edge							1	1
	Scraper, three edges	1						1	2
	Scraper, miscellaneous	1							1
	Archaic Total	7		1	1			2	11
Formative/Mixed (128700P)	Projection	1				1			2
	Retouched piece, miscellaneous	2						2	4
	Side scraper, single edge	1	1			1		1	4
	Side scraper, double edge	1					1		2
	Scraper, miscellaneous	2							2
	Formative/Mixed Total	7	1			2	1	3	14

Table 15.12 Directionality of Cores Collected from LA 128700

Spatial Component	Material:	Bidirectional	Multidirectional	Unidirectional	Unknown	Total
Archaic (128700A)	Chert	1	3	1		5
	Rhyolite			1		1
	Archaic Total	1	3	2		6
Formative/Mixed (128700P)	Chert	1		1		2
	Limestone			1	1	2
	Quartzite			1		1
	Rhyolite	2				2
	Silicified shale			2		2
	Formative/Mixed Total	3		4	1	8
	Totals	4	3	7	1	15

assemblage (Late Archaic mixed with the Formative period). Fifty-three percent of the debitage was collected from the surface (n=77), while 47 percent (n=68) was collected below the surface. Material types include 48 percent chert (n=70), 23 percent silicified shale (n=34), 10 percent rhyolite (n=15), and 9 percent granite (n=13). Additionally there were five pieces of quartzite, three pieces of igneous material, three pieces of limestone, a piece of obsidian, and a piece of flaked glass. Compared to 128700A the material is larger and thicker, but the material types are similar. This might be because the Puebloan occupants opportunistically reused the abundant high-quality material left by the Archaic inhabitants. The possibility that Archaic occupants preferentially used high-quality lithic materials such as chert is supported by the dominance of chert cores in the 128700A area. The lithic assemblage is consistent with tool manufacture and general lithic usage. See Chapter 21 for more information on this site and how it compares to the other sites in the study area.

Ground Stone

Thirty-six pieces of ground stone were recovered from LA 128700, 11 of which were too fragmentary to for identification. Of the remaining 25 pieces, four were manos, and one was an unidentified handstone, too small for further assignment. All four manos were recovered from the 128700P

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portion of the site; cross-sectional shapes for these included wedge-shaped (n=2), ovate (n=1), and parallel faces (n=1). Granite was the most common material (n=2), followed by sandstone (n=1) and limestone (n=1).

Of the 20 artifacts identified as metates or grinding slabs, 11 were recovered from the 128700A portion of the site and nine from the 128700P area. All were small fragments, and sandstone dominates the assemblages from both parts of the site (Table 15.13).

These artifacts are divided into two main kinds of grinding slab: metates (including basin, slab, flat, and indeterminate metate forms) and netherstones. Metates are large grinding stones used with manos for large-scale or intensive grinding purposes, usually involving food processing. Netherstones are smaller stones, usually quite thin (approximately 10 mm or less), with grinding surfaces too small to represent significant food preparation; these may have been used for grinding minerals and pigments. Slab metate forms are those metates with relatively flat grinding surfaces on otherwise unprepared tabular stone slabs. Some metate fragments were simply identified as “flat-surfaced” but could not confidently be assigned to the slab metate category because of their extremely fragmentary nature. Finally, some metate fragments were so small that they could not be assigned to any category beyond “metate.” Relative proportions of these artifact forms are found in Table 15.13.

Temporal Placement of the Ground Stone Assemblage

Carmichael (1986) indicates possible associations between certain mano forms, ground stone materials, and time. He notes two patterns: Archaic ground stone assemblages appear to have more manos with wedge-shaped and triangular cross-sections and also appear to use more sandstone than later Formative sites. The ground stone assemblage at LA 128700 is dominated by sandstone, but the sample size is too small to persuasively argue for the dominance of any particular mano form. Likewise, the small overall size of the ground stone sample is too small to indicate any spatial difference between ground stone forms between the 128700A and 128700P areas.

Other Lithics

Twelve pieces of schist, a tabular metamorphic material, were recovered from LA 128700; 11 of these were recovered from the “Archaic” portion of the site and one was recovered from the “Formative” portion. These are clustered, with the majority (n=11) being recovered from an 11 x 15-m area between N 1042 and N 1053 and E 951 and E 964. These pieces were not initially identified as cultural due to their extremely blocky cleavage and tendency to fracture along lines of foliation, resulting in a lack of typical flake features. However, Carmichael (1986:170) notes that pestles made of schist occur in sites within the Tularosa Basin, with material sources in the northern Organ Mountains; Church *et al.* (1996:111) note a possible second source in the Franklin Mountains. Thus, the presence of this material at LA 128700 is likely the result of human transport.

Table 15.13 Grinding Slab Forms Represented in LA 128700 Assemblage, by Material

Spatial Component	Material:	Flat metate	Slab metate	Metate	Netherstone	Total
Archaic (128700A)	Quartzite			2		2
	Sandstone	2	1	4	2	9
Archaic Total		*2*	*1*	*6*	*2*	*11*
Formative / Mixed (128700P)	Sandstone	2		2	5	9
Formative/Mixed Total		*2*		*2*	*5*	*9*
Totals		*4*	*1*	*8*	*7*	*20*

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Biological Remains

A variety of biological remains were recovered and analyzed, with data recovered from six flotation samples, five pollen samples, and one lipid residue sample. In general, preservation conditions at the site were poor, and the archaeobotanical samples were not informative as to subsistence activities associated with the site's occupation(s). No animal bone was recovered from the site.

Archaeobotanical

The six flotation samples analyzed came from Features 29, 33, 35, 38, 43, and 44, and the five analyzed pollen samples were from Features 29, 33, 35, 38, and 43. No plant foods were identified in the macrobotanical samples, although the pollen assemblage provided some potential, subsistence-related data. Specifically, recovered pollen of Brassicaceae (mustard family), *Eriogonum* (Desert Buckwheat), and *Platyopuntia* (prickly pear cactus) indicates possible economic use of these species at the site. The prickly pear pollen is especially interesting, because grains of this plant are heavy and not typically transported very far through natural processes. Thus, their presence in Features 33 and 43 probably indicates that prickly pear may have been roasted or prepared in these thermal pits. See Chapters 24 and 25 for more information on the botanical remains from LA 128700 and how they relate to assemblages from the other US 54 sites.

Lipids

The single fire-cracked rock submitted from Feature 29 fell on the border between medium and moderate-high fat content foods. Elevated levels of medium chain and very long chain saturated fatty acids suggest the presence of plant residue. A total of 524 historic items were recovered from Orogrande 2 (LA 128700). The vast majority of these (n = 517) came from Feature 3, a discrete historic trash dump that partially overlaid Feature 2 (a prehistoric large thermal pit). In addition to Feature 3, Features 17 and 18 are historic trash dumps outside the impact area, but were not investigated beyond their original identification and documentation.

Historic cultural materials identified at Feature 3 include glass, metal, ceramics, and building materials (Table 15.14). The historic glass fragments include predominately lamp glass and bottle glass, with lesser amounts of window glass. Metal artifacts include can fragments, bottle caps, nails (wire, roofing, and finishing), washers, and a few other miscellaneous items. Other cultural material present includes buttons, plaster/mortar, wood, and tar paper. The cans were all fragments and could not be used for dating purposes, although no solder was observed on any of the cans.

The sun altered purple glass fragments and the dark olive glass fragments provide the basis for an early twentieth-century temporal affiliation. Although some building materials are present, their frequencies are low, and no intact evidence of structural remains was observed. Most of the material appears to be domestic debris and the feature is likely a secondary refuse deposit.

Site Chronology

Chronological data were recovered in the form of radiocarbon dates and diagnostic ceramics. A total of six radiocarbon samples was analyzed from Features 29, 33, 35, 38, 43, and 44 at LA 128700 (Table 15.15). Four of the six samples were analyzed by conventional means; the remaining two were submitted for AMS dating. Five of the six samples are indicative of a relatively wide Formative-period occupation (approximately A.D. 760–1280). The remaining sample (Feature 35) appears to date to the Late Archaic period, although there are no diagnostic artifacts from this feature or its vicinity to corroborate this date. One Late Archaic projectile point, a Palmillas type, was recovered from the surface of the site, but it is located nearly 50 north of Feature 35.

Based on the presence of El Paso Bichrome, El Paso Polychrome, and Chupadero Black-on-white, much of the site likely dates to the Doña Ana phase. Two dates, however, are inconsistent with the conventional time frame of this phase.

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Table 15.14 Historic Artifacts at Feature 3, LA 128700

Type	Complete	Fragment	Total
Glass			
Bottle			
Clear/colorless		113	113
Sun-altered purple		40	40
Brown		40	40
Green		21	21
Olive Green/black		2	2
Window		49	49
Lamp			
Clear/colorless		116	116
Sun-altered purple		5	5
Unspecific		2	2
Metal			
Undiagnostic can		47	47
Bottle caps	11		11
Nails-wire	22	5	27
Nails-roofing	2		2
Nails-finishing	1	1	2
Unspecific nails		9	9
Nuts/bolts/washers	4		4
Other metal pieces	6	2	8
Other materials			
Buttons	1	2	3
Tumbler/cup		4	4
Ceramic plumbing		1	1
Other ceramics		4	4
Ceramic bowl		1	1
Plaster/mortar		1	1
Wood		1	1
Tar paper		3	3
Unmodified animal bone		1	1
	47	470	517

One is the aforementioned Late Archaic date. The other is Beta-161822, whose two-sigma, calibrated range falls within the middle to late Mesilla phase. The large number of features distributed over a relatively wide area suggests the site experienced multiple prehistoric occupations. The majority of the features originate in the Bw horizon (Organ III deposits), with the exception of those in Excavation Block 11, which all appear to originate higher in the Ab horizon. The date from Feature 35 is decidedly earlier than the other five dates (Figure 15.10). While one date should never be treated as conclusive evidence, given the stratigraphy, it is likely that this date is erroneous. The other five dates, especially when combined with the stratigraphy, suggest a middle to late Mesilla to early Doña Ana phase-affilation for most of the features, with Features 28 and 29 and those from Block 11 possibly ranging into the El Paso phase.

Site Interpretation and Summary

Testing and data recovery results suggest that Orogrande 1 (LA 128700) represents a campsite (or food processing area) occupied on a recurring basis during the Late Archaic and Late Formative periods. No structure remains were encountered inside the area investigated, and if any structures were erected here, their remains were either obliterated by erosion or they were so ephemeral as to leave no archaeological traces. If structures are present outside of the right-of-way, many of the excavated features may be part of a recurring food processing area associated with those habitations. Otherwise, Orogrande 1 probably represents the remains of repeatedly occupied, short-term, or seasonal campsites.

Prehistoric people were probably attracted to this locality in part because it lies at the juncture of two alluvial fans, and the channeling of precipitation runoff to, and through, this area would have enhanced the availability of scarce water. In fact, this area hosts a dense concentration of archaeological remains including nearby sites Orogrande 1 (LA 128699; see Chapter 14) and LA 128701 (see Chapter 18). These sites collectively include occupations ranging from Late Archaic to Late Formative times. An El Paso Bichrome sherd recovered from LA 128701 indicates a possible Doña Ana-phase occupation that may be contemporary with the main component at Orogrande 2,

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Table 15.15 Radiocarbon Dates from Orogrande 2 (LA 128700)

Feature	Beta #	Date Type	Conventional Radiocarbon Age (B.P.)	Calibrated (2-Sigma)
33	161820	Standard	820 ± 50	A.D. 1060–1080 and A.D. 1150–1280
43	161824	Standard	860 ± 60	A.D. 1030–1280
38	161821	Standard	900 ± 60	A.D. 1010–1260
44	161825	Standard	1040 ± 60	A.D. 890–1060 and A.D. 1080–1150
29	161822	AMS	1170 ± 50	A.D. 720–740 and A.D. 760–990
35	161823	AMS	1790 ± 40	A.D. 130–350

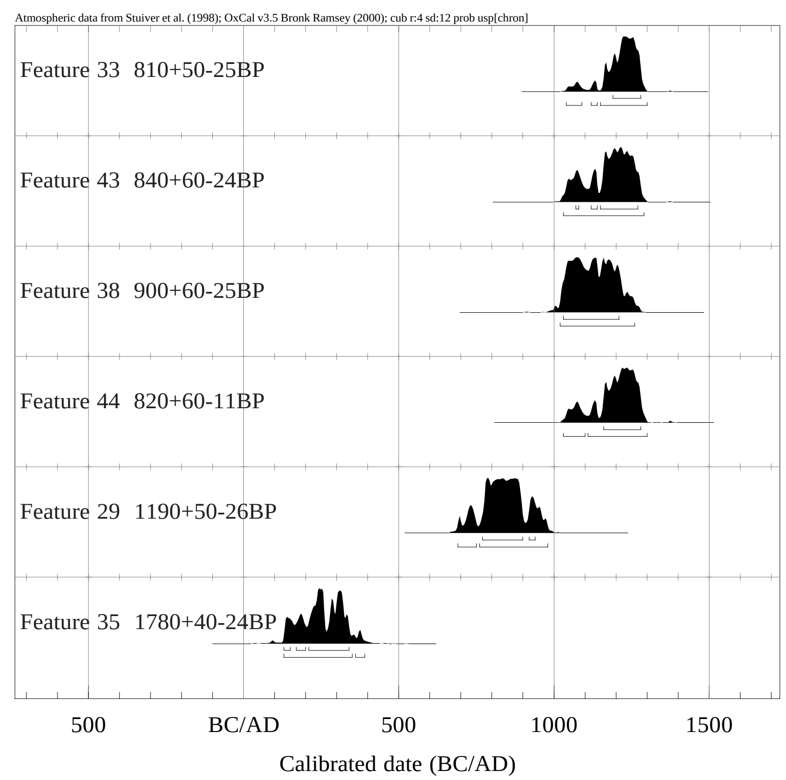

Figure 15.10 Radiocarbon dates from Orogrande 2 (LA 128700)

but the occupation at the former site appears to have been extremely ephemeral and small in scale.

Recommendations

Data recovery efforts at LA 128700 have fulfilled the goals outlined in the data recovery plan, and the proposed construction will have no effect on any cultural resources. The site extends outside the impact area, however, and features remain in the portion of the site that was not excavated. Fencing along the boundaries of the impact zone is recommended to ensure that sensitive features documented immediately to the north and east are not disturbed during construction. Should any future construction activities be scheduled that would impact cultural resources outside the US 54 impact area, and should such activities fall under appropriate regulations, then additional testing at the site should be carried out and, if necessary, a data recovery plan should be produced and implemented.

Chapter 16

The Orogrande North Site (LA 128708)

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Introduction

Orogrande North (LA 128708) is a multicomponent site in the south-central Tularosa Valley (Figure 16.1). The site lies on the eastern alluvial fans of the Jarilla Mountains and contains Late Archaic- and Formative-period remains, along with a later historic/industrial component associated with Orogrande. The prehistoric component is probably associated with LA 128709, which lies on the other side (west) of US 54 (see Chapter 18). Although some data were recovered from the historic component, the investigations were focused on the prehistoric remains.

The site terrain slopes slightly from the west-northwest to the east-southeast. Mesquite-stabilized coppice dunes (0.50–2.0-m high) stud the site surface, with the highest dunes near the highway edge. The narrow interdunal areas drain mostly toward the south, and numerous shallow arroyos (up to 1.0-m deep) cut through the site. Accumulated sheet sand deposits are present in the site, although they are limited to areas immediately adjacent to dunes. Much of the site surface is deflated.

Surface soils are mainly gravelly, sand loam to loam deposits, with eolian sands in the northeastern portion of the site. The site lies in the Chihuahuan biotic zone, with the flora at this locality including mesquite, creosote, fourwing saltbush, tarbush, broom snakeweed, narrowleaf

Figure 16.1 Overview of excavations at Orogrande North (LA 128708), looking south. The edge of Otero Mesa is visible in the distance.

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yucca, all thorn, dropseed grass, prickly pear cactus, and various weeds.

The site is on the side east of US 54 on BLM and private lands. Only a narrow strip of the recorded site, along the east edge of US 54, lies within the highway right-of-way. TRC attempted to record the entire site, but archaeological remains extend onto private land to the south, and the site boundaries could not be completely followed out in this direction. To the east, on BLM property, historic debris continues well beyond the limits of the prehistoric remains, and is part of a more-or-less continuous distribution of historic remains in and around the town of Orogrande. The eastern site boundary is thus drawn somewhat arbitrarily.

Previous Investigations

Michalik (2000) identified LA 128708 as a Jornada Mogollon lithic, ceramic, and ground stone scatter covering approximately 9,600 m^2 (160 m north-south x 60 m east-west). Five fire-cracked rock features were recorded during the original survey. The described assemblage contained approximately 30 artifacts, including chert and limestone tertiary flakes, a limestone unifacially shaped tool, a limestone bifacially shaped tool, some El Paso Brown ceramics, and granite and sandstone mano and metate fragments.

Testing Investigations

TRC undertook testing at LA 128708 during the late summer of 2000. Testing began with a careful inspection of the site surface to determine the actual extent and distribution of surface artifacts and features. As a result, the site boundaries were greatly expanded and numerous features were documented. A site datum was then established, and a topographic map of the site was produced using a total station instrument. Fifteen 0.5 x 0.5-m shovel tests were excavated during testing (Figure 16.2).

Surface Investigations

The surface cultural materials were found to extend over a 338 m north-south x 152 m east-west area. Total site area, as defined during testing, is approximately 46,204 m^2 including 4,443 m^2 (roughly 10 percent of the total site area) within the right-of-way. The surface documentation recorded 34 features and 47 discrete, surface artifact concentrations (Tables 16.1 and 16.2). Of the features, five (Features 2, 4, 7, 33, and 34) were within the highway right-of-way and 29 (Features 1, 3, 5, 6, and 8–32) were outside the right-of-way on BLM land. Depth of deposits within each of the artifact concentrations was not systematically investigated, although colluvial gullies passing through several of the concentrations revealed deposits in excess of 10 cm bgs.

Subsurface Testing Results

Subsurface investigations consisted of 15 0.5 x 0.5-m shovel tests (Table 16.3). A chert flake and a granite fire-cracked rock were recovered from two tests. The materials were restricted to the upper 0.10 m of eolian deposits. Based upon evaluation of the excavation units, it appeared that most cultural features observed during testing were correlated with Organ III sediments. This stratum overlies an Organ I unit that dates to 2,100–7,000 B.P. It was also considered possible that some of the cultural features could extend into this unit.

Artifacts Documented During the Testing Phase

The cultural materials recorded on the site during testing include ceramics, chipped stone, ground stone, scattered thermal materials, and late historic cultural materials. Ceramics include 80 El Paso Brown sherds (one of which is a disc), two El Paso Bichrome sherds, two El Paso Polychrome rims, one Chupadero Black-on-white, and one possible Mimbres Black-on-white sherd. The majority of the ceramics are clustered in the southwest and south-central portions of the site, especially in the vicinity of Feature 12. The intrusive wares are located in the southeastern portion of the site. Only one sherd was recorded in the northern half of the site, and this was an undifferentiated brownware sherd from the northeastern portion of

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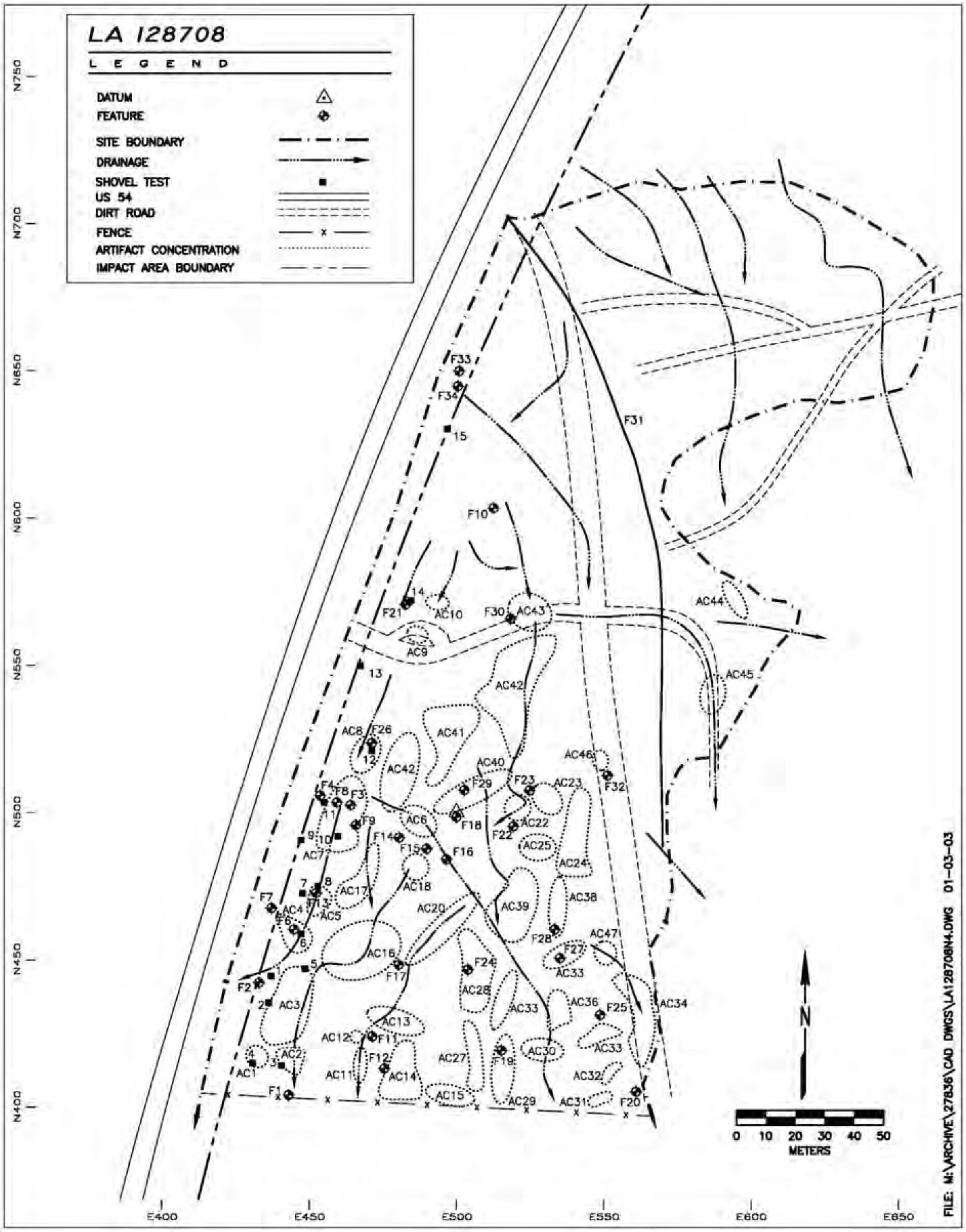

Figure 16.2 Orogrande North (LA 128708), testing phase map.

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Table 16.1 Features Identified During Testing at LA 128708

Fea. No.	Location	Type	N/S (m)	E/W (m)	Depth (m)	Cultural Materials
1	Southwest	FCR/ash stain	2	2	5	Michalik (2000) Feature 1 south of BLM land on private property, no count of FCR, contains one mano
2	Southwest	Large ash stain with FCR	2	2	>20	Michalik (2000) Feature 2: 2-m diameter-stain, possible pithouse, 8 scattered fire cracked rock, 1 large granite cobble at southern end, and 1 large granite boulder at northern end
3	Southwest to west-central	Hearth	1	1	12	Michalik (2000) Feature 3:14 granite, basalt, and shale fire-cracked rock, 1 white chert projectile point midsection, and 1 silt-stone marginal flaked tool
4	Southwest to west-central	Hearth	1.25	0.75	10	Michalik (2000) Feature 4: semi-articulated feature, 14 granite and sandstone fire-cracked rock
5	Southwest to west-central	Hearth	1	1	8	Michalik (2000) Feature 5: articulated feature, 30+ granite and rhyolite fire-cracked rock, and 1 large utilized basalt flake
6	Southwest to west-central	Hearth	1	1	10	21 fire-cracked limestone and granite, subsurface FCR only
7	Southwest	Hearth	2	1	Surface	11 large fire-cracked rock
8	Southwest to west-central	Hearth	1	0.75	10	Semi-articulated feature, 18 sandstone, rhyolite, and granite fire-cracked rock
9	Southwest to west-central	Hearth	4	4	Surface to 10	50+ scattered basalt and granite fire-cracked rock, and some asphalt present. No subsurface artifacts in interdunal area; how-ever, some FCR appear to be eroding out of small dunes to the east
10	Northwest	Hearth	5	3	Surface	100+ scatter of sandstone, rhyolite, and granite fire-cracked rock
11	Southwest	Hearth	0.3	0.3	9	1 limestone fire-cracked rock associated with stain
12	Southwest	FCR/ash stain	1	1	5	10 fire-cracked rock, 2 EP Bichrome, and 3 UB
13	Southwest	Ash stain	0.4	0.4	5	Ash stain with no associated artifacts
14	Southwest to west-central	Hearth	0.75	0.75	7	4 fire-cracked rocks
15	Southwest to west-central	Hearth	0.5	0.5	7	+10 fire-cracked rock
16	Southwest to west-central	Hearth	2	2	Surface	+50 fire-cracked rock, and 1 siltstone flake, east of feature 16: +20 fire-cracked rock, I chert flake, and 1 UB
17	Southwest	Ash stain	0.3	0.3	10	No associated artifacts
18	Southwest to west-central	Ash stain	>10 cm	>10 cm	Unk.	Stain in built up sands brought up by bioturbation
19	South-cen-tral	Ash stain	40 cm	40 cm	7	No associated artifacts
20	West-central	Ash stain	> 10 cm	> 10 cm	>10	Ash stain is under dune, dimensions unknown; no associated artifacts
21	Northwest	Ash stain	0.3	0.3	5	No associated artifacts

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Table 16.1 Features Identified During Testing at LA 128708 (continued)

Fea. No.	Location	Type	N/S (m)	E/W (m)	Depth (m)	Cultural Materials
22	South-central	Ash stain	0.2	0.2	3	No associated artifacts
23	Central	Hearth	2	1.5	10	30+ rhyolite, granite, and unidentified fire-cracked rock, 1 granite anvil
24	South-central	Hearth	3	3	Surface	+200 fire-cracked rock, flakes (1 rhyolite, 1 limestone), and 22 dark purple bottle fragments
25	South-central	Hearth	2.5	1.5	10	Semi-articulated 50+ fire-cracked cobbles, 1 white chert bifacially shaped tool, 1 limestone ground stone fragment. 5 m to the north of Feature 25, 10+ fire-cracked rock, and 1 chert flake
26	South-central	Ash stain	0.5	0.5	5	No associated artifacts
27	South-central	Hearth	1	3	Surface	+ 50 fire-cracked rock, 1 limestone metate fragment, 1 quartzite flake, and 1 quartzite bi-marginal tool
28	South-central	Ash stain	0.3	0.3	7	No associated artifacts
29	Central	Ash stain	1.3	2	14	No associated artifacts
30	North-central	FCR/ash stain heath	1	1	9	1 m diameter ash stain inside a 5 m diameter fire-cracked rock concentration and 1 granite metate fragment
31	Northwest to central	Water pipe	222	0.17	N/A	Steel water pipe to a smelter
32	East-central to central	Ash stain	0.5	0.5	>10	No associated artifacts
33	Northwest	Ash stain/Hearth	0.75	0.75	>15	Articulated feature with 32 fire-cracked rock, subsurface ash/charcoal
34	Northwest	Ash/FCR stain hearth	1	0.75	>15	Semi-articulated feature with 15 large fire-cracked rock, subsurface ash and charcoal

Table 16.2 Artifact Concentrations Identified During Testing at LA 128708

Artifact Conce	Location	Type	N/S (m)	E/W (m)	Cultural Materials
1	Southwest	Artifact concentration with FCR	4	4	18+ fire-cracked rock, 10+ UB, 1 siltstone hammerstone/core, 1 sandstone ground stone fragment, and 1 chert flake
2	Southwest	Artifact concentration with FCR	8	15	30+ fire-cracked rock, 1 chert projectile point fragment, 2 siltstone flakes, 1 quartzite flake, 2 UB, 1 utilized flake, 1 metal can, and 1 brick
3	Southwest	Artifact concentration with FCR	35	18	150+ scattered fire-cracked rock, 2 sandstone mano fragment, 1 sandstone metate fragment, 1 chert bimarginal flaked tool, 1 large chert bifacial tool, 10+ chert and siltstone flakes, 1 fence post (7 milled lumber)
4	Southwest (associated with Feature 6)	Artifact concentration	12	20	30+ scatter fire-cracked rock, 1 whiteware, and 2 lithic flakes
5	Southwest	Artifact concentration with FCR	10	15	20+ scattered fire-cracked rock, 1 black chert flake, 1 siltstone core, 1 granite marginal tool (15 x 7x 13 cm), 1 sandstone ground stone fragment, and 1 tan chert core
6	West-central	Artifact concentration with FCR	13	23	20+ fire-cracked rock, 1 rhyolite tested cobble, 1 chert bifacially shaped tool, 2 limestone flakes, 1 milled lumber. Western edge: 30+ glass bottle fragments and asphalt

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Table 16.2 Artifact Concentrations Identified During Testing at LA 128708 (continued)

Artifact Con.	Location	Type	N/S (m)	E/W (m)	Cultural Materials
7	West-central (associated with Features 3-5,8&9)	Artifact concentration with FCR	16	17	50+ scattered fire-cracked rock, 1 rhyolite metate (24 x 15 x 5 cm), 1 rhyolite flake, 2 UB (1 collected), and 3 fence posts
8	West-central	Artifact concentration with FCR	20	9	10+ fire-cracked rock, 1 chert bifacially shaped tool, 1 copper rich mineral fragment, 1 galvanized metal fragment, 1 black chert utilized flake, 1 quartzite flake, 20+ metal fragments, and 5 fence posts (4 are at northern end)
9	Northwest	FCR scatter	4	4	8 scattered fire-cracked rock, 1 brick fragment, and 1 sanitary can
10	Northwest	FCR scatter	5	5	15+ fire-cracked rock, and 1 sandstone metate fragment
11	Southwest	FCR scatter	20	10.0-15.0	20+ scatter of fire-cracked rock, 1 UB, 1 palette fragment, and 1 granite metate fragment
12	Southwest	FCR scatter	7	15	15+ fire-cracked rock, 1 UB, and 1 horseshoe
13	Southwest	Artifact concentration with FCR	12	28	20+ fire-cracked rock, 1 cortical rhyolite flake (size 2—4cm), 1 UB, and 1 siltstone flake
14	Southwest	Artifact concentration with FCR	17	13	30 fire-cracked rock, 2 chert flake, 2 El Paso Bichrome (1 body and 1 rim ceramic), 1 siltstone flake, 1 limestone flake, and 50+ UB
15	Southwest	Artifact concentration with FCR	7	24	+20 fire-cracked rock, 1 rhyolite core, and 3 chert flakes
16	Southwest	Artifact concentration with FCR	18	27	+40 fire-cracked rock, 1 basalt metate fragment, 1 igneous hammerstone, 2 siltstone flakes, 1 quartzite flake, 1 utilized limestone debitage, and 1 chalcedony utilized flake
17	West-central	Artifact concentration with FCR	30	14	+50 fire-cracked rock (majority of FCR at northern end), 3 chert flakes and 1 siltstone flake, 1 siltstone core, and 1 galena mineral
18	West-central	Artifact concentration with FCR	10	10	+15 fire-cracked rock, and 1 siltstone core
19	West-central	Artifact concentration with FCR	9	14	+100 fire-cracked rock, 1 siltstone flake, plus a concentration or +40 fire-cracked rock along the eastern edge
20	South-central	Artifact concentration with FCR	10	10	100 fire-cracked rock, 1 metate sandstone fragment, flakes (1 rhyolite, 5 chert, 2 siltstone, 1 chalcedony, 1 quartzite), 3 UB, 1 marginal granite tool, 1 siltstone retouched tool, 1 tobacco tin, and 1 metal pipe
21	Central	Artifact concentration with FCR	21	11	+40 fire-cracked rock, 1 UB, flakes (1 quartzite, 3 siltstone, 1 chert), 1 projectile point (coil. # 3), 1 quartzite two-sided mano, and 10,000 metal fragments
22	Central	Artifact concentration with FCR	17	11	+15 fire-cracked rock, 1 siltstone marginal tool, 1 siltstone core, 1 siltstone flake, and 3 sanitary cans
23	Central	Artifact concentration with FCR	13	7	20+ fire-cracked rock, flakes (1 limestone, 3 chert, 1 siltstone, 1 large basalt), two-sided quartzite mano fragment, 1 siltstone marginal tool, 1 chert core, and 1 basalt metate fragment
24	Central	Artifact concentration with FCR	33	9	+150 fire-cracked rock, 1 chert flake, 3 siltstone flakes, 1 utilized siltstone flake, and 1 porcelain insulator

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Table 16.2 Artifact Concentrations Identified During Testing at LA 128708 (continued)

Artifact Con.	Location	Type	N/S (m)	E/W (m)	Cultural Materials
25	Central	Artifact concentration with FCR	6	9	+20 fire-cracked rock, flakes (4 siltstone, 1 rhyolite, 1 chert), and 1 rhyolite hammerstone
26	South-central	Artifact concentration with FCR	5	4	4 fire-cracked rock, 1 black chert angular debitage, 1 gray chert flake, 1 siltstone flake, and 1 brown rhyolite flake
27	South-central	Artifact concentration with FCR	18	7	+20 fire-cracked rock, flakes (2 limestone, 3 siltstone), 1 limestone utilized flake, and 1 sanitary can
28	South-central	Artifact concentration with FCR	37	10	+100 scatter fire-cracked rock, flakes (1 white chert, 1 black chert, 2 quartzite) and two-sided sandstone mano fragment
29	South-central	Artifact concentration	25	9	1 chert angular debitage, flakes (2 limestone, 8 siltstone, 4 chert, 2 rhyolite, 1 sandstone), metate fragments (1 sandstone, 1 rhyolite), 1 hole-in-top can, 1 wire (1/4 diameter), 1 miscellaneous wire, and 2 unknown metal
30	South-central	Artifact concentration with FCR	12	21	+20 fire-cracked rock, flakes (1 chert, 1 siltstone), 1 siltstone marginal tool, 1 sandstone metate fragment, 1 metal handle, 1 bucket, 3 sanitary cans, 2 refined whiteware, 10+ metal fragments, and 1 red brick
31	Southeast	Artifact concentration	3	8	Ceramic (1 Mimbres, 2 brownware, 1 brownware disc), 1 siltstone flake, 1 large quartz, coal, bottle glass (16+ purple, 2 green, 5+ clear), 2 porcelain, brick (1 red, 1 tan), 2 whiteware, 1 fence, and 1 wooden fence post
32	Southeast	Artifact concentration with FCR	8	4	+20 fire-cracked rock, flakes (1 chert, 1 siltstone), cores (2 limestone, 1 siltstone), 1 tobacco tin, scattered coal, 100+ miscellaneous metal, 1 sanitary can, 1 gallon metal container, 1 crockery, and 5 dear bottle glass
33	Southeast	Artifact concentration with FCR	6	22	+20 fire-cracked rock, flakes (6 chert, 4 limestone, 4 siltstone), 1 siltstone marginal tool, scattered coal, and 50+ unknown can fragments
34	Southeast	Artifact concentration with FCR	31	12	20+ FCR, flakes (3 chert, 1 siltstone), hammerstone (1 basalt, 1 limestone), 1 granite metate, coal, 1 cinder block, 20+ cans (1 sanitary), bottle fragment (5+ purple, -1 base, 5+ amber), 1 milk bottle, 5-gallon can lid, 6+ ceramic cast, 5+ red brick, 1 whiteware, 1 miscellaneous
35	South-central	Artifact concentration with FCR	27	7	+250 fire-cracked rock, flakes (1 chert, 1 limestone, 4 rhyolite, 1 quartzite, 3 siltstone), 1 limestone hammerstone, and 1 siltstone core
36	South-central	Artifact concentration with FCR	19	9	+50 fire-cracked rock, 2 bone, flakes (1 limestone, 4 siltstone, 1 chert, 1 quartzite), 2 granite metate fragments, 1 siltstone core, 1 basalt marginal tool, 11 UB, scattered slag, and 1 utilized chert flake
37	Central	Artifact concentration with FCR	14	11	Fire-cracked rock, milk glass, 2 chert flakes, 2 siltstone flakes, and 1 limestone marginal tool
38	Central	Artifact concentration with FCR	17	6	+25 fire-cracked rock, flakes (16 siltstone, 3 chert, 2 limestone, 3 chert)
39	Central	Artifact concentration with FCR	22	20	+15 fire-cracked rock, flakes (2 quartzite, 2 siltstone, 4 chert, 1 rhyolite), 1 basalt marginal tool, 1 chert core, 1 aqua bottle glass fragment, 1 hole-in-top can, 1 sanitary can, and 1 lard bucket
40	Central to west-central	Artifact concentration with FCR	13	30	+50 fire-cracked rock, flakes (2 chert, 1 siltstone), 1 granite metate fragment, wire, 4 white earthenware, and 1 tobacco tin
41	West-central	Artifact concentration with FCR	33	22	Majority of material at southern end: +20 fire-cracked rock, flakes (1 chert, 1 limestone), 1 siltstone core, 1 tobacco tin, and 1 sanitary can
42	North-central	Artifact concentration with FCR	64	29	+50 fire-cracked rock, flakes (2 limestone, 1 siltstone, 1 quartzite), 1 siltstone hammerstone, 4 UB ceramics, 1 can lid, 2 hole-in-top cans, 2 sanitary cans, green bottle glass, and 1 horseshoe
44	Northeast	Artifact concentration	12	4	1 leather shoe, ink bottle, 2 tobacco tin, 5 sanitary can fragments, 5 clear bottle glass, 1 opaque jar fragment, 1 potted meat tin, and 1 ribbed brown bottle base "23/. Oct/S"
45	East-central	Artifact concentration with FCR	25	10	+20 fire-cracked rock, scattered coal, 6+ brick fragments, 10+ metal fragments, and 10+ clear bottle glass
46	East-central	Artifact concentration with FCR	8	4	+20 scattered fire-cracked rock, 1 UB, 1 granite mano (13 x 8 x 1 cm)
47	Southeast	Artifact concentration with FCR	5	10	18 fire-cracked rock, 1 large siltstone flake, 2 historic ceramics, and 3 bricks

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Table 16.3 Shovel Test Results at LA 128708

Test No.	Location	Depth	Stratum 1	Cultural Evidence	Stratum 2	Cultural Evidence	Stratum 3	Cultural Evidence	Stratum 4	Cultural Evidence
1	Southwest	0.35 m	Eolian deposition (7.5YR6/6) with few gravels on surface, depth surface to 0.07 m	None	Semi-compacted, sandy loam (7.5YR5/6), depth 0.07–0.15 m	None	Compacted sandy loam (7.5YR5/6) with few gravels, depth 0.15–0.35 m	None		
2	Southwest	0.40 m	Eolian deposition (7.5YR6/6) with sparse ground cover and moderate gravels on the surface, depth surface to 0.02 m	None	Sandy loam (7.5YR 5/6), A horizon, depth 0.02–0.05 m	None	Sandy loam (7.5YR 5/6): Compacted from 0.05-0.18 m, Semi-compacted from 0.1–0.32	None	Compacted. sandy loam with few caliche (7.5YR7/7), depth 0.32–0.40 m	None
3	Southwest	0.50 m	Eolian deposition (7.5YR6/6), depth surface to 0.05 m	None	Semi-compacted, sandy loam, depth 0.0–0.15 m	None	Compacted sandy loam (7.5YR5/6), depth 0.1–0.50 m	None		
4	Southwest	0.40 m	Unconsolidated, eolian sand (7.5YR5/5), depth surface to 0.05 m	None	Semi-compacted, sandy loam (7.5YR5/8) with few inclusions, depth 0.0–0.09 m	None	Compacted, sandy loam (7.5YR5/6), moderate gravels increasing with depth, depth 0.0–0.40 m	None		
5	Southwest	0.50 m	Unconsolidated, eolian sand (7.5YR6/6), depth surface to 0.14 m	None	Compacted, sandy loam (7.5YR5/6), depth 0.1–0.50 m	None				
6	Southwest	0.60 m	Unconsolidated eolian sand (7.5YR5/8), depth surface to 0.16 m	1 FCR	Semi-compacted, sandy loam (7.5YR5/6), depth 0.01–0.42 m	None	Compacted, sandy loam (7.5YR5/6) with few gravels, depth 0.42–0.60 m	None		
7	Southwest	0.40 m	Unconsolidated eolian sand (7.5YR6/6), depth surface to 0.05 m	None	Compacted, sandy loam (7.5YR5/6), depth 0.05–0.40 m	None				
8	Southwest	0.35 m	Unconsolidated, eolian sand (7.5YR6/6), depth surface to 0.10 m	None	Compacted, sandy loam (7.5YR5/6), depth 0.1–0.35 m	None				
9	West-central	0.50 m	Unconsolidated, eolian sand (7.5YR5/6), depth surface to 0.30 m	None	Compacted, sandy loam (7.5YR5/6), depth 0.30–0.50 m	None				
10	Southwest to west-central	0.40 m	Unconsolidated, eolian sand (7.5YR5/6) with moderate gravels, depth surface to 0.08 m	None	Semi-compacted, sandy loam (7.5YR5/8) with moderate gravels, depth 0.08–0.12 m	None	Compacted, sandy loam (7.5YR 5/6) with moderate gravels and caliche, depth 0.12–0.40 m	None		

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Table 16.3 Shovel Test Results at LA 128708 (continued)

Test No.	Location	Depth	Stratum 1	Cultural Evidence	Stratum 2	Cultural Evidence	Stratum 3	Cultural Evidence	Stratum 4	Cultural Evidence
11	Southwest to west-central	0.50 m	Unconsolidated, eolian sand (7.5YR6/6), depth surface to 0.13 m	None	Compacted, sandy loam (7.5YR5/6) with few gravels, depth 0.13–0.50 m	None				
12	West-central	0.60 m	Unconsolidated, eolian sand (7.5YR6/6), depth surface to 0.30 m		Compacted, sandy loam (7.5YR 5/6) with few gravels, depth 0.3–0.60 m	None				
13	West-central	0.40 m	Unconsolidated, eolian sand (7.5YR6/6), depth surface to 0.05 m		Compacted, sandy loam (7.5YR5/8) with few gravels, depth 0.0–0.40 m	None				
14	West-central	0.45 m	Unconsolidated, eolian sand (7.5YR6/6), depth surface to 0.13 m		Semi-compacted, sandy loam (7.5YR5/6), depth 0.1–0.38 m	None	Compacted, sandy loam (7.5YR5/6) with few gravels, depth 0.3–0.45 m	None		
15	Northwest	0.30 m	Unconsolidated, eolian sand (7.5YR6/6), depth surface to 0.10 m		Compacted, sandy loam (7.5YR5/6), depth 0.1–0.30 m	None				

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the site. The overwhelming dominance of El Paso Brown indicated a Mesilla-phase component, while the decorated wares indicate the site also contains Late Mesilla-phase to El Paso-phase components.

More than 278 lithic artifacts were documented during the testing phase. These include 232 flakes, 17 cores, five pieces of angular debris, six hammerstones, 12 marginally retouched lithic tools, four projectile point fragments, and two bifacially shaped tools (Table 16.4). Only one of the projectile point fragments exhibits a portion of the base. This projectile point was collected and classified as a Bonham style point which is indicative of a Late Formative Period component (Carmichael 1986:97). Fourteen of the lithic flakes exhibit edge use damage. Material types identified in the field were mainly varieties of chert (36 percent), or siltstone (35 percent), with

Table 16.4 Chipped Stone Artifacts Documented at LA 128708 During the Testing Phase

		Flakes					
		Indeter.		Other			
Material	**Size (cm)**	**Cortical**	**Non-Cortical**	**Edge Modified**	**Core**	**Shatter (Debris)**	**Formal Tools**
Chert	**1–2**	1	8				1 chert projectile point (CN3), 3 chert projectile point fragments, 2 bifacially shaped tools, 3 marginally retouched tools, 1 hammerstone
	2–4	16	39			1	
	>4	14	3	2	5		
Siltstone	**1–2**	2	8				2 hammerstones (1 previous ground stone), 4 marginally retouched tools
	2–4	17	38				
	>4	5	10	3	8		
Quartzite	**1–2**		1				1 marginally retouched tool
	2–4	5	3				
	>4	4	2	1			
Granite	**1–2**						
	2–4						
	>4			2			
Basalt	**1–2**						2 marginally retouched tools
	2–4	1					
	>4	2	1	1			
Sandstone	**1–2**						1 marginally retouched tool
	2–4						
	>4				1		
Chalcedony	**1–2**						
	2–4		1	1			
	>4						
Rhyolite	**1–2**					2	1 hammerstone
	2–4	4	6			2	
	>4	3	1	1	1		
Limestone	**1–2**		2				2 hammerstones, 1 marginally retouched tool
	2–4	3	7				
	>4	7	4	2	2		
TOTAL		**84**	**134**	**13**	**17**	**5**	

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lesser amounts of limestone, rhyolite, and quartzite. Nominal quantities of granite, basalt, sandstone, and chalcedony are also represented. Note that silicified shale was not identified during the testing phase, but was during the data recovery laboratory analysis. It appears likely that most of the "siltstone" artifacts (and possibly some recorded under other material types) are, in fact, silicified shale.

Ground stone artifacts recorded include two complete sandstone manos, one complete rhyolite metate, four mano fragments, 22 metate fragments, 10 indeterminate ground stone fragments, a granite anvil, and a shale pallet. The complete rhyolite metate measures 24 x 15 x 5 cm. The ground stone fragments are mainly pieces of granite, rhyolite, or sandstone. These pieces are scattered randomly over the site area, though mainly within the identified artifact concentrations. Almost all of the pieces appeared to have been reutilized for their thermal properties.

Fire-cracked rocks are scattered throughout the site and include more than 2,165 pieces of limestone, granite, basalt, and sandstone. The majority (82 percent) of these scattered pieces of thermally altered materials are within recorded artifact concentrations. These materials indicate the presence of deflated and/or buried hearths and roasting pits that were not documented as formal features.

Other cultural materials identified on the site included historic glass, ceramic, and building material remains. The historic glass includes bottles, mason jars, milk bottles, windowpane, and safety glass. An aqua glass inkwell recovered from the site is illustrated in Figure 16.3. Metal artifacts include cans, building materials, and other miscellaneous metal fragments. The cans include hole-in-top, lard pails, potted meat cans, and sanitary, church key, and tobacco tins. Other metal artifacts include bottle tops, wire and cut nails, metal buckets, various pipes, a main water line (Feature 31), a "Lenox Aire Flo" fragment, chicken wire, buckets, galvanized sheet metal, and horseshoes. Historic ceramics consist of fragments of refined whitewares with some porcelain, earthenware, and crockery. Some whiteware sherds include blue, green, and red flow design elements, usually flower and leaf designs. The building fragments include bricks, cement fragments, and some plaster fragments. Table 16.5 lists a rough count of historic cultural materials observed during the testing phase.

A total of 11 items was recovered from this site during the testing phase (Table 16.6). Ten of the 11 items were temporally diagnostic artifacts recovered off the surface. One chert flake was recovered from ST 6 and one fire-cracked piece of granite was recorded from the upper 10 cm of fill from ST 6.

Site Stratigraphy and Geomorphology

LA 128708 is at the base of an alluvial fan that drains the Jarilla Mountains, but is further out on the distal margin of the fan than nearby sites LA 128709 or LA 128710. As a result, the site sediments have less gravel than was observed in sites

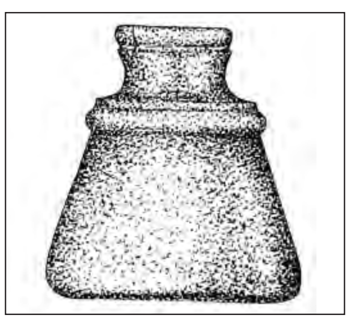

Figure 16.3 Inkwell from Orogrande North (LA 128708).

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Table 16.5 Historic Artifacts Documented at LA 128708 During the Testing Phase

Type	Complete	Fragment	Total	Comments
Glass				
Bottle				
Sun altered amber		4	4	One base fragment with "MIL."
Aqua		3	3	
Green		1	1	
Blue		21	21	
Brown				
Sun altered purple		2	2	
Other glass	1		1	Marble
Metal				
Unknown		>110	>110	
Hole-in-top	3		3	
Sanitary	23	2	25	
Tobacco	8		8	
Key strip	1		1	
Other	15		15	Church key cans
Wire	4		4	
Horseshoe	4		4	
Other Metal	3	10	17	1 bucket, galvanized metal strips, 2-m-length metal post, one metal post with loop at one end, 1 pipe
Ceramics				
Porcelain		3	3	
Refined Whiteware		6	6	
Stoneware		>10	>10	
Earthenware		4	4	
Crock/Jug		1	1	
Plumbing		3	3	
Electrical	1		1	
Building Material (brick, concrete, shingle, wood)		> 25	> 25	Bricks, 14 fence posts, a wooden fence gate

further up the fan. The stratigraphy and geomorphology reflect both alluvial and eolian processes. In addition, LA 128708 is on the eastern side of US 54 and appears to have largely been cut off from the source of the alluvial sediments, a situation that has probably increased erosion on the site following road construction.

Recent eolian activity has resulted in the development of mesquite coppice dunes that are generally under one meter in height. Although eolian deflation has probably scoured the site area somewhat, the majority of erosion appears to be alluvial in nature. Archaeological visibility is highest in the interdunal areas where historic sands are the thinnest. Eolian deflation may have removed some prehistoric sediments in the interdunal areas, but a substantial amount of sediment is still present. Thus, geomorphic investigations recognized the potential for cultural features to be buried in the subsurface.

The surficial deposit at the site (Unit 1) consists of historic sands, which range from a thin

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Table 16.6 Artifacts Collected from LA 128708 During the Testing Phase

PNUM	Easting	Northing	Unit	Level (cmbs)	Depth	Comments
1	441.87	435.23	–	Surface	0	Chert bifacial tool
2	458.81	499.85	–	Surface	0	El Paso Brownware body ceramic
3	508.45	486.16	–	Surface	0	Chert projectile point
4	475	409	–	Surface	0	El Paso Bichrome rim (possibly polychrome)
5	558.39	402.43	–	Surface	0	Chupadero body ceramic
6	553.91	401.56	–	Surface	0	Worked brownware ceramic
7	551.87	401.88	–	Surface	0	Mimbres body ceramic
8	461.38	406.5	–	Surface	0	El Paso Polychrome rim
9	473.75	406.67	–	Surface	0	El Paso Polychrome rim
10	588.09	577.23	–	Surface	0	Whole aqua ink bottle
11	447.38	458.82	6	1	10 cm	Chert flake fragment

(0–0.20-m thick) veneer in interdunal areas, to over a meter thick in some coppice dunes (Figures 16.4 and 16.5). These sediments are generally reddish-yellow (7.5YR6/6) and have a loamy sand texture. In general, the Unit 1 sediments are coarsely laminated and contain few gravels. These surficial sediments appear to be historic in origin and probably date to within the last 100 years. For this reason, they have low archaeological potential. It is possible, however, that some historic cultural materials may have been deposited while these sands were accumulating. On the site, cultural features were observed only where Unit 1 was absent or very thin (e.g., in interdunal areas).

Although shovel test pits excavated during the testing phase exhibited a few examples of a buried A horizon underlying Unit 1, neither of the two backhoe trenches uncovered this unit. In the backhoe trenches, the historic sands lie on Unit 2, a cambic Bw horizon (which directly underlie the Ab horizon where the latter was observed in some shovel tests). Unit 2 is 0.50–0.70-m thick and consists of a strong brown (7.5YR5/6), loamy sand. This unit lacks stratification or significant pedogenic accumulations, but the high chroma of these sediments suggests that they have been subject to minor pedogenic alteration. For this reason, Unit 2 is considered a cambic Bw horizon. In the region, a Bw horizon is typically associated with the Organ III (100–1,100 B.P.) eolian sediments described by Monger (1993). Thus, Unit 2 is tentatively identified with Organ III sediments, but datable materials would be needed to corroborate this association.

Unit 2 has a sharp contact with an underlying calcareous Bk horizon, or Unit 3. This unit is light brown (7.5YR6/3, d) and has a sandy loam texture. The most distinctive feature of Unit 3 is the presence of calcium carbonate filaments. Pedogenic carbonate accumulation in this unit is equivalent to a Stage I development (after Gile *et al.* 1966). Within the region, Stage I carbonates are typically middle Holocene in age. In Monger's (1993) chronology this correlates with the Organ I unit (2,100–7,000 B.P.) and in the chronology of Blair *et al.* (1990) this horizon is part of unit Q3 (100–7,000 B.P.). No cultural materials were observed in this unit during the current project, but it is possible that intrusive features could have been excavated into the unit.

The basal unit at site LA 128708 is the La Mesa calcrete. The calcrete was observed at the bottom of both backhoe trenches at a depth of 1.20–1.34 mbs. This unit is white to pinkish-white (7.5YR8/1–8/2) and has a clay loam texture. Calcrete provides a barrier that cannot easily be breached by the backhoe and is impenetrable for hand excavations. Previous work in the region

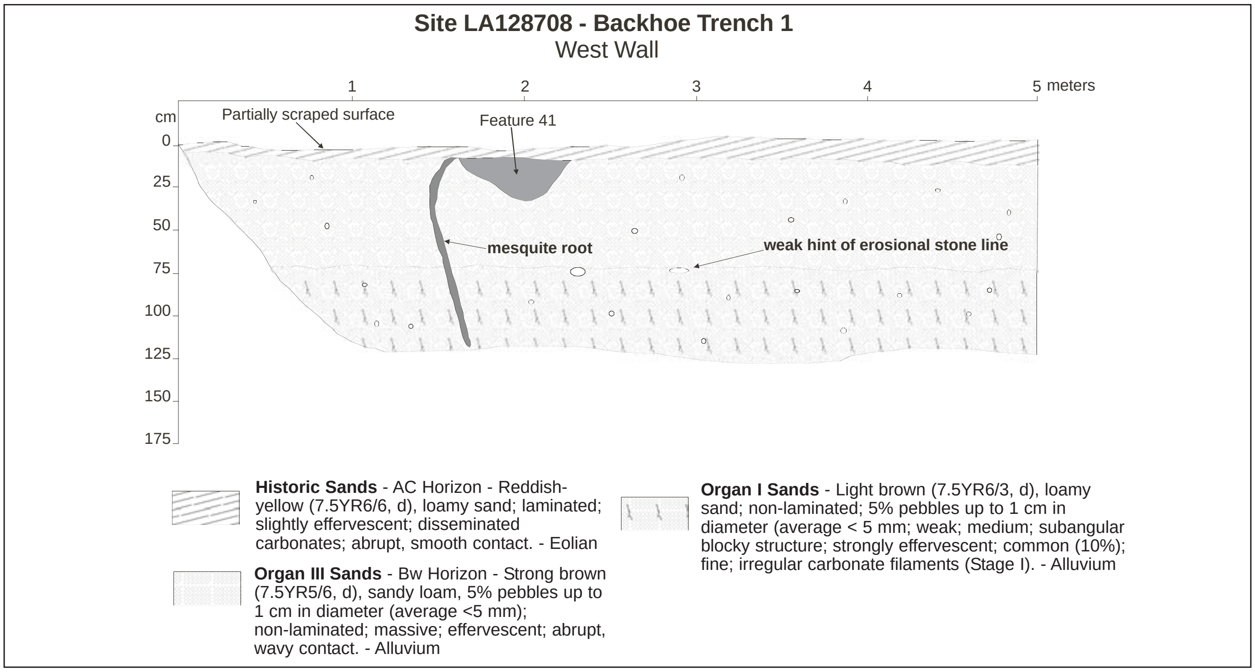

Figure 16.4 Orogrande North (LA 128708), Backhoe Trench 1 profile.

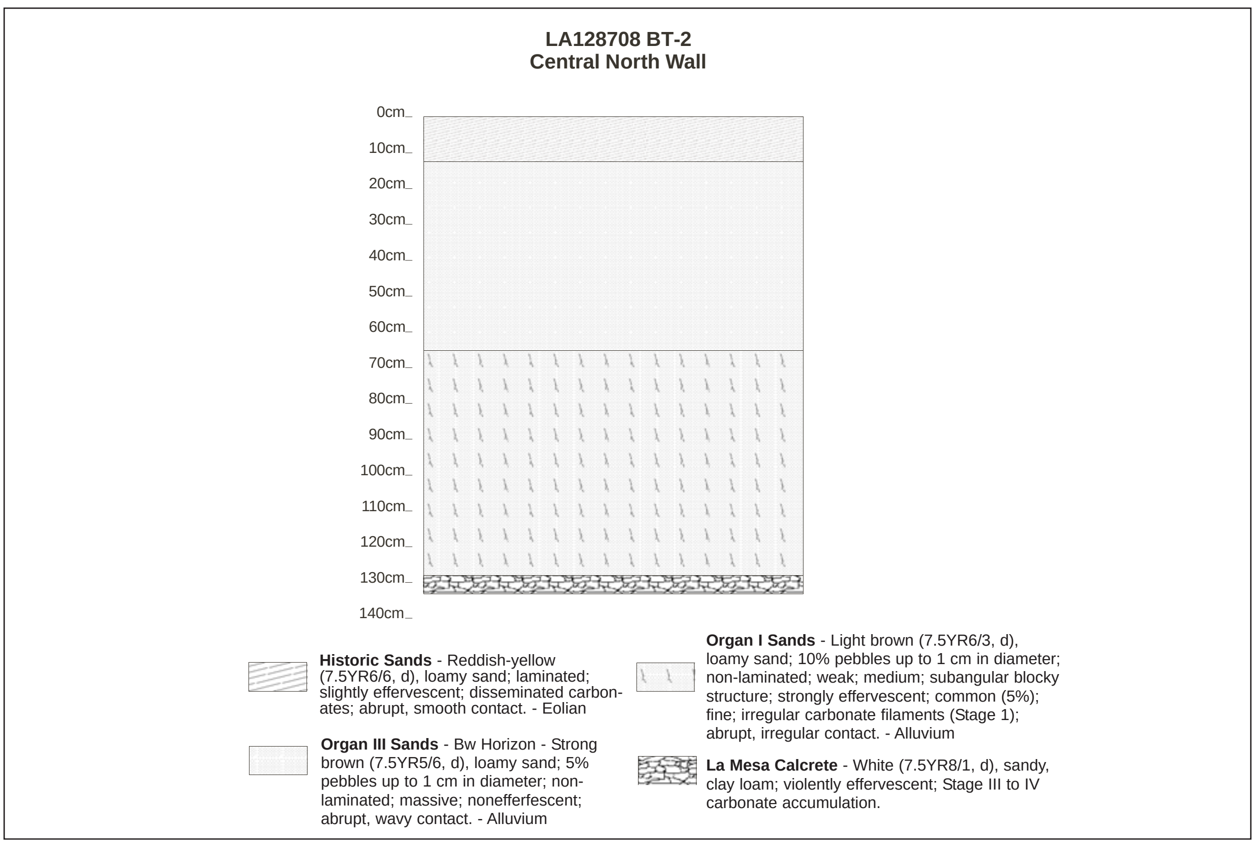

Figure 16.5 Orogrande North (LA 128708), Backhoe Trench 2 profile.

(Gile *et al.* 1981; Blair *et al.* 1990; Monger 1993) has proposed that the calcrete is Mid-Pleistocene (ca. 250,000 B.P.) and, thus, predates the accepted range for human occupation of North America. Accordingly, the calcrete is considered to be the sterile level for archaeological excavations.

Data Recovery Strategy

Data recovery investigations at LA 128708 were carried out by TRC in late March and early April 2001. Work began by relocating the datum established during testing and assigning it the grid provenience N500/E500, with an arbitrary elevation of 100 m. During data recovery, surface artifacts within the right-of-way were mapped and collected. Data recovery then proceeded with subsurface investigations, which involved a combination of hand-excavated units, backhoe trenching, and machine stripping within the impact area (Figure 16.6). The excavation blocks were placed over features identified during the testing phase or uncovered with backhoe trenches (Figures 16.7 and 16.8). The data recovery excavations discovered 16 new features (Features 35–50), which were uncovered both within excavation blocks and in the stripped area. Some features uncovered by machine stripping were trowel tested and excavated directly, without a surrounding hand excavation block (Figure 16.8).

The four excavation blocks ranged in size from 2 x 2–7 x 7 m (Table 16.7; Figures 16.8–16.11). A total of 73.5 m² was hand excavated during data recovery and an additional 3.75 m² during the testing phase. Backhoe trenches (n=2) excavated an additional 33.13 m² (Table 16.8). One feature was encountered in a trench excavation near Block 2.

Hand excavations and trenches opened just over 2.5 percent of the site area within the impact area. After all hand and trench excavations, the southern parts of the impact area were mechanically stripped. The stripping opened an additional 40 percent of the site within the impact area. Areas excluded from subsurface investigation were all severely deflated to Organ I surfaces, near a caliche-dominated stratum, or associated with the margins of the site where little surface cultural evidence was present.

Data Recovery Results

Features

Fifty features were identified during data recovery and testing, 21 of which were within the highway right-of-way (Table 16.9). Three of the features within the right-of-way (Features 7, 36, and 37) were deflated and lack intact subsurface remains; these were not investigated beyond surface documentation. Of the 18 features in the right-of-way with subsurface remains, 10 were excavated within the four excavation blocks (see Figures 16.8–16.11), while the remaining eight were uncovered by machine stripping. Three of the features uncovered by machine stripping proved to be portions of an A soil horizon and are not cultural; the remaining five were cultural and fully excavated.

All 15 cultural features excavated within the right-of-way appeared to be thermal features and all contained ash stain fill with charcoal. Thermal features at the US 54 sites were classified as either large or small, with the dividing line set at a maximum diameter of 70 cm. In general, the small thermal features are hearths and the large ones roasting pits (see Chapter 30). At LA 128708, seven of the 15 excavated cultural features were classified as small thermal features (three prehistoric and four historic), while the remaining eight were large thermal features (all prehistoric). Table 16.10 provides summary data for the 11 excavated, prehistoric thermal features.

The prehistoric large thermal features (Figures 16.9, 16.12, and 16.13) ranged 0.75–2.2 m in maximum diameter (average 1.05 m) and 9–43 cm in depth (average 19 cm). Three of the large thermal features (Features 2, 42, and 47) were considerably larger than the others, ranging 1.15–2.2 m in maximum diameter and 11–43 cm in depth. Feature 42 had a second, smaller pit on its floor (Feature 42.1) (see Figure 16.12). These

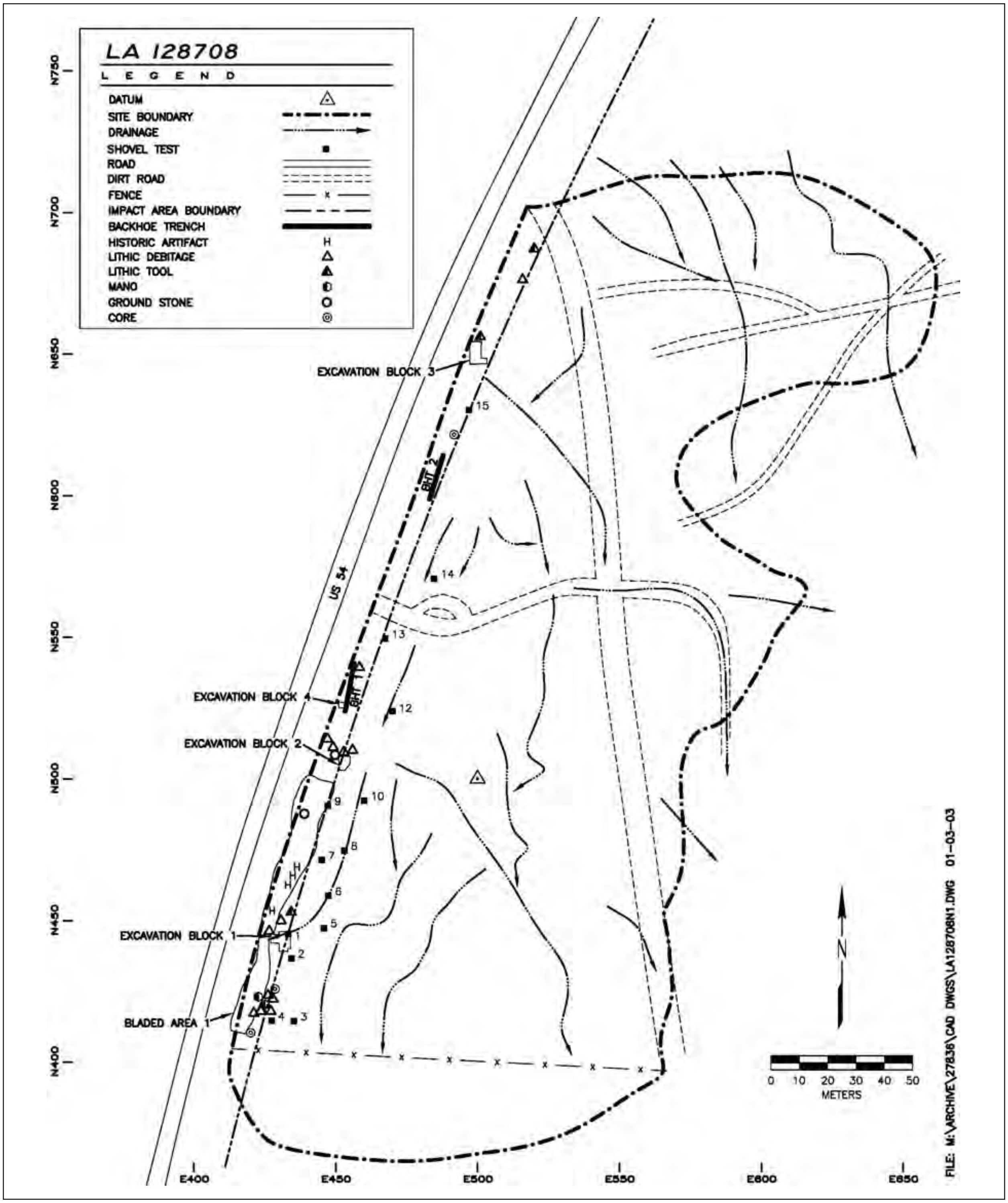

Figure 16.6 **Orogrande North (LA 128708), showing location of excavations and surface artifacts collected during the data recovery phase.**

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Figure 16.7 Excavation of Feature 2, in Block 1 at Orogrande North (LA 128708).

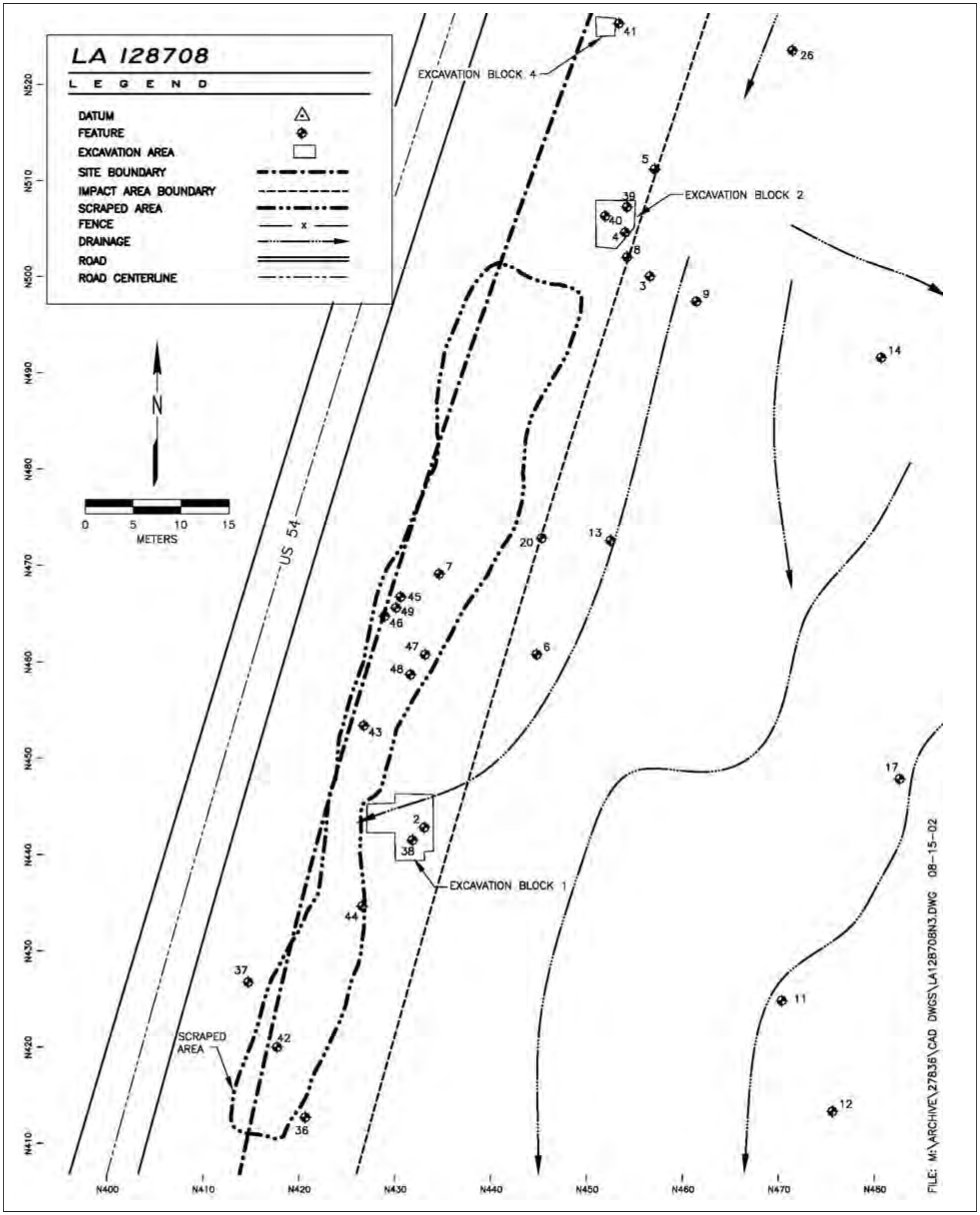

Figure 16.8 Orogrande North (LA 128708), showing features documented in and near the southern half of the impact corridor following data recovery.

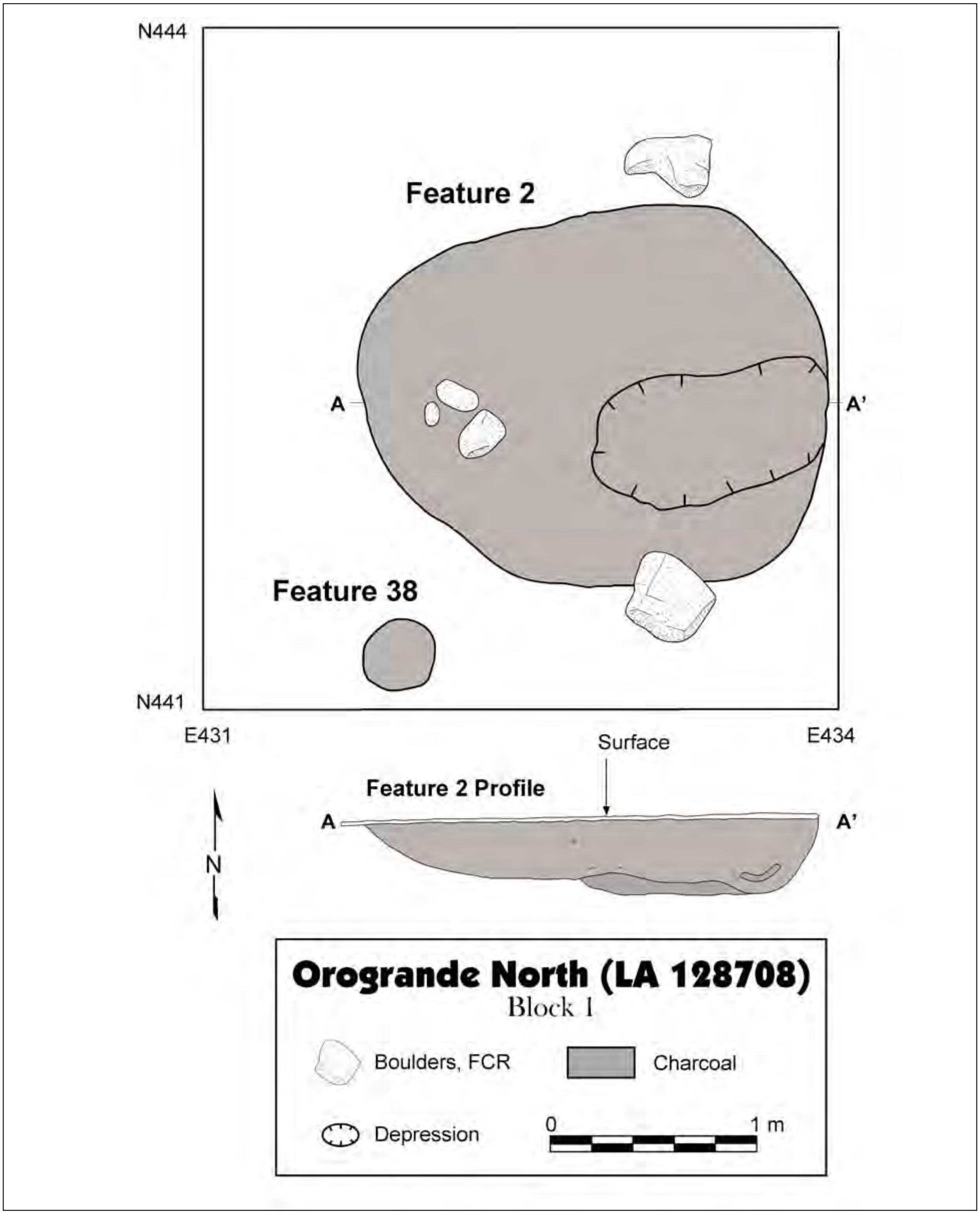

Figure 16.9 Orogrande North (LA 128708), Excavation Block 1.

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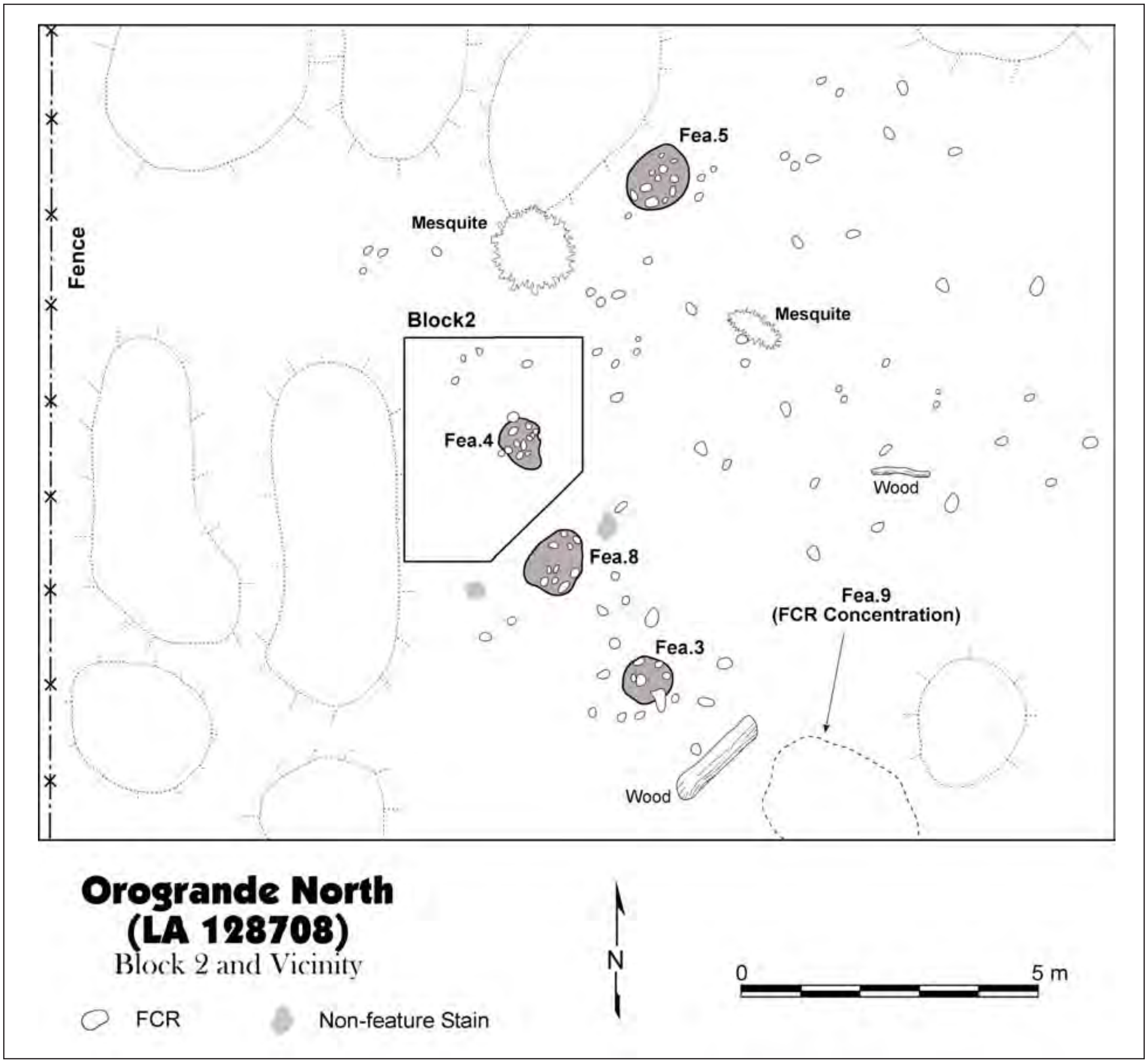

Figure 16.10 Orogrande North (LA 128708), Excavation Block 2.

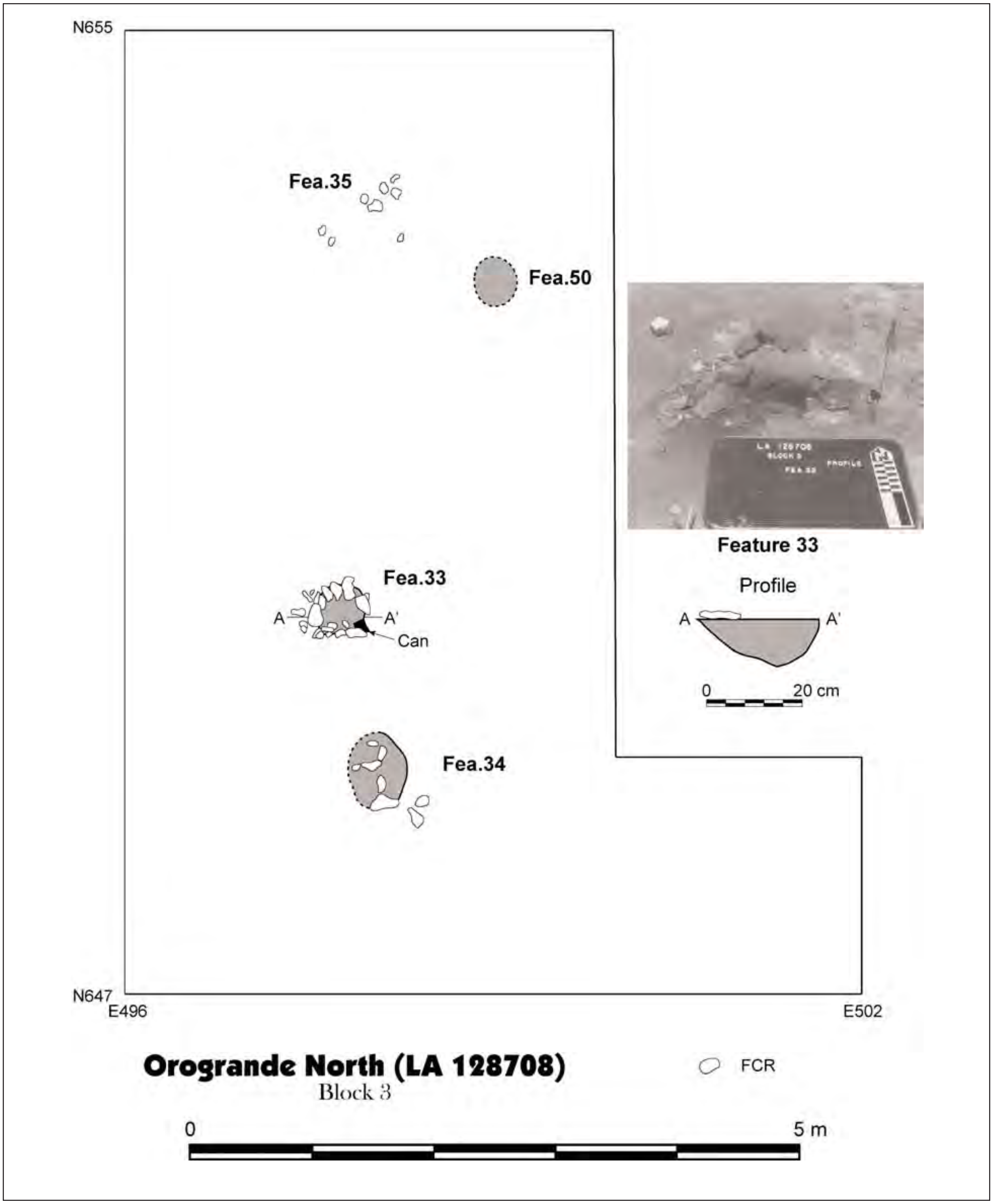

Figure 16.11 Orogrande North (LA 128708), Excavation Block 3.

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Table 16.7 Data Recovery Hand Excavations at LA 128708

Type	Unit No.	Size (m^2)	North	East	Feature	Depth Below Datum (100 m)	Comment
Block	1	36	439–445	427–433	2, 38	98.46–97.88	11 LD, 1 ceramic, 1 GS
Block	2	18	503–507	451–454	4, 39, 40	99.80–99.47	11 LD, 1 GS
Block	3	15.5	648–654	497–499	33–35, 50	101.46–101.01	1 LT
Block	4	4	525–526	451–452	41	100.42–99.75	5 LD, 1 LT
Trowel Test/Feature Excavation	42	1	419.79	417.67	42, 42.1	97.92–97.72	100% of feature excavated
Trowel Test/Feature Excavation	43	0.5	453.17	426.72	43	98.38–98.33	100% of feature excavated, 1 HS, 2 LD, 1 UB ceramic
Trowel Test/Feature Excavation	44	0.725	434.26	426.37	44	98.15–98.00	100% of feature excavated
Trowel Test/Feature Excavation	45	0.75	466.74	430.55	45	98.81–98.60	100% of feature excavated
Trowel Test	46	NA	464.66	429	46	98.77–98.75	Non-feature—Ab horizon
Trowel Test/Feature Excavation	47	1.02	460.65	433.2	47	98.71–98.60	100% of feature excavated
Trowel Test	48	0.5	458.27	431.65	48	98.67–98.65	Non-feature—Ab horizon
Trowel Test/Feature Excavation	49	0.61	465.44	430.05	49	98.81–98.59	100% of feature excavated, 2 LD

Table 16.8 Backhoe Trenches at LA 128708.

BHT No	EDM Shot	N/E	N/E	EDM Elevation	Length (m)	Width (m)	Depth (m)	Size (m^2)	Vol. (m^3)	Feature
1	½	523.76/453.45	541.09/456.5	99.88/100.21	17.33	1	1.2	17.33	20.8	41
2	½	598.68/483.07	614.48/487.82	101.10/101.18	15.8	1	1.34	15.8	21.17	0

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Table 16.9 All Features Documented at Orogrande North (LA 128708)

Fea. No.	North	East	Location	Length (m)	Width (m)	Depth (m)	Type	Function
1	404.07	443.1	Outside Impact Area	2	2	0.05	FCR Ash stain	Large thermal feature—Private land
2	442.5	433	Block 1	2.2	1.7	0.43	Basin	Large thermal feature
3	500.85	456.31	Outside Impact Area	1	0.8	0.12	FCR Ash stain	Large thermal feature
4	505.7	453.5	Block 2	0.79	0.7	0.09	Basin	Large thermal feature
5	511.04	457.11	Outside Impact Area	1.4	1.4	0.08	FCR ash stain	Large thermal feature
6	460.34	444.83	Outside Impact Area	1	1	0.1	FCR concentration	Large thermal feature (deflated)
7	468.98	434.7	None—not excavated	2	1	Surface	FCR scatter	Large thermal feature (deflated)
8	502.74	454.06	Outside Impact Area	1	0.75	0.1	FCR concentration	Large thermal feature (deflated)
9	497.51	461.25	Outside Impact Area	4	4	0.1	FCR scatter	Large thermal feature (deflated)
10	603.39	512.82	Outside Impact Area	5	3	Surface	FCR scatter	Large thermal feature (deflated)
11	427.9	467.78	Outside Impact Area	0.3	0.3	0.09	FCR ash stain	Small thermal feature
12	412.98	475.55	Outside Impact Area	1	1	0.05	FCR ash stain	Large thermal feature (deflated)
13	472.67	452.41	Outside Impact Area	0.4	0.4	0.05	Ash stain	Small thermal feature
14	491.5	480.64	Outside Impact Area	0.75	0.75	0.07	FCR Ash stain	Large thermal feature
15	487.68	489.92	Outside Impact Area	0.5	0.5	0.07	FCR Ash stain	Small thermal feature
16	484.09	496.66	Outside Impact Area	2	2	Surface	FCR scatter	Large thermal feature (deflated)
17	451.5	478.12	Outside Impact Area	0.3	0.3	0.1	Ash stain	Small thermal feature
18	498.45	500.05	Outside Impact Area	0.10+	0.10+	Unknown	Ash stain	Thermal feature, size unknown, (under dune)
19	419.14	515.28	Outside Impact Area	0.4	0.4	0.07	Ash stain	Small thermal feature
20	472.76	445.26	Outside Impact Area	0.10+	0.10+	0.10+	Ash stain	Unknown Stain eroding out of dune
21	570.58	482.8	Outside Impact Area	0.3	0.3	0.05	Ash stain	Small thermal feature
22	495.38	512.81	Outside Impact Area	0.2	0.2	0.03	Ash stain	Small thermal feature (deflated)
23	507.5	524.86	Outside Impact Area	2	1.5	0.1	FCR scatter	Deflated thermal feature
24	446.59	503.95	Outside Impact Area	3	3	Surface	FCR scatter	Deflated thermal feature
25	433.4	546.83	Outside Impact Area	2.5	1.5	0.1	FCR concentration	Large thermal feature (semi-deflated)
26	523.88	471.47	Outside Impact Area	0.5	0.5	0.05	Ash stain	Small thermal feature

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Table 16.9 All Features Documented at Orogrande North (LA 128708) (continued)

Fea. No.	North	East	Location	Length (m)	Width (m)	Depth (m)	Type	Function
27	451.82	530.45	Outside Impact Area	3	1	Surface	FCR scatter	Deflated thermal feature
28	464.45	531.61	Outside Impact Area	0.3	0.3	0.07	Ash stain	Small thermal feature
29	507.65	502.75	Outside Impact Area	2	1.3	0.14	Ash stain	Large thermal feature pit
30	568.56	516.6	Outside Impact Area	1	1	0.09	FCR ash stain	Large thermal feature (semi-deflated)
31	507-696	526-566	Outside Impact Area	189	0.25	Surface to 0.30	Historic Pipeline	Water pipeline
32	512.34	551.58	Outside Impact Area	0.5	0.5	0.10+	Ash stain	Small thermal feature
33	651.75	447.84	Block 3	0.56	0.5	0.1	Rock-lined Basin	Historic small thermal feature
34	648.9	497.9	Block 3	0.55	0.37	0.09	Rock-lined Basin	Historic small thermal feature
35	653.72	498	Block 3	0.6	0.5	0.03	FCR concentration	Historic small thermal feature (deflated)
36	412.16	420.64	None—not excavated	0.5	0.5	Surface	FCR ring	Small thermal feature (deflated)
37	426.45	414.68	None—not excavated	0.8	0.75	Surface	FCR ring	Small thermal feature (deflated)
38	441.25	431.92	Block 1	0.34	0.34	0.13	Basin	Small thermal feature
39	506.6	453.6	Block 2	0.76	0.65	0.09	Basin	Large thermal feature
40	506.27	452.8	Block 2	0.48	0.44	0.05	Basin	Small thermal feature
41	526.38	453.32+	Block 4 (BHT 1)	0.75	0.55+	0.27	Basin	Large thermal feature
42	419.79	417.67	Scraped Area 1	1.22	0.79	0.18	Basin	Large thermal feature w/ interior pit
43	453.17	426.72	Scraped Area 1	0.55	0.5	0.05	Lens	A Horizon (not a feature)
44	434.26	426.37	Scraped Area 1	0.75	0.7	0.15	Basin	Large thermal feature
45	466.74	430.55	Scraped Area 1	0.8	0.7	0.21	Basin	Large thermal feature
46	464.66	429	Scraped Area 1	>1.0	>1.0	0.02	Lens	A horizon (not a feature)
47	460.65	433.21	Scraped Area 1	1.15	0.9	0.11	Basin	Large thermal feature
48	458.27	431.65	Scraped Area 1	0.6	0.4	0.02	Lens	A horizon (not a feature)
49	465.44	430.05	Scraped Area 1	0.62	0.6	0.22	Basin	Small thermal feature
50	653	499	Block 3	0.45	0.4	0.03	FCR with ash	historic small thermal feature (deflated)

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Table 16.10 Summary Data for Excavated, Prehistoric Thermal Features at LA 128708

Fea. No.	Location	Length (m)	Width (m)	Depth (m)	Morphology	Plan	Type
38	Block 1	0.34	0.34	0.13	Basin	oval	Small thermal feature
40	Block 2	0.48	0.44	0.05	Basin	circular	Small thermal feature
49	Scraped Area 1	0.62	0.6	0.22	Basin	circular	Small thermal feature
44	Scraped Area 1	0.75	0.7	0.15	Basin	circular	Large thermal feature
41	Block 4 (BHT 1)	0.75	0.55+	0.27	Basin	oval	Large thermal feature
39	Block 2	0.76	0.65	0.09	Basin	circular	Large thermal feature
4	Block 2	0.79	0.7	0.09	Basin	circular	Large thermal feature
45	Scraped Area 1	0.8	0.7	0.21	Basin	circular	Large thermal feature
47	Scraped Area 1	1.15	0.9	0.11	Basin	circular	Large thermal feature
42	Scraped Area 1	1.22	0.79	0.18	Basin	oval	Large thermal feature w/ interior pit
2	Block 1	2.2	1.7	0.43	Basin	oval	Large thermal feature

pits appear to have been substantial roasting ovens in which large quantities of food were cooked. Two of these largest roasting pits were radiocarbon dated; Feature 2 produced a Late Archaic, Hueco-phase date, while Feature 42.1 yielded a middle Mesilla-phase date (which is supported by an El Paso Brown sherd recovered from this feature). Thus, the exceptionally large size of these roasting pits does not appear to be a function of chronological affiliation. Four of the smaller large thermal features were also radiocarbon dated, and these determinations ranged widely, including one falling in the late Fresnal phase (Feature 41), one in the early Hueco phase (Feature 39), one in the late Hueco phase (Feature 45), and one in the mid-late Mesilla phase (Feature 44).

Only three prehistoric small thermal features were excavated (Features 38, 40, and 49). These range 34–62 cm in maximum diameter and 13–22 cm in depth. One of these, Feature 49, was radiocarbon dated to the late Hueco or Mesilla phase. All three of these features lacked diagnostic artifacts.

All four of the historic thermal features were hearths, and two of these were completely deflated (see Figure 16.11). The two preserved historic hearths were very similar; both were rock-lined basins measuring 55–56 cm in maximum dimension and 9–10 cm in depth. All four of these features occurred in Block 3 and apparently mark the location of an historic camp, although it is unclear whether these features are associated with the mining days of the nearby town of Orogrande, or with the construction of US 54 during the 1960s. One of these features contained rusted can remains, but the lack of diagnostics and botanical remains prohibits any specific interpretations of these features.

Artifact Assemblage

A total of 89 artifacts was recovered during testing and data recovery investigations, including 11 from the testing phase. These include 23 ceramics, 65 lithic artifacts, and one historic item. In addition, 35 samples were collected.

Ceramics

A total of 23 sherds, weighing 83.1 grams, was analyzed from LA 128708. The sherds were recovered from three proveniences including surface collection, Feature 42, and Feature 42.1. Seven sherds were collected from the surface during the testing phase. These include the only decorated ceramics recovered from the site, and all came from the southern part of the site, outside the right-of-way (Figure 16.14). The decorated

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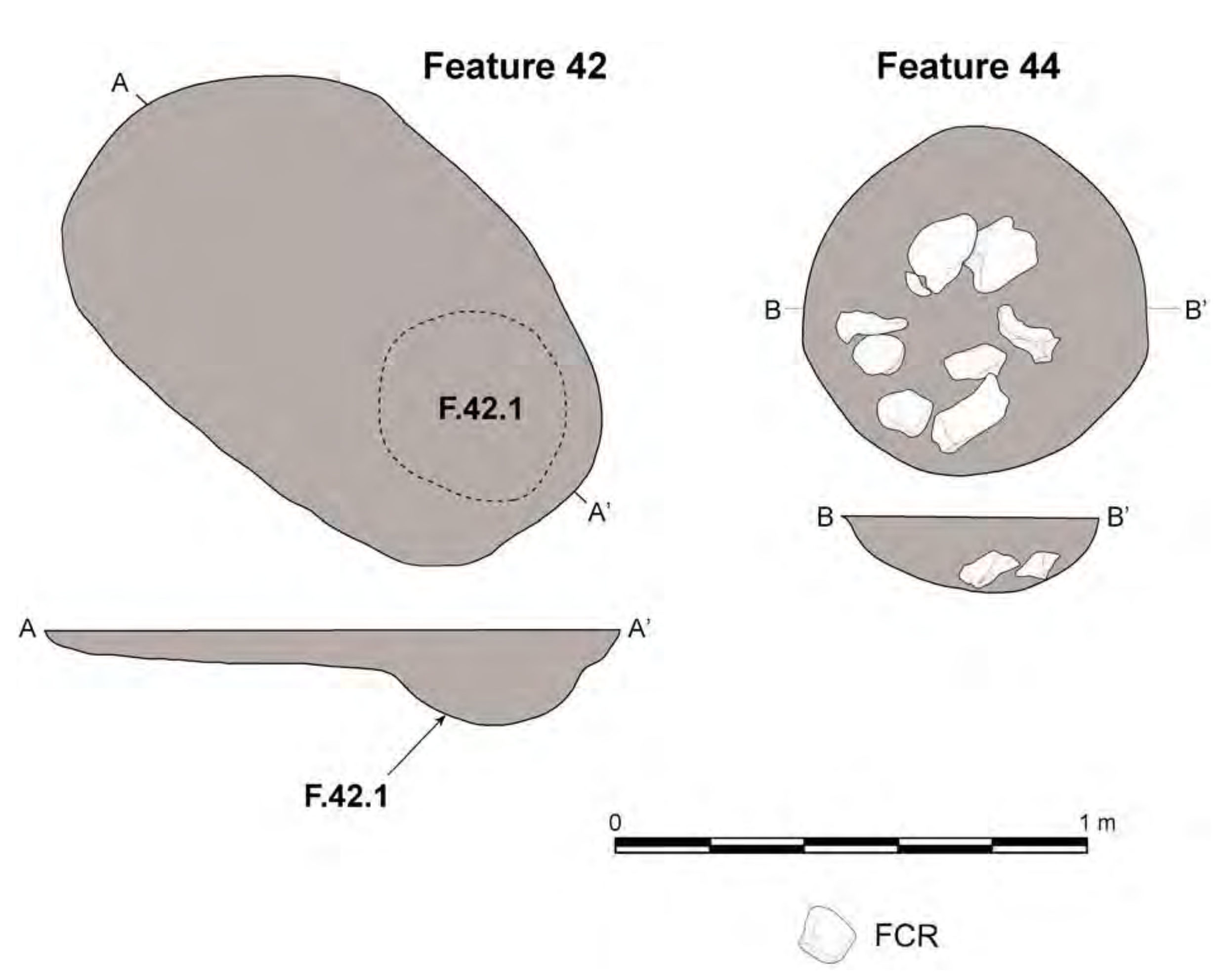

Figure 16.12 Large thermal features at Orogrande North (LA 128708).

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Figure 16.13 **Feature 2, a very large roasting pit and the largest feature excavated at Orogrande North (LA 128708). Analysis of lipid residues from FCR in this feature suggested it was perhaps used for roasting mesquite.**

sherds include two El Paso Polychrome rims, one El Paso Bichrome (or possibly Polychrome) sherd, one Chupadero Black-on-white sherd, and one undifferentiated Mimbres whiteware sherd. Of the two undecorated El Paso Brown sherds recovered during testing, one had been worked into a rough disk.

All of the 16 sherds recovered during data recovery are fragmentary El Paso Brown jar body fragments. These appear to represent at least two individual vessels based on paste color and texture. Since no rim sherds were recovered, specific jar form(s) could not be determined. The sherds were tempered with coarse angular granite, had a semi-friable fracture, and a brown interior and exterior surface color; no polish was noted on the ceramics. No use-wear or residues were noted; however, a single drill hole of indeterminate use was identified on one sherd. Because no attrition was observed, vessel use can only be surmised. It is likely that the vessel was used for cooking and/or storage.

The recovered ceramic assemblage suggests minimally two components. The earlier of the two is early to middle Mesilla phase in affiliation and is represented primarily by the 16 sherds collected during the data recovery phase. This component is chronometrically fixed by one, and possibly two, radiocarbon dates. Feature 42.1 yielded both an El Paso Brown sherd and a two-sigma calibrated radiocarbon date of A.D. 570–790. A second radiocarbon age of A.D. 650–900 was obtained from Feature 44, but this feature lacks ceramics.

The second component is represented by the decorated sherds from the site and minimally includes an early Doña Ana-phase occupation, although these sherds may also reflect sporadic occupations ranging from the late Mesilla to El Paso phases. The Mimbres sherd dates from late Mesilla to early Doña Ana times, while the Chupadero and El Paso series sherds date from the Doña Ana or El Paso phases. The very small number of these sherds indicates this later component involved only very small, ephemeral occupation(s).

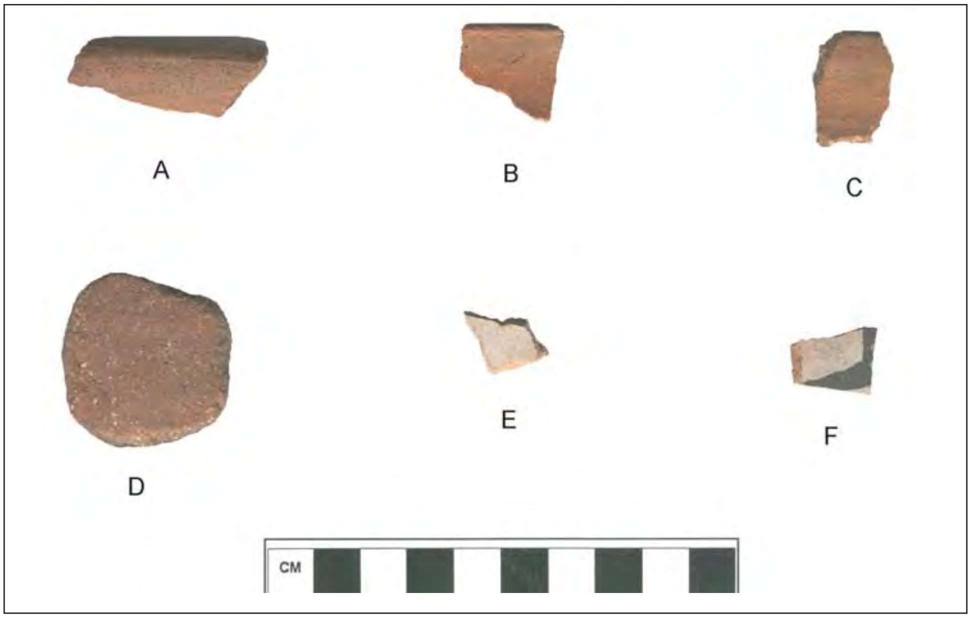

Figure 16.14 Decorated ceramics from Orogrande North (LA 128708). A, C: El Paso Polychrome; B: El Paso Bichrome or Polychrome; C: sherd disk; D: Mimbres whiteware; E: Chupadero Black-on-white.

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Lithic Artifacts

Sixty-three lithic artifacts were recovered from LA 128708, a small mixed assemblage of late Archaic and Formative age (Table 16.11). These include one projectile point, one biface fragment, two retouched tools, two cores, 48 pieces of debitage, two hammerstones, five metate fragments, and one piece of ochre probably used for pigment.

Chipped Stone

Tools and Cores

The single projectile point, recovered from the surface, is a fragmentary dart tip made of chert. The base and one barb are missing, but the deeply corner-notched point appears consistent with the San Pedro or Cienega types of the Late Archaic (Huckell 1995, Carmichael 1986:92–95, Van Hoose 2000a). One margin of the blade has a notably convex shape and appears to have been resharpened. The biface is of chert, has a very irregular form, and represents Stage II reduction.

Two retouched tools were recovered from the site surface, both identified as scrapers with continuous retouch along all three flake margins. One is silicified shale and the other is chert. Also recovered from the surface were two silicified shale cores, one bi-directional and the other unidirectional.

Debitage

One-third of the 48 pieces of debitage was collected from the surface (n=16), and two-thirds were collected below the surface (n=32). Over 60 percent of the material represented is silicified shale (n=29), followed by one-quarter chert (n=12) and eight percent rhyolite (n=4). Two pieces of unidentified igneous material and a piece of quartzite were also recovered. Although a Late Archaic dart point was recovered from the site and four of the six radiocarbon dates are of Late Archaic age, the presence of ceramics and a relatively high proportion of silicified shale are consistent with a predominantly Formative period debitage assemblage. Due to the small sample size, a spatial examination of ceramics and different material types did not conclusively resolve this issue; it appears that the ceramic and aceramic occupations overlap in the area excavated. This site contains the largest percentage of large, heavy flakes of all the US 54 sites, as well as the highest frequency of edge-modified debitage (15 percent). This is consistent with an expedient technology and the repeatedly reused, short-term nature of this site.

Ground Stone Tools and Other Lithic Artifacts

The small ground stone assemblage includes one whole slab metate, two metate fragments, and two pieces of unidentified ground stone. The whole metate is a small, unshaped sandstone slab with a flat grinding surface; its largest dimension is 22 cm, suggesting non-intensive grinding activity. The fragmentary metates include part of a basin metate and a small portion of a slab metate. The basin metate is nearly half complete, consisting of a roughly oval-shaped sandstone slab with a

Table 16.11 Lithic Artifacts at LA 128708 by Material Type

Artifact Type	Chert	Granite	Igneous	Ochre	Quartzite	Rhyolite	Sandstone	Silicified shale	Grand Total
Biface	1								*1*
Core								2	*2*
Debitage	12		2		1	4		29	*48*
Hammerstone						1		1	*2*
Metate/grinding slab		2					3		*5*
Mineral				1					*1*
Projectile point	1								*1*
Retouched tool	1							1	*2*
Total	*15*	*3*	*2*	*1*	*1*	*5*	*3*	*33*	*63*

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basin-shaped grinding surface consistent with food grinding activities. This metate is completely worn through in the center of the grinding surface. The remaining slab metate fragment is too small for thorough analysis. All metates show very little formal preparation; the basin shape of the first metate likely began as a flat-surface metate, acquiring its concave shape through use-wear.

Two hammerstones were recovered. One is a rhyolite hammerstone exhibiting battering on a single protuberance, while the other is silicified shale with a polar battering pattern. Both battering patterns are relatively localized, indicating relatively nonintensive use.

Finally, a single piece of red ochre was recovered from subsurface context. The item was likely used as a pigment and exhibits faceting resulting from grinding.

Biological Remains

A variety of samples, including pollen, flotation, phytolith, and lipid residue, were recovered from LA 128700. Of these, six flotation samples and five soil-pollen samples were submitted for analysis. In addition, two fire-cracked rocks were submitted for lipid residue analysis. The results are described below.

Archaeobotanical

A total of six flotation samples were analyzed from Orogrande North (LA 128708). These included single samples from Feature 2, 39, 42.1, 44, 45, and 49. The results were rather meager, with only four possible taxa identified. These include *Prosopis glandulosa, Atriplex canescens, Gramineae,* and *Amaranthus* sp. These taxa are generally indicative of locally available wood/fuel sources and, possibly, some wild food plants. See Chapter 24 for more detailed information on the macrobotanical remains from this site.

Five pollen samples were collected from site LA 128708 and represent Features 2, 39, 41, 42, and 45. Pollen preservation was generally poor, and no unequivocally economic species were identified. Of special interest was a grain of *Prunus* pollen, which indicated long-term transport to the site, probably from the nearby Sacramento Mountains. Overall, however, the pollen assemblage from Orogrande North is of limited value in interpreting past subsistence patterns and on-site activities. See Chapter 25 for more detailed information on the pollen remains from this site.

Lipid Residues

The two FCR samples submitted for lipid residue analysis came from Features 2 and 44. Both are large thermal features, probably the remains of roasting pits, although Feature 2 is by far the larger of the two, and the largest feature excavated at the site. Feature 44, on the other hand, is one of the smallest large thermal features. Feature 2 is Late Archaic in age, and Feature 44 dates from the Mesilla phase. The residues identified from these samples were similar in that they both contained very high levels of C24:0. One residue (Feature 2) was identified as food of medium fat content and the other (Feature 44) fell on the border between medium and medium-low fat content foods. Residues from Feature 2 appear to result from the preparation of medium fat content foods, such as mesquite or maize. This residue has elevated levels of C18:1 isomers and relatively lower levels of C18:0. Fish produces similar residues, but given the highly elevated levels of very long chain-saturated fatty acids in this residue, plant origins are almost certain. Given the absence of maize in archaeobotanical samples from the site, it seems most likely that Feature 2 was used for roasting mesquite pods. The fatty acid composition from Feature 44 is very similar; however, the C18:1 isomer levels are lower, suggesting certain plant fruits, such as prickly pear tunas.

Site Chronology

Chronological information from Orogrande North (LA 128708) derives from both chronometric and relative dating sources. Chronometric dates were obtained from seven radiocarbon samples, all from feature fill (Table 16.12, Figure 16.15).

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Table 16.12 Radiocarbon Dates from LA 128708

Feature	Beta #	Date type	Conventional Radiocarbon Age (B.P.)	Calibrated (2-Sigma)
44	161830	Standard	1270 ± 70	A.D. 650–900
42.1	161829	Standard	1360 ± 70	A.D. 570–790
49	161832	Extended count	1810 ± 60	A.D. 70–380
45	161831	AMS	1960 ± 40	40 B.C.–A.D. 120
2	161826	Standard	2000 ± 60	160 B.C.–A.D. 120
39	161827	Extended count	2400 ± 80	790–360 B.C.
41	161828	Standard	2900 ± 70	1300–900 B.C.

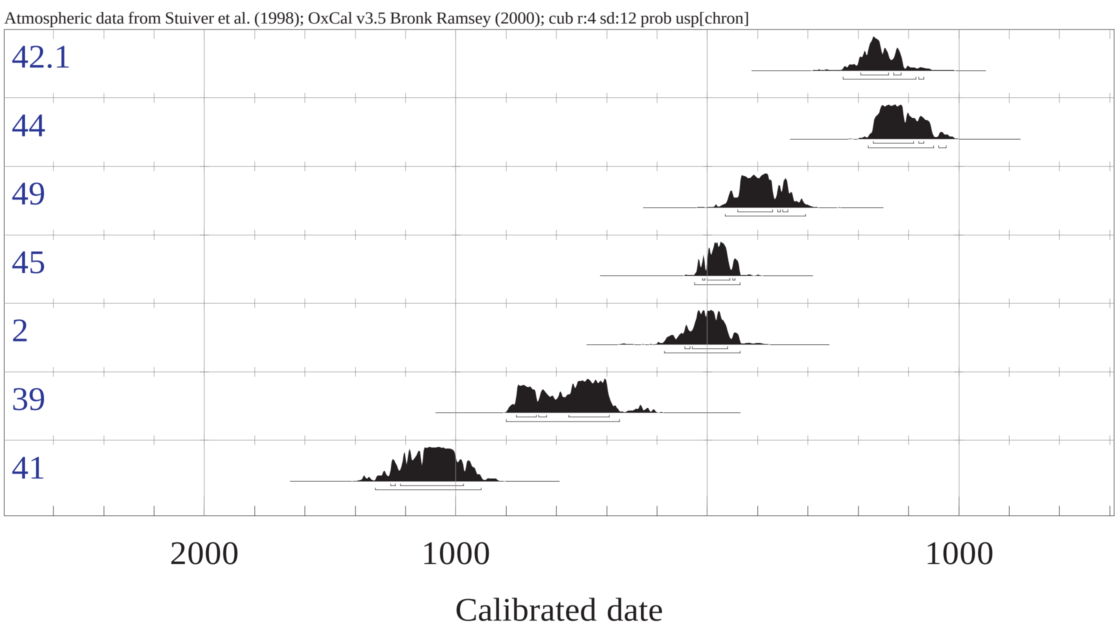

Figure 16.15 Radiocarbon dates from LA 128708.

Four of the seven dates fall within the Late Archaic period, two are within the Mesilla phase, and one straddles the conventional boundary between these two time frames. The earliest date, from Feature 41, falls within the later span of the Fresnal phase, the earlier of the two Late Archaic phases in the central Jornada Mogollon region (see Chapter 3). Three of the four dates fall within the Hueco phase of the later Late Archaic period, and the single projectile point recovered from the site is consistent with this time frame.

The middle to late Mesilla-phase dates are supported by a small number of undecorated, El Paso Brown ceramics from within the right-of-way. The high percentage of silicified shale in the recovered debitage assemblage suggests a predominantly Formative period occupation. Other diagnostic ceramics suggest later occupation at the site, possibly spanning the late Mesilla to El Paso phases, or perhaps a single occupation dating from the early Doña Ana phase. These include an unidentified Mimbres sherd, El Paso Polychrome (and possibly El Paso Bichrome), and Chupadero Black-on-white. These decorated wares all occurred outside the right-of-way, and none appear to relate to the features investigated within the impact area.

Four historic features, all within Block 3, as well as a scattering of historic materials across the site mark the use of the site during the twentieth century. Much of this debris probably derives from the heyday of Orogrande in the late nineteenth and early twentieth centuries, although the features in Block 3 may also be associated with construction of US 54 during the 1960s.

Site Interpretation

The Orogrande North site (LA 128708) was occupied intermittently over a long span of prehistory, and includes both Late Archaic- and Formative-period components. The nature of the site's archaeological remains suggests these occupations involved seasonal, and probably short-term, encampments. No structural remains were encountered at the site, indicating that any shelters constructed here were light-duty and did not leave any archaeological traces (or at least within the right-of-way portion of the site). All of the features excavated at the site were thermal facilities, and some of these are quite large and substantial roasting pits. It is important to keep in mind, however, that most of the site was outside of the right-of-way and was not investigated beyond surface documentation; subsurface remains outside the impact may alter our present understanding of this site and its occupational history.

Unfortunately, preservation at this site was not good, and the recovered botanical remains shed little light upon the kinds of subsistence or food processing activities associated with the site's occupations. Lipid residues from two large thermal (Features 2 and 44), however, did yield evidence suggesting roasting of plant foods. Although the lipids data are not definitive, they do suggest Feature 2 (a Hueco-phase pit oven) was perhaps used for roasting mesquite, while prickly pear tunas may have been the main item prepared in Feature 44 (a middle to late Mesilla-phase roasting pit).

Orogrande North is located within a high-density concentration of prehistoric sites, and indigenous peoples may have been attracted to this locality by several factors. Located high on the alluvial apron of the Jarilla Mountains, the site is not situated in a particularly productive environmental zone, yet it offered relatively close access to resources from the nearby desert floor and mountain zones. The site may also be located close to sources of silicified shale, although this needs to be confirmed by a field inspection of nearby rock outcrops. People may have found this locality a strategic place to set up camp during the course of their seasonal rounds and as a stopover while moving from one location to another. The archaeological remains suggest most of the occupations at this site occurred during the Late Archaic and early-mid Mesilla phase, when settlement-subsistence patterns still featured a high degree of seasonal mobility and dispersion, yet regional population levels were also rising to the point that local groups were probably becoming more territorial and were utilizing resources both more intensively and extensively. The presence of substantial roasting pits on this site does indicate a degree of investment beyond mere ephemeral camping and appears to be symptomatic of the intensifying subsistence strategies that probably characterized the Late Archaic–Mesilla phase time frame. The accumulation of debris here over time may have provided an added bonus for the site's Formative period occupants, who probably re-used chipped stone waste on the site for the production of expedient tools and ground stone fragments and other rock for use in thermal features.

At any rate, by later Formative times occupation at the site appears to have been reduced to extremely ephemeral camping episodes. Insofar as this is true, this may reflect decreasing mobility during the Doña Ana and El Paso phases, with fewer people making fewer seasonal forays to localities such as this site.

Following the late Formative period, there is no evidence of occupation at Orogrande North until late historic times. Lying just north of the town of Orogrande and just northwest of the smelter

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site (see Chapter 32), LA 128708 witnessed activities associated with the heyday of Orogrande in the early twentieth century. Among the historic archaeological remains within the site is a steel water pipe (Feature 31) that ran from a reservoir in the nearby Jarilla Mountains to the smelter. Historic trash litters the site's surface, and much of this was deposited at the site during Orogrande's zenith roughly a century ago. Almost all of these remains are located outside the right-of-way, however, and so documentation was limited. The four historic features investigated within the right-of-way may also be associated with historic Orogrande, although at least some of these may also date from the construction of US 54 in the 1960s. Unfortunately, these features proved to be of minimal data potential and contribute little to our understanding of the historic occupation of the area.

Recommendations

Data recovery efforts at LA 128708 have fulfilled the goals outlined in the data recovery plan. Fencing along the east impact zone is recommended to ensure that sensitive features documented immediately to the east are not disturbed during construction. The proposed construction will not have any effect on cultural resources within the right-of-way. Outside the right-of-way, however, cultural resources have been only minimally documented, and the southern site boundary (which lies on private property) remains undefined. In the future, should there be any construction activities planned for portions of the site outside the right-of-way, and if such activities fall under relevant regulations, they should be proceeded by additional testing and, if necessary, a data recovery plan.

Chapter 17

Prehistoric Tested Sites Outside Orogrande

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Introduction

The tested prehistoric resources outside Orogrande include two low-density artifact scatters and one potential Archaic habitation site. One of the tested sites (LA 115257) contains a Jornada Mogollon component. The two other sites (LA 115255 and LA 126178) are of unknown cultural/temporal affiliation. Testing phase data includes site type, cultural affiliation, site size, and the numbers and kinds of features within and outside of the right-of-way, and National Register of Historic Places eligibility recommendations. Most of the information in this chapter appeared previously in Acklen *et al*. (1999), and eligibility recommendations were presented previously for review and consultation, and completed by, agency archeologists (BLM and Fort Bliss) and the Historic Preservation Division. Artifact analyses were carried out as part of the present project, and the information generated from these analyses is presented here for the first time.

LA 115255

LA 115255 is an aceramic chipped and ground stone scatter located on a flat plain in the east-central portion of the Tularosa Valley (Figure 17.1). The site is located on private land and right-of-way obtained from private sources on the western side of US 54. The site measures 250 m along the right-of-way and approximately 12 m within the existing right-of-way as it was originally proposed. The site also appears to extend for another 6–8 m into private land beyond the original right-of-way. Total site area within the right-of-way is estimated to be 3,163 m^2. The site is characterized by level, grassy terrain with a few scattered mesquite coppice dunes. A desert floor depression is located approximately 1 mile (1.6 km) to the southeast of the site. Local vegetation includes dropseed, grama grass, narrowleaf yucca, fourwing saltbush, and mesquite.

During initial survey, the site was identified as an eroded ash stain (Marshall and Marshall 1998). Since no cultural materials were found, the temporal period of occupation was unknown.

Testing Methodology

Eleven 0.5 x 0.5-m shovel tests, five auger tests, and three backhoe trenches were excavated during the testing of LA 115255 (Figure 17.1). Five of the shovel tests were excavated near or adjacent to identified features along the right-of-way to determine the potential for intact subsurface cultural horizons associated with these features. The remaining shovel tests and the auger tests were spaced along the right-of-way edge in regular intervals. The three backhoe trenches were excavated in the central, south, and northern portions of the site to allow the project geomorphologist to assess the potential of this site to contain intact late Holocene age deposits. The backhoe trenches indicated a potential for intact remains in the western portion of the site.

Testing Results

Testing results are summarized in Table 17.1. Five of the STs produced evidence of subsurface cultural deposits. ST 2 produced a single flake in the second level. Feature 2 was encountered at the bottom of the first level excavated in ST 4. Feature fill was continuous to a depth of 0.31 m in that unit. ST 6 produced a chert flake from 0.25–0.3 m bgs. Subsurface deposits associated with Feature 7 were encountered in ST 8; also

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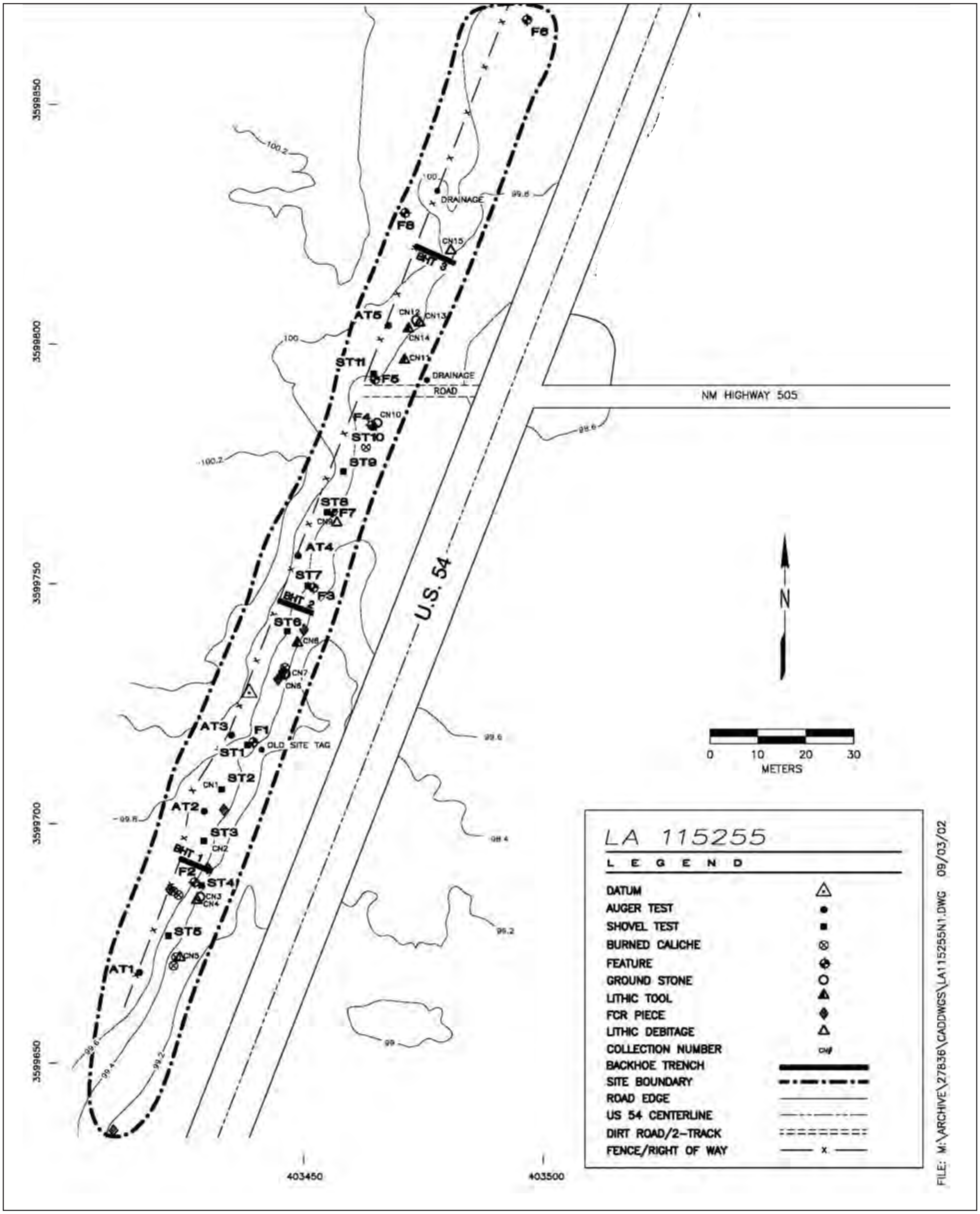

Figure 17.1 LA 115255 site map.

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Table 17.1 Testing Results

Test No.	Location	Depth	Stratum 1	Cultural Evidence	Stratum 2	Cultural Evidence	Stratum 3	Cultural Evidence
ST 1	South-central, southwest of Feature 1	0.4 m	Friable, reddish-brown sand (5YR6/6), surface to 0.1 m	None	Compact, reddish-brown, loamy sand (5YR6/6), with trace of caliche nodules, 0.1–0.4 m	None	N/A	N/A
ST 2	South-central	0.5 m	Friable, reddish-brown sand (5YR5/6), surface to 0.2 m	1 flake, 0.1–0.2 m	Compact, reddish-brown, loamy sand (5YR5/6), with trace of caliche nodules, 0.2–0.37 m	None	Compact, reddish-brown, loamy sand, with high density caliche to calcrete (5YR5/6), 0.37–0.5 m	None
ST 3	South-central	0.48 m	Friable, light reddish-brown sand (5YR6/4), surface to 0.07 m	None	Slightly compact, reddish-brown, loamy sand (5YR5/4), with few inclusions, 0.07–0.2 m	None	Compact, reddish-brown, loamy sand, with moderate to high caliche (5YR5/4-6/3), 0.2–0.48 m	None
ST 4	South, in Feature 2	0.34 m	Friable, reddish-brown sand (5YR5/6), surface to 0.1 m	Bottom of level Feature 2	Slightly compact, brown, ash-stained, loamy sand (5YR5/4), 0.1–0.31 m	Feature 2 fill and one utilized chert flake	Compact, light brown, loamy sand, with high density of caliche (5YR6/4), 0.31–0.34+ m	None
ST 5	South end	0.4 m	Friable, reddish-brown sand (5YR6/6), surface to 0.08 m	None	Slightly compact, reddish-brown, loamy sand (5YR6/6), 0.08–0.38 m	None	Caliche or calcrete 0.38–0.4+ m	None
ST 6	Central	0.6 m	Friable, reddish-brown sand (5YR5/6), surface to 0.25 m	None	Slightly compact, reddish-brown, loamy sand (5YR5/6), 0.25–0.45 m	1 chert flake at 0.25–0.3 m bgs, and 2 fire-cracked rock	Very compact, reddish-brown, loamy sand, with moderate to high caliche 0.45–0.60+ m	None
ST 7	Central, west of Feature 3	0.4 m	Friable, reddish-brown sand (5YR6/6), surface to 0.07 m	None	Slightly compact, reddish-brown, loamy sand (5YR5/8), 0.07–0.36 m	None	Very compact, reddish-brown, loamy sand, with some caliche (5YR5/8), 0.36–0.4+ m	None
ST 8	North-central	0.17 m	Friable, yellowish-red sand (5YR5/6), surface to 0.06 m	1 fire-cracked rock	Slightly compact, yellowish-red, loamy sand (5YR5/6), with some caliche, 0.06–0.15–0.17 m	None	Dark Brown, ash-stained sand (7.5YR3/3), with charcoal flecks 0.15–0.17+ m	Feature 7 fill with 3 limestone flakes
ST 9	North-central	0.5 m	Friable, reddish-brown sand (5YR6/6), surface to 0.2 m	None	Slightly compact, reddish-brown, loamy sand (5YR5/8), 0.2–0.4 m	None	Very compact, reddish-brown, loamy sand, with caliche nodules (5YR6/6), 0.4–0.5+ m	None

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Table 17.1 Testing Results (continued)

Test No.	Location	Depth	Stratum 1	Cultural Evidence	Stratum 2	Cultural Evidence	Stratum 3	Cultural Evidence
ST 10	North, in Feature 4	0.1 m	Friable, reddish-brown sand, with high density of caliche (5YR6/4–8/4), surface to 0.1 m	5 fire-cracked rock off surface	Calcrete or caliche 0.1+ m	None	N/A	N/A
ST 11	North, just north of Feature 5	0.3 m	Friable, reddish-brown sand (5YR6/6), surface to 0.2 m	None	Very compact, reddish-brown, loamy sand (5YR6/6), with high density of caliche 0.2–0.3+ m	None	N/A	N/A
AT 1	South end	1.65 m	Friable, reddish-yellow sand (5YR6/6), surface to 0.5 m	None	Slightly compact, yellowish-red, loamy sand (5YR5/6), some caliche nodule inclusions 0.5–1.2 m	None	Very compact, loamy sand, with caliche nodule inclusions (5YR5/3), 1.2–1.65 m contacting caliche or calcrete	1 modern beer bottle glass fragment B from rodent burrow
AT 2	South-central	0.6 m	Friable, yellowish-red sand (5YR5/8), surface to 0.3 m	None	Light reddish-brown, loamy sand (5YR6/4), with caliche nodules, 0.3–0.5 m	None	Pink, soft caliche, with some clay (5YR7/3), 0.5–0.6+ m	None
AT 3	South-central	1.4 m	Friable, reddish-brown sand (5YR5/6), surface to 0.4 m	None	Reddish-brown, moist, loamy sand (10YR5/8), 0.4–0.8 m	None	Light reddish-brown, loamy sand, with caliche inclusions (5YR5/6), 0.8–1.4 m where contact with caliche	None
AT 4	Central	0.9 m	Friable, reddish-brown sand (5YR5/6), surface to 0.5 m	None	Slightly compact, loamy sand (5YR5/8), 0.5–0.8 m	None	Light reddish-brown, loamy sand, with caliche (5YR6/4), 0.8–0.9 m contact with caliche	None
AT 5	Northern end	0.4 m	Friable, reddish-yellow sand (5YR6/6), surface to 0.3 m	None	Pink, loamy sand, with caliche (5YR7/3), 0.3–0.4+ m	None	N/A	N/A

recovered were three limestone flakes. Modern beer bottle glass was recovered from 1.2–1.65 m bgs in Auger Test (AT) 1 from a context interpreted to be a rodent burrow.

Eight features recorded on the site include three ash stains, two burned rock concentrations, two possible pithouses, and one historic trash dump. Seven of the eight features occur within the right-of-way.

Feature 1, which was identified during the initial survey (Marshall and Marshall 1998), is southeast of the site datum, just south of the central portion of the site. The feature consists of a 50-cm diameter area of ash-stained sand. Two pieces of fire-cracked limestone are present on the surface of the stain. ST 1 was excavated 40 cm west of the feature. During excavation of this shovel test, a few fire-cracked rocks were encountered at the point of contact with eolian sands. These pieces of fire-cracked rock, along with subsurface, sandy loam soils, indicate that subsurface materials will likely be present within the feature.

Feature 2 is located in the south-central portion of the site atop a bench above the road cut. The ash stain measures 2 x 1.5 m. No fire-cracked rock or artifacts are present on the surface, although burned caliche was noted 3 m to the southwest. ST 4 was excavated adjacent to the feature in order to determine its depth and partial horizontal extent. The shovel test revealed the ash-stained soils beginning at 5–10 cm bgs and continuing to a depth of 22–25 cm bgs. At this depth, sterile caliche was encountered. A single utilized tan chert flake fragment was recovered at the bottom of the fill. This feature may be a small pithouse stain that extends 2.5–3 m in diameter.

Feature 3 is in the central portion of the site. The feature is a 2 m north-south x 1.5 m east-west scatter of 15 pieces of burned caliche and limestone fire-cracked rock. The feature is eroding from the edge of the road cut and east into a drainage that parallels the highway. ST 7 was excavated 50 cm northwest of Feature 3. No cultural materials were encountered within the shovel test.

Feature 4 is in the north-central portion of the site and is on an exposed caliche laden surface. The feature is eroding to the north onto a dirt road that trends to the west from the highway. The road undercuts the surrounding terrain 20–30 cm and is eroded down to caliche. The feature is a 2-m diameter scatter of more than 40 pieces of burned caliche and fire-cracked limestone. ST 10 was placed in the central portion of the feature to determine if subsurface materials are present. The shovel test was sterile, indicating that the surficial portion of the feature is all that remains.

Feature 5 is at the north edge of an east-west two-track and is eroding from the road cut. The feature is a 20 cm north-south x 10 cm east-west ash stain. The intact portions of this feature appear to remain buried. ST 11 was excavated 1 m north of the ash stain. The shovel test was sterile, indicating that the remains are minimal.

Feature 6 is at the north edge of the site and consists of a late historic trash dump. The feature measures 1.5 m east-west x 1 m north-south. Artifacts present on the surface include a hole-in-top evaporated milk can, 15 triangular punch cans, and some broken, clear bottle glass.

Feature 7 was identified during excavation of ST 8 in the central portion of the site along the highway right-of-way edge. The feature consists of dark brown ash-stained soils with charcoal flecking. Feature fill was noted under the eolian sand deposits at a depth of 12 cm bgs. Artifacts present include three limestone flakes on the upper feature surface, and one piece of fire-cracked limestone near the top of the feature fill. The size of the feature remains unknown as it extends out of the 34 cm north-south x 32 cm east-west shovel test. The function of the feature is unknown.

Feature 8 is outside of the right-of-way on private land. The feature is in the northern portion of the site and is eroding into a two-track road that parallels the fence line. The feature is a 2-m-diameter ash stain and may represent another pithouse structure. A single marginally retouched lithic tool is present a few meters south of the feature.

Stratigraphy and Geomorphology

Three backhoe trenches excavated on this site reveal a relatively intact stratigraphic profile with the potential to yield archeological materials *in situ*. Preservation is greatest on the western portion of the site, which has received the least amount of construction activity. This gives way to the ditch area adjacent to the road, which has been scoured down to the Mid-Pleistocene La Mesa calcrete. This discussion will focus on the intact, western portions of the site.

The surficial deposit at the site (Unit 1) consists of 20–40 cm of historic sands and/or mixed fill. These sediments are generally light brown (7.5YR6/3, d) and have a loamy sand texture. Unit 1 correlates with Stratum 1. Where dunes are encroaching on the site, the sediments are coarse laminated and lack a strong gravel component. Elsewhere, the sands lack stratification, but exhibit up to 20 percent carbonate nodules that appear to have been incorporated into the sands during previous construction. In either case, these surficial sediments appear to be historic in origin and probably post-date the construction of US 54. For this reason they are considered to have low archeological potential. It is possible, however, that cultural materials were incorporated into this unit during construction. Materials found in this context lack stratigraphic integrity. On the site, cultural features were observed only in areas where Unit 1 was absent or very thin (e.g., near the break in slope by the highway ditch).

Underlying the historic dune sands in some portions of the site (e.g., BHTs 1 and 3) is a 10–15-cm-thick unit of reddish-yellow (7.5YR6/6, d), loamy sand (Unit 2). Unit 2 was not observed in BHT 2, presumably because scraping during previous construction removed these deposits from that portion of the site. This unit lacks stratification or strong pedogenic accumulations, but the high chroma of these sediments suggest that they have been subject to minor pedogenic alteration. For this reason, Unit 2 is considered a cambic Bw horizon. A Bw horizon is typically associated with the Organ III (100–1,100 B.P.) eolian sediments described by Monger (1993). Thus, Unit 2 is tentatively correlated with Organ III sediments, but datable materials would be needed to certify this correlation. Unit 2 may correlate to Stratum 2 based on the high chromas often assigned to these sandy sediments, but it may not have been observed in all of the shovel tests.

Unit 3 is a relatively thin (5–15-cm thick) remnant of a soil Ab horizon (Figure 17.2). It is composed of pinkish-gray, loamy sand (7.5YR6/2, d). This Ab horizon is present throughout much of the site, though it was absent in BHT 1. The humate-enriched appearance of this unit makes it apparent when compared to the surrounding sediments. Based on its stratigraphic position and the amount of carbonate contained in the accompanying Bk horizon (see Unit 4 below), this unit appears to correlate with either the Organ I or II sediments (1,100–7,000 B.P.) described by Monger (1993), or the Q3 sediments (100–7,300 B.P.) described by Blair *et al.* (1990). The Ab horizon is important because it indicates a stable surface that supported vegetation and may have been favorable for prehistoric inhabitants. Though the Ab horizon was absent in BHT 1, a stained area approximately 3 m to the south of the trench (Feature 2) occurs at about the same level. Feature 2 is too dark and ashy in appearance to be the A horizon, but its occurrence at approximately the same stratigraphic level as the Ab supports the idea that this was the living surface during the occupation(s) of the site. It is unclear how this unit was recorded for the archeological shovel tests. Most of the notes do not include a unit that had low enough chromas (e.g., gray colors) to be

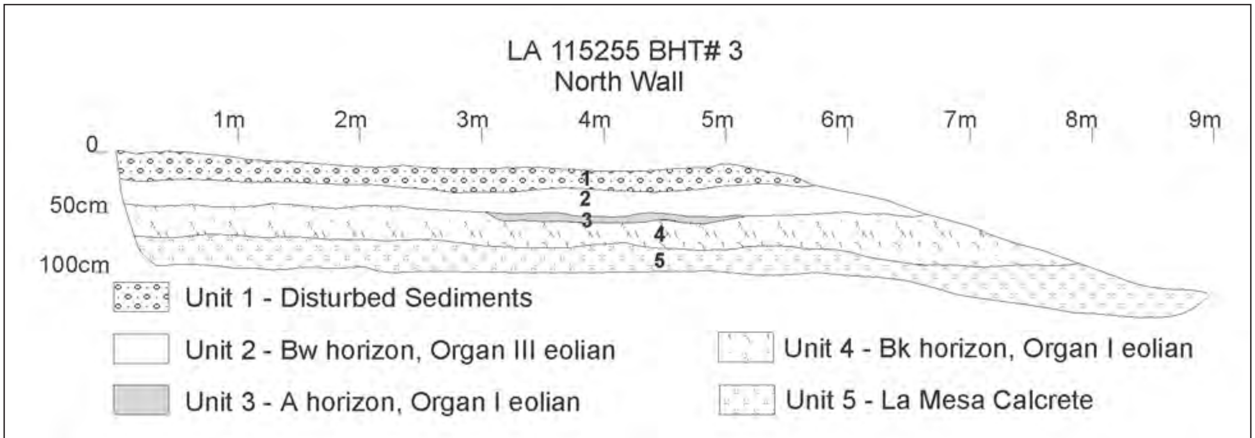

Figure 17.2 Backhoe Trench 3 profile, LA 115255, showing north wall.

associated with the A horizon. Though it was not present in every portion of the site, it also is possible that the field technicians missed this stratigraphic break.

Unit 3 transitions smoothly into a calcareous Bk horizon that is light brown (7.5YR6/4, d) and has a loamy sand texture. Though this unit developed at the same time as the Ab horizon, its different color and calcareous properties make it appear much different than the Ab horizon in a stratigraphic profile. For this reason, and with respect to the fact that archeological field technicians would probably indicate it as a different depositional unit, the Bk horizon is considered to be Unit 4. Based on color, stratigraphic position, and the presence of carbonate filaments ("caliche" in the archeological field notes), Unit 4 appears to correlate with Stratum 3 as defined by the archeological field technicians.

Unit 4 is an eolian sand deposit that experienced pedogenesis after its deposition. Though the chances appear slight, it is possible that some cultural materials were deposited into this unit while the sands were accumulating. An area of mobile sand is relatively hostile to sustained human occupation, however, and it would seem more likely that cultural occupation of the site occurred after sand stabilization. During pedogenesis, the Bk horizon was in the subsurface and was not exposed to cultural contact. It is possible that intrusive features from such an occupation were excavated into the Bk horizon. Another consideration is that cultural materials buried in sand sediments are often subject to displacement by foot traffic. Trampling of cultural materials in sandy sediments can result in vertical displacement of up to 10 cm (Schiffer 1987). Thus, Unit 4 is not the most favorable stratum for the recovery of cultural materials, but it cannot be discounted.

The basal unit at site LA 115255 is the La Mesa calcrete. This unit is white to pinkish-white (7.5YR8/1–8/2, d) and has a clay loam texture. In excavations this unit is evident by its white color and hardness. The calcrete provides a barrier that cannot easily be breached by the backhoe and is impenetrable by hand excavations. Previous work in the region (Gile *et al.* 1981; Blair *et al.* 1990; Monger 1993) has proposed that the calcrete is Mid-Pleistocene in age (ca. 250,000 B.P.) and thus predates accepted dates for the human occupation of North America. For this purpose, the calcrete is considered to be the sterile level for archeological excavations.

Artifact Assemblage

Forty-three artifacts were recorded on the site within the right-of-way (Table 17.2). These include 22 pieces of debitage, five chipped stone tools, eight pieces of ground stone, and eight

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Table 17.2 Artifacts Recorded at LA 115255

Horizontal Provenience	Prehistoric									Historic					
Unit/Level	FS	FT	PP	GS	FCR	CER	C14	Other	Fau	Cans	Glass	Metal	Cer	Other	TOTAL
Surface	16	5		8											29
ST 2, Level 2	1														1
ST 4, Level 4	1														1
ST 6, Level 3	1														1
ST 6, Level 4					2										2
ST 8, Level 1					1										1
ST 8, Level 2	3														3
ST 10, Surface					5										5
TOTALS	22	5		8	8										43

FS = Flaked stone PP = Projectile point FCR = Fire cracked rock FAU = Faunal
FT = Flaked tool GS = Ground stone CER = Ceramic (prehistoric) Cer = Ceramic (historic)

pieces of fire-cracked rock. In addition to these materials, more than 1,600 pieces of burned caliche and fire-cracked rock are present along the right-of-way edge. Much of this cultural material is eroding from the road cut and into the drain paralleling the highway.

Artifacts collected and delivered to the laboratory include 16 chipped stone and four ground stone items (Table 17.3). Among the chipped stone artifacts were three retouched tools, all from surface contexts. These included a chert chopper, one sandstone scraper retouched along a single margin, and one fragmentary silicified shale scraper.

A total of 13 pieces of lithic debitage was collected and analyzed from LA 115255. Seven pieces of debitage were collected from the surface and six were collected from subsurface contexts in shovel tests. Materials represented include chert (n=4), limestone (n=4), silicified shale (n=4) and a single piece of quartzite. Larger and heavier flake sizes are consistent with an expedient technology and with the short-term nature of this site.

The recovered ground stone artifacts include one sandstone mano fragment, and metate fragments of sandstone (n=2) and rhyolite (n=1). The small mano fragment shows a moderate degree of shaping. All ground stone pieces are too fragmentary to identify overall morphology. See Chapter 21 for more information on this site and how it compares to the other sites in the study area.

Site Chronology

No direct or relative dating methods were applicable to cultural materials located or recovered dur-

Table 17.3 Artifacts Collected from LA 115255

Artifact	Chert	Sandstone	Silicified Shale	Limestone	Quartzite	Rhyolite	Total
Chopper	1						1
Scraper		1	1				2
Debitage	4		4	4	1		13
Mano frag.		1					1
Metate frag.		2				1	3
Totals	5	4	5	4	1	1	20

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ing the testing phase, although the small flake assemblage suggests the site may date from Formative times. The absence of ceramics, however, precludes positive identification of a Formative component at this site, and it may represent a short-term, extractive site dating from the Archaic tradition.

Interpretation

The site appears to be a camp occupied at some unknown interval in the past. Testing revealed that the site was considerably larger than originally documented. Intact thermal features, prehistoric surfaces, and potential structure remains are present within the highway right-of-way. Chipped stone artifacts reveal an expedient flake technology, consistent with short-term and/or Formative period occupation(s). Although testing demonstrated the presence of subsurface cultural deposits and features, testing did not fully document the information potential of the site.

Summary and Recommendations

The main artifact cluster at LA 115255 appears to be largely within the existing highway right-of-way. Test excavations at the site were designed to determine if the stain identified during survey was prehistoric in nature and if other subsurface materials are present.

Eight features including three ash stains, two burned rock concentrations, two possible pithouses, and one historic trash dump were located at the site. Seven of the eight features occur within the right-of-way. The evaluation of this site confirms that subsurface stains possibly associated with intact structures and/or living surfaces are present at LA 115255 and may yield important information about local culture history. Further, the aceramic nature of the site is consistent with a hypothesis that LA 115255 may date to the Archaic period, and thus, would be a rare contribution to the archeological record of the Tularosa Basin.

LA 115255 is likely to yield important information and has been deemed eligible for inclusion in the National Register of Historic Places on the basis of Criterion D (36 CFR § 60.4). Although portions of LA 115255 extend into the construction zone as it was originally proposed, subsequent to the testing findings the NMSHTD redesigned the highway project so as to avoid this site. Therefore, this resource will be preserved in place. Input and coordination with consulting agencies, Indian tribes, and the public has found that the undertaking will not alter the characteristics of the resource that qualify it for inclusion in or eligibility for the National Register of Historic Places.

LA 115257

LA 115257 is a small, low-density prehistoric artifact scatter on nearly level terrain between dunes (Figure 17.3). The site is contained within the right-of-way on the eastern side of US 54, on lands administered by the BLM. Mesquite-stabilized coppice dunes, 1.0–2.5-m high, are present, with small, uneven interdunes. The few cultural materials observed on the surface of the site are located between the old US 54 roadbed and the present highway, in two areas between dunes. The site measures 23 m north-south x 20 m east-west.

Marshall and Marshall (1998) originally recorded the site. They described it as a sparse chipped stone, ceramic, and burned rock scatter over a 20 x 15-m area. The artifacts observed during survey include eight pieces of silicified shale (one core and seven flakes), two gray chert flakes, one El Paso Brownware sherd, and two pieces of burned sandstone. Features were not observed on the site surface although the investigators suggested that they may be preserved beneath dune deposits.

Testing Methodology

The testing strategy for LA 115257 included the manual excavation of five shovel tests and five

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auger tests (Figure 17.3). Four of the shovel tests were placed in the site area as originally recorded. A fifth shovel test was located to the south between dunes where two limestone fire-cracked rocks were observed during testing. Two auger tests were placed in this area. A third auger test was placed to the southeast, at the eastern edge of a dune. The last two auger tests were placed to the northeast of the main artifact concentration, in an area of sheet sand deposits situated next to dunes.

Testing Results

The shovel and auger tests did not uncover any subsurface cultural materials or deposits, with the exception of ST 4, which did produce a single ground stone fragment from the upper 10 cm bgs. The results of the shovel and auger tests are presented below.

ST 1, located in the eastern portion of the site in an area of interdunal sands, was excavated in seven levels to a depth of 68 cm bgs. Two strata were identified. The matrix varied from loose, red sand (2.5YR5/6, Levels 1 and 2) to slightly compact, red sand (2.5YR5/8, Levels 2–7). No artifacts were found and no buried cultural deposits were discerned.

ST 2, located in the east-central portion of the site where a few granite flakes were collected from the surface, was placed on the western and southern edges of two coppice dunes. It was excavated in seven levels to a depth of 64 cm bgs. Three strata were identified. The matrix varied from loose, yellowish-red sand (5YR5/6, Levels 1 and 2) to slightly compact, reddish-brown sand (5YR5/4, Levels 2–4) to more compact, yellowish-red sand (5YR5/6, Levels 5–7). No cultural remains were recovered from this shovel test. An auger test was excavated in the bottom of this shovel test from 0.64–1.45 m bgs. No cultural material was found in the auger hole. No stratigraphic breaks were discerned in the fill, although caliche nodules were encountered near the bottom of the unit. Neither the shovel nor the auger test produced any cultural materials.

ST 3, located in the west-central portion of the site where a single chert flake was recovered from the surface, was excavated in eight levels to a depth of 81 cm bgs. Four strata were identified. The matrix encountered included a loose, yellowish-red sand (5YR5/6, Levels 1–3), a slightly compact sand (Levels 2–5), a compact sand with caliche nodules (Levels 5–7), and a compact sand with less caliche (Level 8). Only the consistency of the matrix varied with depth. The color was the same throughout. No buried cultural deposits were recovered.

ST 4, located on the southwestern edge of a dune where a single sandstone ground stone fragment was collected from the surface, was excavated in six levels to a depth of 60 cm bgs. Three strata were identified. The matrix included a loose, red sand (2.5YR5/6, Levels 1 and 2), a slightly compact sand (Levels 2–4), and a slightly compact sand with caliche (Levels 5 and 6). Only the compaction of the matrix varied; the color was the same throughout. The single sandstone ground stone fragment was recovered from the upper 10 cm of fill. A rodent burrow, located 15–25 cm bgs, produced some ash staining and charcoal flecking. No other cultural materials were noted. An auger test was excavated into the bottom of this shovel test from 0.6–1.22 m bgs. The matrix was a continuation of the third stratum to a depth of 1.17 m, where more compact, yellowish-red sand (5YR5/8) with small caliche nodules was encountered. No cultural material was recovered from the auger test.

ST 5, located in the southwestern portion of the site near two pieces of fire-cracked limestone, was excavated in six levels to a depth of 60 cm bgs. Three strata were identified. The matrix varied from loose, yellowish-red sand (5YR5/6, Levels 1 and 2) to slightly compact sand (Levels 2–4) to compact, yellowish-red sand (5YR5/8, Levels 4–6). No artifacts were found and no buried cultural deposits were discerned.

AT 1, located in the southeastern portion of the site, was excavated to a depth of 2 m bgs. The

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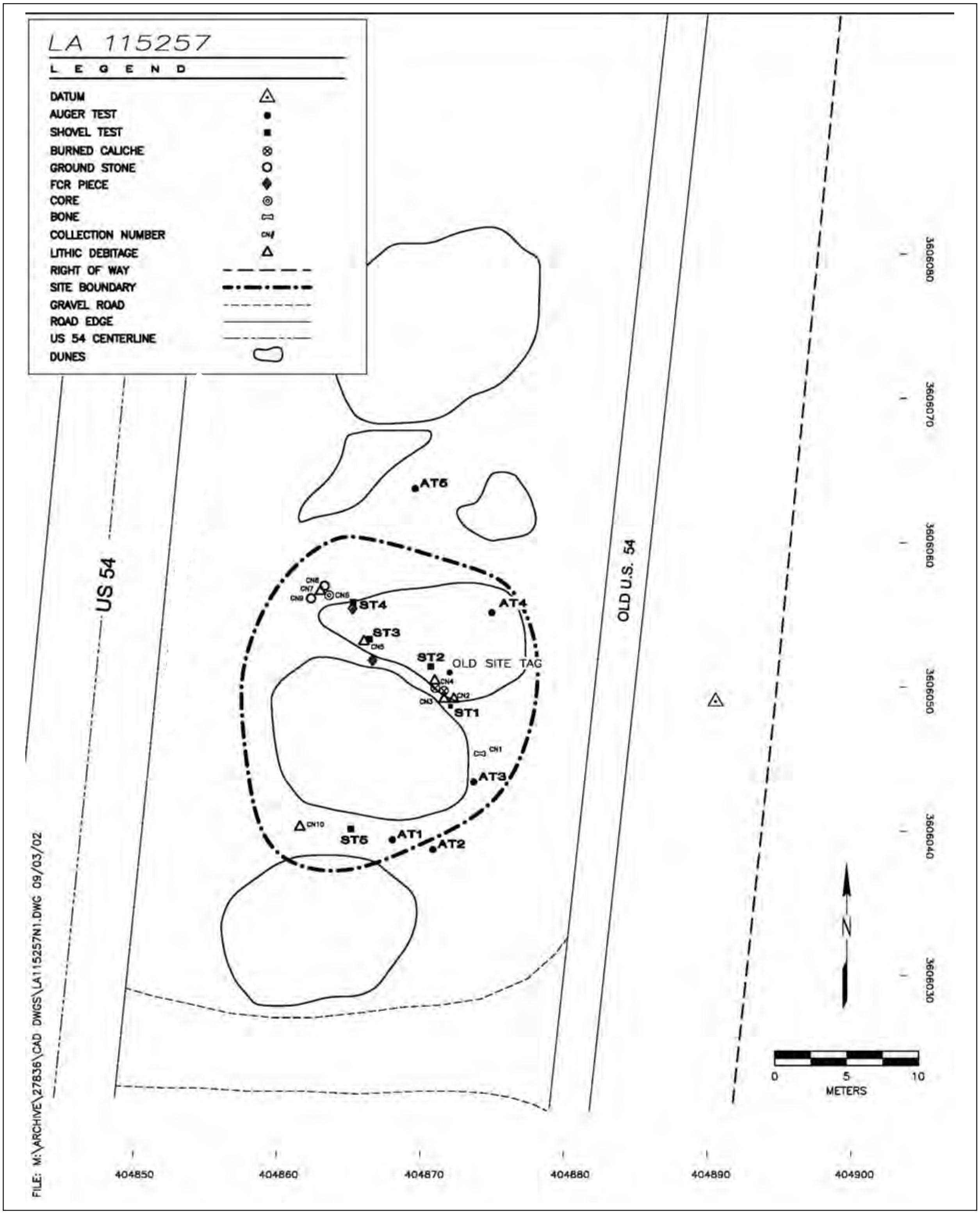

Figure 17.3 Site Map for LA 115257.

matrix consisted of friable, red sand (2.5YR5/6, 0–0.4 m), slightly compact, red sand (2.5YR5/8, 0.4–1.3 m), and reddish-yellow sand (5YR6/6) with some caliche filaments (1.3–2 m). The fill from 1.5–2 m bgs was sandy loam with increasing clay content. No artifacts were found, and no buried cultural deposits were present.

AT 2, located immediately outside of the southeastern portion of the site, was excavated to a depth of 2 m bgs. The matrix consisted of loose, yellowish-red sand (5YR5/6, 0–0.7 m), slightly compact, yellowish-red sand (5YR5/8, 0.7–1.8 m), and friable, yellowish-red sand (5YR5/6) with a trace of caliche (1.8–2 m). Some caliche filaments were noted from 1.5–1.8 m bgs. No artifacts were found, and no buried cultural deposits were discerned.

AT 3, located in the eastern portion of the site, was excavated to a depth of 1.7 m bgs. The matrix consisted of friable, yellowish-red sand (5YR5/6, 0–0.6 m), moister yellowish-red sand (5YR5/8, 0.6–1 m), friable, yellowish-red sand (5YR5/6) with some caliche (1.0–1.4 m), and slightly compact, yellowish-red sand with increased caliche (1.4–1.7 m). No artifacts were found, and no buried cultural deposits were discerned.

AT 4 was excavated in 18 levels to a depth of 1.8 m bgs. The matrix consisted of loose, reddish-brown sand (5YR5/4, 0–1.6 m) and yellowish-red sand (5YR5/6) with some caliche (1.6–1.8 m). Compaction increased with depth, and some gravel was noted in the deepest levels. Caliche nodule density increased from 1.5–1.8 m bgs. No artifacts were found, and no buried cultural deposits were discerned.

AT 5, located in the northern portion of the site, was excavated in 17 levels to a depth of 1.7 m bgs. The matrix consisted of loose, yellowish-red sand (5YR5/6, 0–0.8 m) and slightly compact, yellowish-red sand (5YR5/8, 0.8–1.7 m). No artifacts were found, and no buried cultural deposits were discerned.

Site Stratigraphy and Geomorphology

Surface examinations, shovel tests, and auger excavations at this site suggest that the majority of cultural materials probably are visible on the current land surface. A thin, discontinuous veneer of historic eolian sand is present in the interdunes, but the more compact unit below it is often exposed. Cultural materials lie on the deflated upper surface of a noncalcareous, sandy loam that appears to match the characteristics of the Organ III (100–1,100 B.P.) eolian unit described by Monger (1993). The lack of a discernable soil A horizon reflects the deflated condition of this unit. The Organ III sediments typically extend to 30–40 cm bgs where archaeologists encountered another sandy loam unit with calcium carbonate filaments. These filaments suggest that this unit may be the Organ I (2,200–7,000 B.P.) eolian sediments. Based on the auger tests, the Organ I sediments extend to more than 2 m bgs. The La Mesa calcrete was not encountered.

Based on these interpretations of soil/sediment units, some tentative conclusions about the archeology on LA 115257 may be made. If all of the cultural materials are Formative in age, it is likely that all evidence of occupation is expressed on the current ground surface, or just below recent sand deposits. Partial erosion of the Organ III unit would have concentrated the materials on the surface. It is possible, given its age estimate, that the underlying Organ I unit also could contain cultural materials, but no evidence of such materials (e.g., Archaic components) was observed on this site.

Artifact Assemblage

The artifacts were restricted to two areas between dunes. The single undifferentiated brownware sherd previously observed during the survey (Marshall and Marshall 1998) was not relocated during the testing phase. A surface collection was conducted during testing, and 13 items were recovered: one bone fragment and nine chipped stone and one groundstone artifacts. In addition, two ground stone fragments were recovered from ST 4 (Table 17.4).

Table 17.4 Analyzed Lithic Artifacts from LA 115257

Artifact	Chert	Sandstone	Silicified Shale	Quartzite	Total
Core			2		**2**
Debitage	1	1	1	4	**7**
Metate fragment		3			**3**
Totals	**1**	**4**	**3**	**4**	**12**

Two unidirectional silicified shale cores were recovered from LA 115257. Both were surface finds. A total of seven pieces of lithic debitage was collected and analyzed from the site. All seven pieces of debitage were collected from the surface. Materials represented include quartzite (n=4), a piece of chert, a single piece of silicified shale, and a single piece of sandstone. Larger and heavier flake sizes are consistent with an expedient technology and with the short-term nature of this site.

Also recovered were three sandstone metate or grinding slab fragments, two from the surface and one in subsurface context. All are small fragments (all weighing less than 31 grams) recovered from an approximately 1 x 2-m area around N507 E473, and as such may be fragments of the same artifact. See Chapter 21 for more information on this site and how it compares to the other sites in the study area.

Site Chronology

No direct or relative dating methods were applicable to cultural materials located or recovered during the testing phase. The ceramic located during the survey phase was not relocated, although the original documentation of this suggests a Formative-period occupation. This is supported by the stratigraphic position of the observed cultural remains, which occurred within a matrix of loose surface sands located above soil deposits that date to 100–1,100 B.P. The expedient character of the small chipped stone assemblage also suggests a Formative-period affiliation.

Summary and Recommendations

LA 115257 is a low-density artifact scatter. Although some ash and charcoal flecking was observed in a rodent burrow in ST 4, site testing and geomorphological assessment indicate that the site is surficial with little, if any, subsurface potential, and thus can contribute little information concerning the prehistory of the area. The few cultural materials present are most likely associated with the Formative period. The surface collection and the subsurface testing of this site have exhausted its data potential. Based on the paucity of surface materials and the absence of subsurface cultural deposits, the resource has been recorded and is not likely to yield information beyond what already has been documented. LA 115257 is not eligible for inclusion in the National Register of Historic Places, and no additional investigations are warranted.

LA 126178

LA 126178 is a moderate-sized lithic procurement site of unknown cultural and temporal association, located on lands administered by the BLM. The site occurs on the eastern side of US 54 and includes remains both inside and outside of the right-of-way. The site is situated on the western slope of a low limestone outcrop in the northeast portion of the Jarilla Mountains. Based on the distribution of surface cultural materials, the site measures approximately 120 m north-south x 115 m east-west (Figure 17.4). Vegetation on the site is dense, characterized by a creosote and mesquite mix. Soils in the area have been identified as within the Lozier soil series (Derr 1981:Sheet 23). These soils are extremely gravelly, brown, silt loam to loam and are strongly calcareous with angular limestone (Derr 1981:97). Usable lithic materials are included among the gravels.

Originally located during survey for the current project (Michalik 1999), LA 126178 consists of three moderately dense concentrations of lithic

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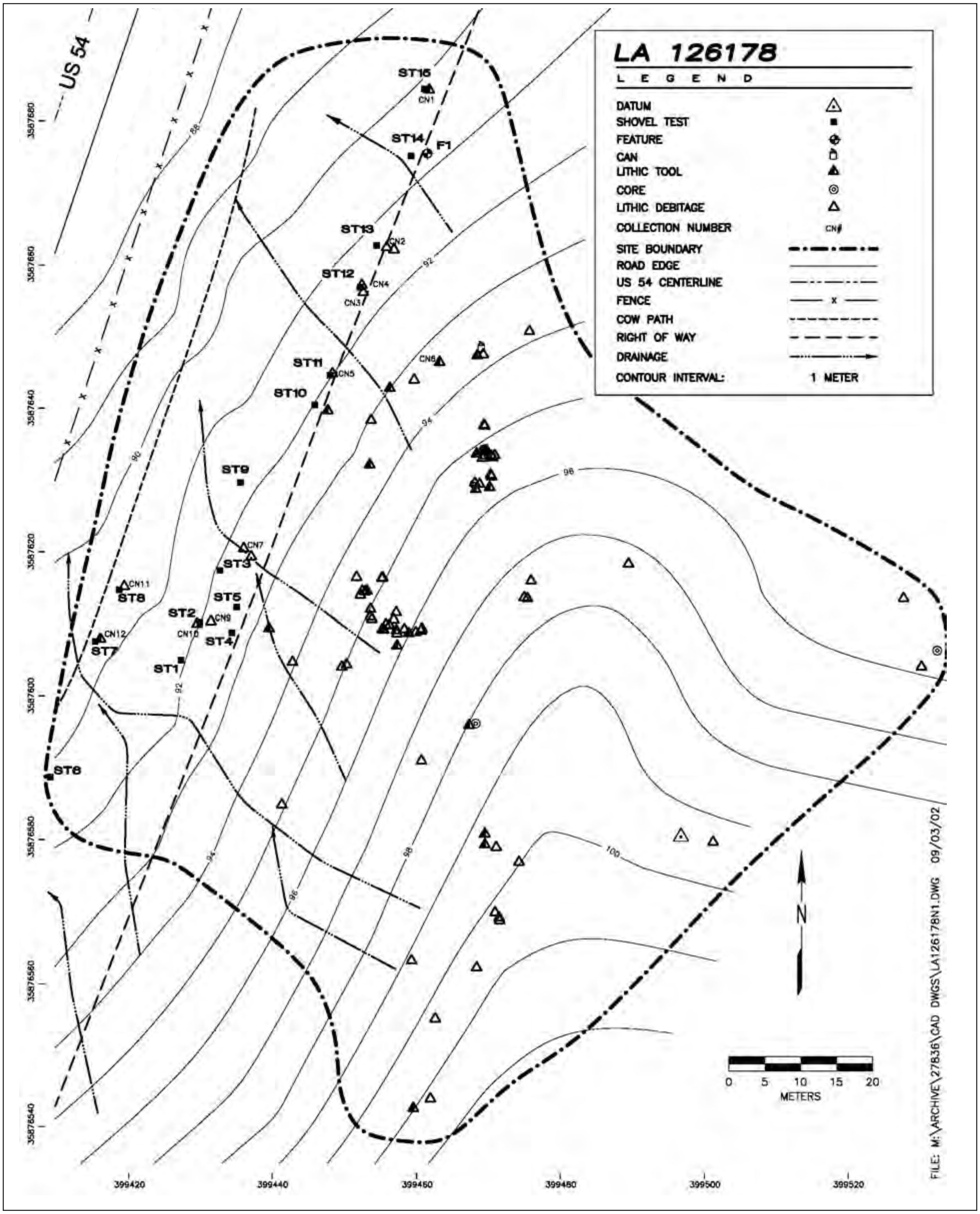

Figure 17.4 Site map for LA 126178.

debitage, cores, chipped stone tools, and a single thermal feature. The three concentrations are approximately midway up the west-facing slope, 10–30 m beyond the US 54 right-of-way.

Testing Methodology

Fifteen shovel tests were excavated during the testing of LA 121678 to determine the potential for subsurface cultural deposits within the right-of-way. Shovel tests were concentrated downslope from two of the major lithic concentrations in the central portion of the site. Eight shovel tests were equally spaced from south to north along the right-of-way. The remaining shovel tests were located further downslope from the main concentrations of lithic artifacts at the western edge of the site.

Testing Results

Stratum 1 was encountered in all of the units excavated. The stratum consisted of a friable, silt loam (10YR6/3–10YR7/2) with a small to moderate amount of caliche and some limestone. All shovel tests lacked subsurface cultural evidence. Soil depth within the right-of-way ranged from a minimum of 3 cm to a maximum of 16 cm. Eight of the shovel tests contacted bedrock or caliche laden deposits from 3–6 cm bgs. Only four of the shovel tests contained silty loam deposits, which extended to 10 cm bgs. The testing results are summarized in Table 17.5.

One feature (Feature 1), identified during the current testing project, was recorded in the extreme northwest portion of the site just east (outside) of the US 54 highway right-of-way. This feature consists of a semi-circular alignment of 15 heat altered limestone cobbles. The alignment measures 1.2 m north-south x 0.5 m east-west. No subsurface materials appeared to be associated with this feature. The loose, residual silty soils recorded were considered to be of minimal depth, given that the bedrock surface was exposed within a few meters of the feature.

Stratigraphy and Geomorphology

Surface observations and shovel tests indicate that this site lies upon limestone bedrock and that Holocene sediments on the site are very thin. With shovel tests that varied 3–16 cm to bedrock and/or calcrete, the possibility of cultural materials being present in the subsurface is considered to be low. Given this lack of stratigraphy, it is possible that multiple cultural components are present on the surface of this site.

Artifact Assemblage

Testing at LA 126178 documented only chipped stone artifacts, and all of these occurred on the site surface. All lithic artifacts inside the right-of-way were point provenienced with the total station instrument and collected. A total of 104 lithic artifacts was observed, 11 of which were inside the right-of-way and were collected. Extensive infield analysis was performed on all artifacts observed (Table 17.6). In terms of material type, the infield analysis identified a vast majority of artifacts as a reddish brown, silicified sandstone

Table 17.5 Flaked Stone Artifacts Recorded in the Field at LA 126178

Artifact	Silicified Sandstone or Chert	Black/ brown Chert	Indurated Limestone	Gray Limestone	Total
Core	4				**4**
Biface	2				**2**
Unifacial Tool	5				**5**
Marginally Retouched Flake Tool	3				**3**
Debitage	73	7	8	2	**88**
Total	**87**	**7**	**8**	**2**	**104**

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Table 17.6 Flaked Stone Artifacts Collected at LA 126178.

Type	Limestone	cf. Rancheria Chert	Total
Retouched tool		2	2
Biface		2	2
Debitage	1	6	7
Total	1	6	11

or chert. This material appears to be the coarse grained material identified as probable Rancheria chert in the laboratory analysis of the 11 artifacts from within the right-of-way. The field investigators stated that chippable stone occurs naturally on the site, and it would appear that this locality was one source of Rancheria chert.

The infield analysis did record a high incidence of cortical and large flakes (Acklen *et al.* 1999:91), suggesting mostly early stage reduction activities and/or an expedient flake production dominated flint knapping activities at the site, a finding that was confirmed by laboratory analysis of the 11 recovered artifacts.

The 11 artifacts collected from within the right-of-way include two bifaces, two retouched tools, and seven pieces of debitage. All came from surface contexts. Both bifaces are Stage I, representing preliminary biface manufacture with primary retouch and no thinning; both are a fine- to medium- grained, brownish-red chert consistent with local Rancheria chert. One is complete, measuring 75 x 39 x 20 mm and is quite asymmetrical. The other is fragmentary.

The two retouched tools, both made of probable Rancheria chert, include a whole side scraper with unifacial retouch along two flake margins, measuring 49 x 35 x 10 mm. The other tool is a more expediently retouched flake with discontinuous retouch on one margin. Both pieces exhibit rounding wear on working edges.

Seven pieces of debitage were collected. Six are of a coarse chert, while one piece was limestone. Although this assemblage remains undated due to a lack of ceramics and radiocarbon dates, the reliance on limestone and coarse chert consistent with Rancheria chert, both poor-quality lithic materials, is similar to that of other Formative period sites in the study area. Larger and heavier flake sizes are consistent with an expedient technology and the short-term nature of this site. See Chapter 21 for more information on this site and how it compares to the other sites in the study area.

Interpretation

Investigations conducted as part of site testing indicate that LA 126178 served as a lithic procurement area, perhaps over a protracted period during prehistoric times. Lithic materials occur naturally on the site, and the debris observed reflects early stage reduction of these local materials. Other maintenance activities occurred as well, as evidenced by a number of bifacial and unifacial tools which appeared to have been manufactured on site. A single cluster of burned rock probably served as a hearth feature. The site location may have served as a short-term campsite, where chert extraction and reduction, along with support activities, were carried out.

Site Chronology

No direct chronological indicators were located or recovered at the portion of the site within the right-of-way. Soils were thin at this outcrop locality, and thus geomorphology and stratigraphy does not provide any temporal indicators with respect to the site's cultural materials.

Summary and Recommendations

Cultural materials at LA 126178 were restricted to the surface, and the surface assemblage was thoroughly documented. The resource was fully recorded and is not likely to yield information beyond what already has been documented. LA 126178 is not eligible for inclusion in the National Register of Historic Places. No additional investigations are warranted.

Chapter 18

Historic and Multicomponent Sites Tested within Orogrande

Timothy B. Graves, John C. Acklen, Jonathan E. Van Hoose, Lance Lundquist, Gwyneth A. Duncan, and Jim A. Railey

Five sites within Orogrande were tested but not investigated further during the data recovery phase. These sites are either entirely historic in age (LA 115258, LA 128707, and LA 128710) or include both historic and prehistoric components (LA 128701 and LA 128709). LA 115258 is a segment of the old Jarilla Mountains railroad grade; LA 128701 contains a substantial prehistoric component and a minor historic one; LA 128707 and LA 128710 are historic scatters; and LA 128709 is a multicomponent site with intensive historic and Jornada Mogollon components, including historic industrial and residential features and prehistoric thermal features. The historic components are related to industrial and residential developments that comprise the cultural landscape of early Orogrande. LA 128701 and LA 128709 are part of the dense concentration of prehistoric sites on the alluvial fans of the Jarilla Mountains.

Most of the information in this chapter appeared previously in Graves *et al.* (2000). Eligibility recommendations were presented in that report for review by, and consultation with, BLM, Fort Bliss, and New Mexico Historic Preservation Division archaeologists. Detailed analyses of recovered artifacts were carried out as part of the present project, and some of the information on those materials varies slightly between the original testing report and this document.

LA 115258

LA 115258 is a segment of an historic railroad spur located, on the eastern alluvial fans of the Jarilla Mountains in the south-central Tularosa Valley. This spur line originated at the former Orogrande railroad station (Jarilla Junction) on the Santa Fe line and extended northwest into the Jarilla Mountains. The grade lies on either side of US 54 (Figure 18.1). The site's terrain slopes slightly from the west-northwest to the east-southeast, with grades ranging 1–2 degrees. Surface soils are very gravelly, sand loam to loam deposits. Flora on the site is typical of alluvial fan communities, with creosote bush, mesquite, dropseed grass, prickly pear, and various weeds. Mapped boundaries of the site cover more than 12,804 m^2 in area, extending more than 388 m southeast-northwest by a maximum of 33 m southwest-northeast. Approximately 3,889 m^2, or 30 percent of the documented portion of the site, falls within the impact area.

Myrick (1990:100) reports that the spur line is approximately 2.5 miles in length, extending from Jarilla Junction along the main line to the mining camp of Zora in the Jarillas. Chapter 32 presents the historical context for Orogrande, including the rail line of which LA 115258 is a part.

Marshall and Marshall (1998) report the site as a 60 x 5-m segment of historic railroad grade present within and in the immediate vicinity of the highway right-of-way. The grade is reported as a linear, earth and rock rubble mound approximately 1-m high. Historic artifacts reported in association with the railroad grade include large bolts and nuts, railroad spikes, iron milling balls, white ironstone, milk cans, and modern crimped cans. Michalik (2000) produced a site update, but offered little new information.

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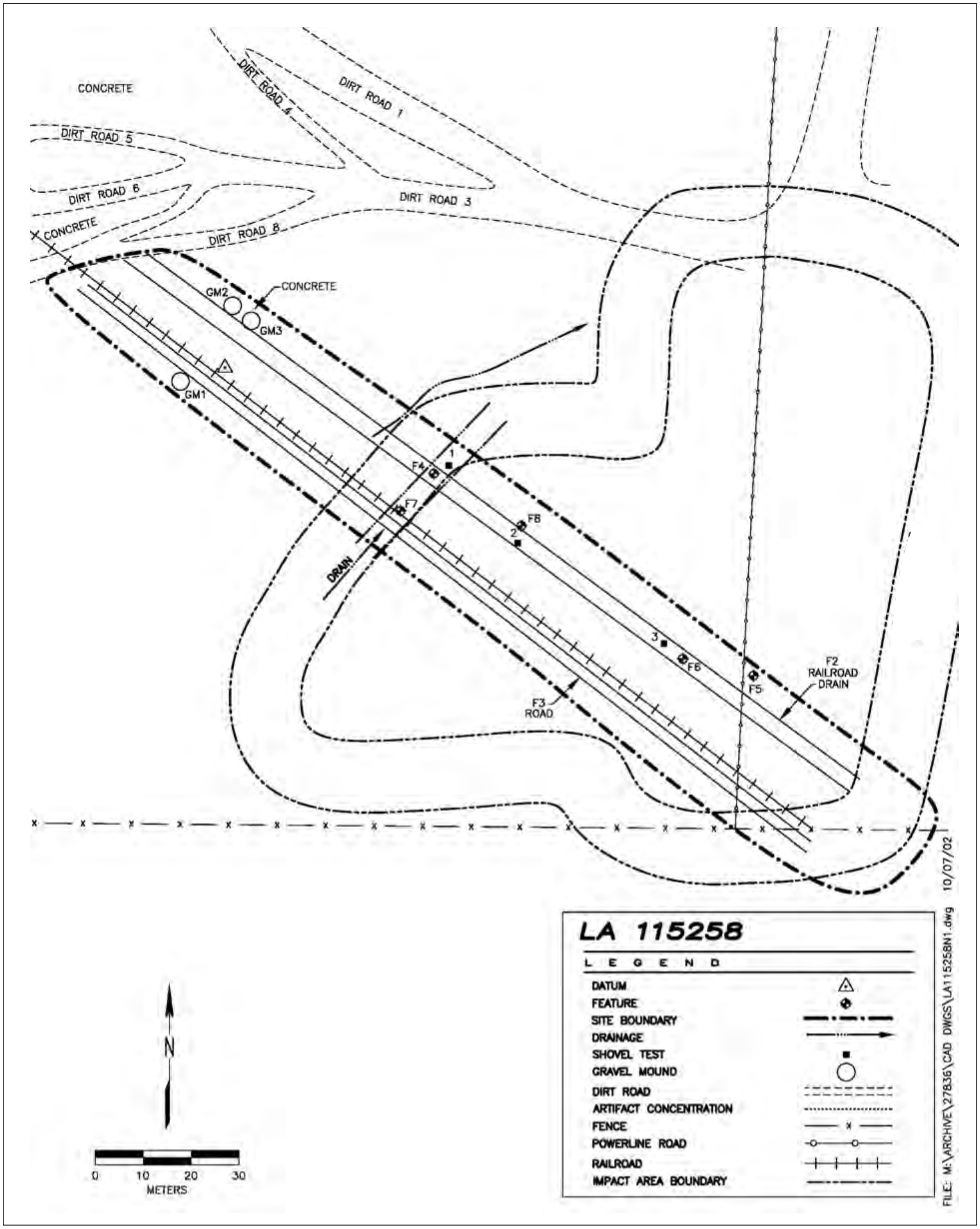

Figure 18.1 Site Map of LA 115258, showing shovel tests and features.

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Testing Methodology

A permanent, aluminum-capped datum was established and the site was mapped with a total station instrument. The site also was plotted on an orthoquad aerial photograph of the site area. Features were trowel tested to identify depth and content and three shovel tests, each measuring 50 x 50 cm, were excavated. These were placed in the vicinity of feature areas and artifact concentrations to explore for subsurface deposits. ST 1 was excavated near Feature 4, ST 2 near Feature 8, and ST 3 near Feature 6.

Testing Results

Surface reconnaissance and site mapping expanded the boundaries of this site. A total of eight historic features, three gravel dumps, and a moderate scatter of historic artifacts were documented on the surface of the site. The eight features included the railroad grade (as originally defined), one artificial drainage feature that parallels it, one associated dirt road that also runs parallel to the grade, four historic trash dumps, and one coal dump. Feature 1, originally defined as the railroad grade, consists of a 5-m wide berm, covered with sparse slag to a maximum height of 50 cm. Upon further inspection, it became apparent that this feature, originally recorded by Marshall and Marshall (1998), was not the grade, but rather an earthen berm constructed within the right-of-way as a drainage control feature. No evidence of the railroad grade was visible within the right-of-way. All eight of the features recorded are within the proposed impact area. The eight features are summarized in Table 18.1.

Three gravel mounds were documented within the mapped boundaries of the site (see Figure 18.1; Table 18.2). These three mounds are located in the northwestern portion of the site. These occurrences were recorded due to their proximity to rail line and berm 2. The gravel mounds were not given feature numbers, as their original function and possible association with the adjacent features remains uncertain.

Table 18.1 Features on LA 115258

Feature No.	Location	Type	N/S (m)	E/W (m)	Depth (cm)	Cultural Materials
1	Bisects center of LA 128709 and LA 128710	Drainage berm	5	388.0+	Surface	Earthen berm (5-m wide x 50-cm high), long axis orientation is southeast by northwest
2	Bisects center of LA 128709 and LA 128710	Drainage	10	388.0+	5–100	Associated drainage (10-m wide x 1-m deep), long axis orientation is southeast by northwest
3	Bisects center of LA 128709 and LA 128710	Dirt road	7	388.0+	30	Parallel dirt road (7-m wide x 30-cm average depth), long axis orientation is southeast by northwest
4	Northwest	Historic dump	2	2	10	9 lard buckets and 8 hole-in-top cans
5	Southeast	Historic dump	8	4	10	27 hole-in-top cans, 3 tobacco tins, 4 lard cans, 6 potted meat tins, 5 clear bottle glass fragments, and 2 refined whiteware ceramics
6	Southeast	Historic dump	4	8	10	50+ sanitary cans and 1 clear stopper
7	Northwest	Coal dump	3	1.5	>20	Coal dump/ash stain with 2 sanitary cans and 1 sandstone mano (12 x 10 x 3 cm)
8	Center	1940s historic dump	5	10	10	20+ “Clabber Girl” baking powder cans, 10+ hole-in-top cans, 30+ bottle tops, 5 tobacco tins, refined whiteware oval bowl (3/4 complete in 5 pieces) reads “CORONET USA,” 7 windowpane glass fragments, 6 green bottle glass, and 3 porcelain fragments

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Table 18.2 Gravel Mounds on LA 115258

Gravel Mound No.	Location	Type	N/S	E/W	Depth	Cultural Materials
1	Northwest	Gravel mound	1.0 m	2.5 m	Surface	Gravel mound (2.5 m E/W x 1 m N/S x 50-cm high)
2	Northwest	Gravel mound	2.0 m	2.0 m	Surface	Gravel mound (2.0-m diameter x 50-cm high) with 2 hole-in-top cans and modern bottle glass
3	Northwest	Gravel mound	2.0 m	1.0 m	Surface	Gravel mound (2.0 m N/S x 1 m E/W, 50 cm high)

Shovel tests exposed an area totaling 0.75 m^2. Table 18.3 provides a description of the shovel testing results. Subsurface cultural evidence was not recorded within any of the shovel tests, although some slag was present in the upper 10 cm of ST 3.

Stratigraphy and Geomorphology

LA 115258 is centered around a railroad bed constructed on the base of a Jarilla Mountains alluvial fan. In the area immediately surrounding the railroad bed, alluvial sands and eolian reworked sands comprise the majority of the sediments. The alluvial input has, however, resulted in a large gravel component in portions of these deposits. Test units on adjacent archaeological sites (LA 128709 and LA 128710) typically encountered a prominent gravel layer approximately 35–50 cm bgs. It is probable that the gravel material used to make the railroad bed was derived from this gravel layer.

Support for the hypothesis that the railroad bed gravels were derived from the surrounding sediments comes from a prominent trough that parallels the track approximately 2 m to the north. Examination of this trough indicates that it is deep enough to encounter the gravel layer, often extending 50–60 cm below the surrounding land surface. After track construction the trough caused by the gravel excavation may have served a secondary purpose as a diversion ditch for rainwater runoff. Water runoff on an alluvial fan can be quite intense and it would have been in the interest of the people building the railroad bed to prevent alluvial erosion of their construction. Using the trough in this manner would have helped protect the track from erosion.

The degree of disturbance caused by track construction severely limits the potential of LA 115258 to yield *in situ* prehistoric cultural materials. Considering that leveling activities probably occurred before the railroad bed gravels were emplaced, any cultural materials that would have been below the track probably would have been displaced. Likewise, excavation of the trough north of the track would have served to disturb or remove the underlying sediments. As a result, the potential for LA 115258 to yield *in situ* cultural materials is probably limited to those materials that are historic in age.

Material Culture

All cultural materials observed at LA 115258 were located on the surface. With the exception of a single one-handed mano made of sandstone, cultural materials are historic and include glass, metal, and ceramics. Historic glass fragments are predominately bottle glass. Metal artifacts include lard buckets, hole-in-top cans, solder dot cans, tobacco tins, baking powder tops, spice tops, railroad spikes, and baling wire. Ceramics include mainly refined whiteware with some pieces of porcelain. Rough counts presented in Table 18.4 do not include the contents of the trash dump features, which were enumerated separately (see Table 18.1).

A single artifact collected on this site consisted of a complete, 12-ounce beer bottle of dark amber glass (Table 18.5). The bottle was manufactured

Table 18.3 Shovel Test Results on LA 115258

Test No.	Location	Depth (m)	Stratum.1	Cultural Evidence 1	Stratum 2	Cultural Evidence 2	Stratum 3	Cultural Evidence 3	Stratum 4	Cultural Evidence 4
1	North	0.3	Eolian, sandy loam (7.5YR6/6) with high gravels, depth surface to more than 0.01 m	None	Semi-compacted, silt humus (7.5YR 5/8), A horizon, Organ III horizon, depth 0.01–0.05 m	None	Semi-compacted, alluvial, silt humus (7.5YR5/6) with high gravels, depth 0.05–0.30 m	None		
2	Center	0.4	Eolian, sandy loam (7.5YR) with high gravels, depth surface to more than 0.01 m	None	Sandy loam humus (7.5YR5/8), A horizon, Organ III horizon, depth 0.01–0.04 m	None	Semi-compacted, alluvial deposition (7.5YR5/6), Organ III horizon, depth 0.04–0.10 m	None	Compacted loam (7.5YR7/7) with 60% gravels, depth 0.10–0.23 m	None
3	South	0.3	Historic, eolian, sandy loam (7.5YR6/6), depth surface to 0.10 m	None	Semi-compacted, alluvial, sandy loam (7.5YR6/6), Organ III horizon, depth 0.10–0.16 m	None	Compacted, alluvial loam (7.5YR7/7) with 60% gravel, Organ II horizon, depth 0.16–0.30 m	None		

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Table 18.4 Historic Artifacts Recorded in the Field at LA 115258

Type	Complete	Fragment	Total	Comments
Glass				
Bottle				
Sun-altered amber		2	2	1 base
Sun-altered purple		5	5	1 base with "F"
Metal				
Can				
Unknown	2		2	
Hole-in-top	49		49	
Sanitary	23		23	1 coffee
Key strip	3		3	
Other	1		1	1 coffee
Other	2		2	2 railroad spikes
Wire	2		2	Baling wire
Other Metal	4	1	5	1 enameled bowl, 3 unknown lids, 1 galvanized metal fragment
Ceramics				
Porcelain				
Refined Whiteware		1	1	

Table 18.5 Attributes of Beer Bottle Collected from LA 115258

Surface (FS 1)	Complete glass beer bottle, dark amber	24 cm (length) x 6.2 cm (base diameter)	Automatic machine manufactured; crown cap finish	Base embossed with "N," "16," "44"	Obear-Nester Glass Co. 1915–1980+

by the Obear-Nester Glass Company no earlier than 1915. The embossed base suggests a 1944 date for the manufacture of this bottle. The bottle may be discard from activities related to large-scale salvage of scrap metal in the area to support the war effort (see Chapter 32).

Interpretation

Testing at LA 115258 documented the remains of an historic railroad grade with a parallel drainage feature constructed to the north and a dirt road to the south. Constructed in 1907, this rail line was a spur of the main railroad used to transport ore from the mines in the Jarillas to the processing facilities located to the east of the present highway (McDonald 1998; see Chapter 32). The railroad line was later decommissioned, with all ties and line removed, probably during WWII when scrap metal in the Orogrande mining district was salvaged for the war effort. Only a few railroad spikes and a sparse scatter of slag remain along the old bed. A coal dump and four historic trash dumps were documented in the immediate vicinity of the railroad grade.

Evaluation and Recommendation

LA 115258 is the historic rail spur into the Jarilla Mountains from the El Paso to Alamogordo railroad. The spur line site was in use from 1907 to sometime in the 1920s, based on historic documents and associated trash in the area. Some later historic trash (1940s) also was documented; it may be associated with the dismantling of the rail line, although the association with the site may be spurious. The portion of the grade within the impact area has been recorded and is not likely to yield important information beyond what has already been documented. LA 115258 is not eligible for inclusion to the National Register of Historic Places, and no additional investigations

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are warranted. As part of the data recovery effort, however, archival and oral historical research concerning the history of Orogrande were carried out, in part to provide an historic context for LA 115258. This historic context is presented in Chapter 32.

LA 128701

LA 128701 is a large Jornada Mogollon campsite located on the desert floor in the south-central Tularosa Valley at the southern end of Orogrande, New Mexico. The site is adjacent to, and east of, US 54 (Figure 18.2). The site is also situated between nearby sites LA 128699 and LA 128700, both investigated during the data recovery phase (see Chapters 14 and 15). Terrain ranges from nearly level to slightly sloping with a slight south grade. Covering the southern portion of the site are 1–2-m high, mesquite-stabilized coppice dunes with broad, uneven interdunal areas. A few shallow, broad arroyos drain the surface of the site toward the south-southwest. Accumulated sheet sand deposits, 0.5–1-m thick, border the northern and northeastern portions of the site. Dunal areas in the southern portion of the site obscure nearly 20 percent of the site surface, and low densities of gravel and caliche nodules are present on the surface. Surface soils are mainly eolian sands, though some sandy loam and loam deposits are exposed. Flora on the site consists of mesquite, tar bush, fourwing saltbush, broom snakeweed, all thorn, narrowleaf yucca, and dropseed grass. The site covers a roughly 12,395 m^2 area, extending 218 m north-south x 93 m east-west (Figure 18.2). The site is contained entirely within the impact area, and was thoroughly documented during the testing phase.

Michalik (2000) first recorded the site as a Jornada Mogollon lithic and ceramic scatter covering roughly a 1,200 m^2 area (40 m north-south x 30 m east-west). Initial recording identified 50 ceramics, 15 lithic artifacts, and several hundred pieces of fire-cracked rock. All of the ceramics were El Paso Brownware, one with a rounded rim. Lithics consisted of chert and limestone flakes and angular debris. One pink quartzite hammerstone also was recorded.

Testing Methodology

A permanent, aluminum-capped datum was established and located precisely with a GPS instrument. The site was mapped with a total station instrument. Site boundaries, features, artifact concentrations, and shovel tests were located precisely in relationship to datum, as was the site's location relative to road intersections, dirt roads, and mile markers (if nearby). Features, artifact concentrations, and shovel tests also were plotted on an orthoquad aerial photograph of the site area. Features were trowel tested to identify depth and content, and three shovel tests, each measuring 50 x 50 cm, were excavated in the vicinity of features. STs 4, 8, and 9 were excavated near Features 1, 3, and 4 to assess the depth of deposits in these areas.

Seven additional 50 x 50-cm shovel tests were placed near artifact concentrations and in areas covered by sheet sands to explore for subsurface deposits. STs 1 and 2 were excavated in areas adjacent to artifact concentrations. STs 3, 5–7, and 10 all were excavated in areas of accumulated sheet sand deposits or adjacent to dunes. In addition, 19 shovel probes, each 20 cm in diameter, were excavated within the site near recorded surface materials and in nearby accumulated sheet sand deposits to the north and northeast in search of buried cultural materials.

Testing Results

Surface reconnaissance and site mapping greatly expanded the boundaries of this site. The low- to moderate-density scatter of cultural materials and features is extensive. Moderate densities of cultural materials are present in the north-central and southwest portions of the site. No features were

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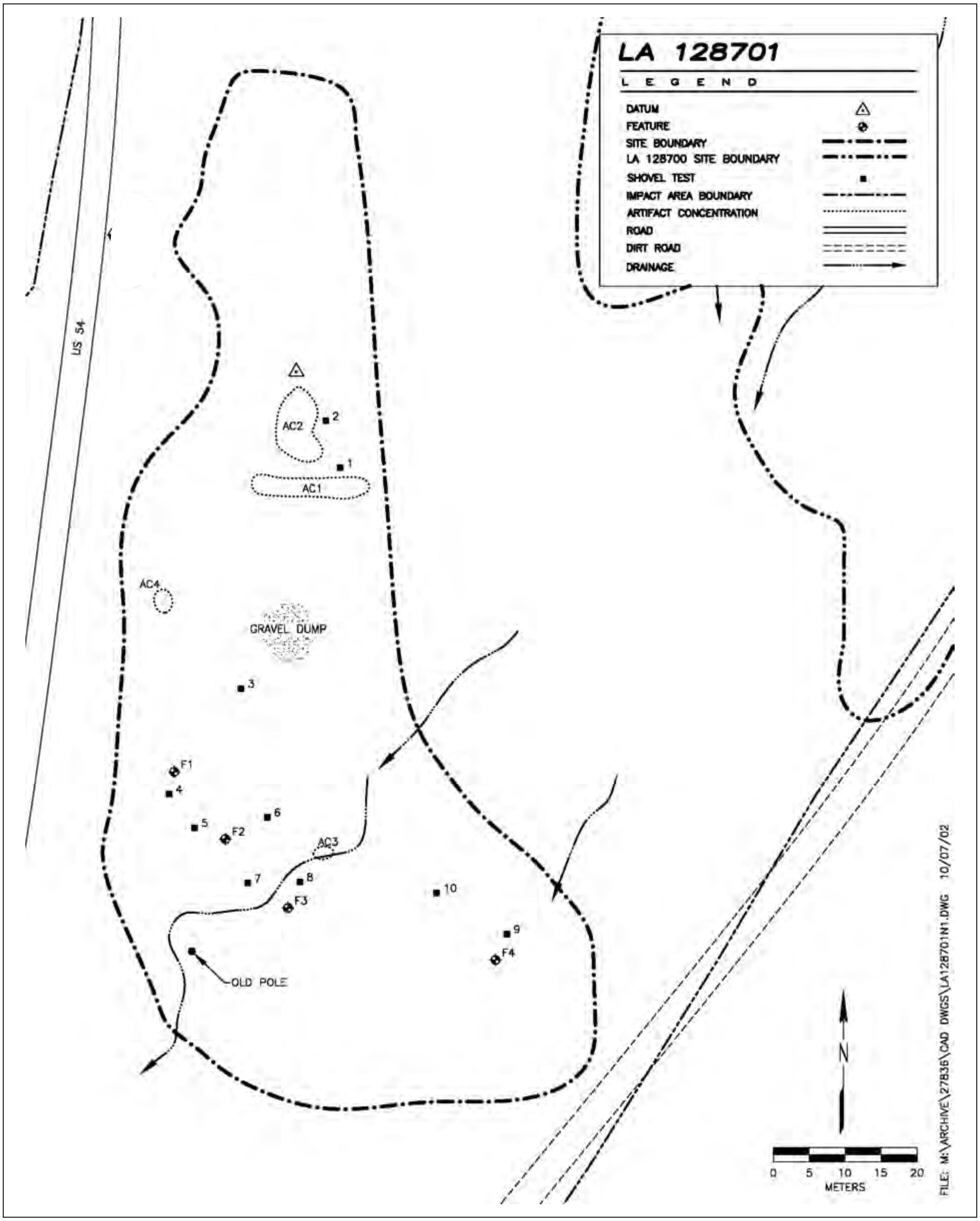

Figure 18.2 Site map of LA 128701, showing shovel tests, features, and artifact concentrations.

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identified in the northern portion of the site where the majority of ceramic artifacts were recorded.

Four features were identified on the surface of the site, all consisting of disarticulated fire-cracked rock concentrations (Table 18.6). Trowel tests within the features revealed a lack of any staining or subsurface cultural deposits. Only Feature 1 contained some subsurface fire-cracked rock, all of which was contained within the upper 10 cm.

Four artifact concentrations were identified (Table 18.7). Shovel tests excavated adjacent to, and within two of the concentrations indicated that they were deflated and did not contain features or dateable materials.

Shovel tests exposed an area totaling 2.5 m^2. Table 18.8 provides a description of the shovel testing results. Three shovel tests (STs 1, 2, and 9) produced positive results. ST 1, placed adjacent to Artifact Concentration 1, recovered four pieces of debitage, one brownware sherd, and one piece of fire-cracked rock. ST 2, adjacent to Artifact Concentration 2, recovered two pieces of burned caliche, four pieces of fire-cracked rock, and two pieces of debitage. A single piece of fire-cracked rock was recovered from ST 9 at the base of recent historic eolian deposits. Despite positive findings, none of the materials were buried at depths greater than 10 cm and most were recovered from the upper few centimeters of fill. This site is largely deflated.

Nineteen informal shovel probes, 20 cm in diameter, also were excavated on this site. Twelve of the shovel probes were excavated near the recorded features. The remaining shovel probes were excavated in the northern and northeastern portions of the site to determine if subsurface cultural materials were present in accumulated sheet sand deposits. No cultural evidence was recovered from any of the 19 shovel probes (Table 18.9).

Table 18.6 Features on LA 128701

Feature No.	Location	Type	N/S	E/W	Depth	Cultural Materials
1	Southern end of site	Hearth	1.5 m	1.0 m	Surface to 10 cm	16 granite and limestone fire-cracked rock, 1 subsurface fire-cracked rock, and 1 marginal flake tool to the south of feature
2	Southern end of site	Hearth	1.0 m	2.0 m	Surface	28 fire-cracked rock, 1 marginal chert tool
3	Southern end of site	Hearth	2.25 m	3.5 m	Surface	50+ limestone fire-cracked rock
4	Southeastern end of site	Hearth	1.5 m	2.0 m	Surface	18 scattered fire-cracked rock

Table 18.7 Artifact Concentrations on LA 128701

Artifact Con.	Location	N/S (m)	E/W (m)	Cultural Materials
1	Northern end of site	4	15	20+ limestone, 40+ undifferentiated brownware sherds, granite fire-cracked rock/burned caliche, 7 limestone flakes, and 1 black chert flake
2	Northern end of site	12	6	30+ limestone fire-cracked rock, undifferentiated brownware sherds (17 body, 1 rim), 5 chert flakes, 10 limestone flakes, 1 quartzite hammer stone,1 granite metate fragment, 3 burnt bone pieces
3	Southern end of site	4	6	10+ historic glass and 1 limestone core
4	Northern end of site	3	3	7 fire-cracked rock, 1 siltstone core, 1 sanitary metal can, and 6 brown bottle glass

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Table 18.8 Shovel Test Results on LA 128701

Test No.	Location	Depth (m)	Stratum1	Cultural Evidence 1	Stratum 2	Cultural Evidence 2	Stratum 3	Cultural Evidence 3	Stratum 4	Cultural Evidence 4
ST 1	Northern end of site	0.3	Unconsolidated, historic, laminated, eolian, sandy loam (7.5YR6/6), surface to 0.08 m	4 lithic debitage, 1 undifferentiated brownware ceramic, 1 burned caliche	Semi-compacted, sandy loam (7.5YR5/8), depth 0.08–0.10 m	None	Compacted, alluvial silt (7.5YR7/7), Organ I horizon, depth 0.10–0.30 m	None		
ST 2	Northern end of site	0.25	Unconsolidated, historic, laminated eolian, sandy loam (7.5YR6/6), surface to 0.12 m	2 burned caliche, 4 fire-cracked rock, 2 lithic debitage	Semi-compacted, sandy loam (7.5YR5/6), depth 0.12–0.15 m	None	Semi-compacted, sandy loam (7.5YR7/7), humus, depth 0.15–0.18 m	None	Compacted alluvial silt (7.5YR7/7), Organ I horizon, depth 0.18–0.25 m	None
ST 3	Center of site	0.3	Unconsolidated, historic, eolian, sandy loam (7.5YR6/6), surface to 0.06 m	None	Semi-compacted, sandy loam (7.5YR5/6), Organ III horizon, depth 0.06–0.12 m	None	Compacted, alluvial silt (7.5YR7/7), Organ I horizon, depth 0.12–0.30 m	None		
ST 4	Southern end of site	0.2	Semi-compacted, historic, eolian, sandy loam (7.5YR6/6), surface to 0.04 m	None	Compact, alluvial silt (7.5YR7/7), Organ I horizon, depth 0.04–0.20 m	None				
ST 5	Southern end of site	0.1	Semi-compacted, historic, laminated, eolian, sandy loam (7.5YR6/6), surface to 0.10 m	None	Compacted, alluvial silt (7.5YR7/7) with caliche nodules, Organ I horizon, depth 0.10–0.40 m	None				
ST 6	Southern end of site	0.3	Semi-compacted, historic, laminated, eolian sandy loam (7.5YR6/6), surface to 0.06 m	None	Compacted, alluvial silt (7.5YR7/7), Organ I horizon, depth 0.06–0.30 m	None				

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Table 18.8 Shovel Test Results on LA 128701 (continued)

Test No.	Location	Depth (m)	Stratum1	Cultural Evidence 1	Stratum 2	Cultural Evidence 2	Stratum 3	Cultural Evidence 3	Stratum 4	Cultural Evidence 4
ST 7	Southern end of site	0.4	Unconsolidated, historic, laminated, eolian, sandy loam (7.5YR6/6), surface to 0.14 m	None	Semi-compacted, sandy loam (7.5YR5/8), humus, A horizon, depth 0.14–0.16 m	None	Compacted, sandy loam (7.5YR5/6), Bw horizon, depth 0.16–0.35 m	None	Compacted, silty sand (7.5YR7/7), Bk horizon, depth 0.35–0.40 m	None
ST 8	Southern end of site	0.36	Unconsolidated, historic, laminated, eolian, sandy loam (7.5YR6/6), surface to 0.05–0.10 m	None	Semi-compacted, sandy loam (7.5YR5/8, Ab horizon, depth 0.05–0.10—0.22 m	None	Compacted sandy loan (7.5YR7/7), Bk horizon, depth 0.22–0.36 m	None		
ST 9	South-eastern end of site	0.4	Historic, eolian, sandy loam (7.5YR6/6), surface to 0.17 m	1 fire-cracked rock	Compacted alluvial silt (7.5YR7/7) with high carbonates, depth 0.17–0.40 m	None				
ST 10	South-eastern end of site	0.5	Semi-compacted, historic, laminated, eolian, sandy loam (7.5YR6/6), surface to 0.26 m	None	Compacted, alluvial silt (7.5YR7/7) with few caliche nodules, Organ I horizon, depth 0.26–0.50 m	None				

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Table 18.9 Shovel Probe Results on LA 128701

Shovel Probe #	Location	Depth (cm)	Soils	Cultural Evidence
1	Near Feature 3	35	Strong brown 7.5YR5/6 sandy loam	None
2	Near Feature 3	40	Strong brown 7.5YR5/6 sandy loam	None
3	Near Feature 3	47	Strong brown 7.5YR5/6 sandy loam	None
4	Near Feature 4	40	Strong brown 7.5YR5/6 sandy loam	None
5	Near Feature 4	35	Strong brown 7.5YR5/6 sandy loam	None
6	Near Feature 4	35	Strong brown 7.5YR5/6 sandy loam	None
7	Near Feature 2	35	Strong brown 7.5YR5/6 sandy loam	None
8	Near Feature 2	35	Strong brown 7.5YR5/6 sandy loam	None
9	Near Feature 2	30	Strong brown 7.5YR5/6 sandy loam	None
10	Near Feature 1	38	Strong brown 7.5YR5/6 sandy loam	None
11	Near Feature 1	35	Strong brown 7.5YR5/6 sandy loam	None
12	Near Feature 1	35	Strong brown 7.5YR5/6 sandy loam	None
13	Northern end of site	40	Strong brown 7.5YR5/6 sandy loam	None
14	Northern end of site	50	Strong brown 7.5YR5/6 sandy loam	None
15	Northern end of site	50	Strong brown 7.5YR5/6 sandy loam	None
16	Northern end of site	50	Strong brown 7.5YR5/6 sandy loam	None
17	Northern end of site	45	Strong brown 7.5YR5/6 sandy loam	None
18	Northern end of site	35	Strong brown 7.5YR5/6 sandy loam	None
19	Northern end of site	40	Strong brown 7.5YR5/6 sandy loam	None

Geomorphology and Stratigraphy

LA 128701 is located at the base of an alluvial fan that drains the Jarilla Mountains. This position has made it subject to the collection of alluvial sands, though eolian reworking probably occurred between alluvial events. In addition, recent eolian activity has resulted in the development of mesquite coppice dunes that are generally less than 1 m high. This site is more eroded than the sites examined to its east and west (LA 128699 and LA 128701). Although eolian deflation probably occurred in the area, the majority of erosion is alluvial in nature. Archaeological visibility is highest in the interdunal regions where the historic sands are the thinnest. The best stratigraphic preservation occurs around STs 7 and 8 in the southern portion of the site. In most other areas, virtually no Formative-aged sediments have been preserved.

The surficial deposit at the site (Unit 1) consists of a thin (0–10-cm thick) veneer of historic sands in interdunal areas that is as much as 1-m thick in some coppice dunes. These sediments are generally light brown (7.5YR6/4, d) and have a loamy sand texture. In general, the Unit 1 sediments are coarsely laminated and lack a strong gravel component. These surficial sediments appear to be historic and probably date to within the last 100 years. For this reason, they are considered to have low archaeological potential. It is possible, however, that some historic cultural materials may be incorporated into the sands. On the site cultural features were observed only in areas where Unit 1 was absent or very thin (e.g., in interdunal areas). In the archaeological descriptions recorded by the field technicians, Unit 1 was sometimes subdivided into two units: the upper being unconsolidated sands and the lower being more compacted sands. The presence of weak laminate through both subdivisions indicates, however, that they are both historic in age.

In STs 7 and 8, Unit 1 is underlain by an approximately 10-cm thick remnant of a soil Ab horizon (Unit 2). It is composed of a pinkish-gray (7.5YR6/2, d), loamy sand. Elsewhere the A horizon was absent or, at best, a very weak, thin (less than 4-cm thick), incipient A horizon developed

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on the underlying Bk horizon. The humate-enriched appearance of Unit 2 makes this quite apparent when it is compared to the surrounding sediments. Sediments comprising the Ab horizon appear to be a mixture of alluvial slope wash and eolian deposition. Alluvial deposition resulted in the presence of sparsely distributed pebbles throughout this unit and all other deposits lower in the profile. These pebbles often are calcareous in nature but should not be confused with carbonates resulting from pedogenesis within the soil. Instead, they are the result of alluviation that has scoured calcareous sources further upslope. Though the majority of the sediments in this locale are probably alluvial, eolian reworking probably occurred between periods of alluvial deposition. Based on its stratigraphic position and association with the underlying Bw horizon (see Unit 3 below), this unit correlates with the Organ III sediments (100–1,100 B.P.) described by Monger (1993) or the Q3 sediments (100–7,300 B.P.) described by Blair *et al.* (1990). The Ab horizon is important because it indicates a stable surface that supported vegetation and may have been favorable for prehistoric inhabitants.

Underlying the Ab horizon in ST 7 is an 18-cm-thick unit of reddish-yellow (7.5YR6/6, d), loamy sand (Unit 3). This unit lacks stratification or strong pedogenic accumulations, but the high chroma of these sediments suggests that they have been subject to minor pedogenic alteration. For this reason, Unit 2 is considered a cambic Bw horizon. In the region, a Bw horizon is typically associated with the Organ III (100–1,100 B.P.) eolian sediments described by Monger (1993). Thus, Unit 3 is tentatively correlated with Organ III sediments; but dateable materials would be needed to confirm this correlation. Unit 3 is slightly thicker (more than 50 cm) in the northern portions of the site than observed in the southern portions of the site (approximately 40-cm thick). This was the only example of a Bw horizon preserved within the boundaries of LA 128701. In the other test pits the Bw horizon had been removed by erosion. This suggests that prior to erosion the site had stratigraphy similar to that observed at LA 128699 and LA 128700.

Underlying the historic sands under most of the site, and under the Ab or Bw horizons in the vicinity of STs 7 and 8, is a calcareous Bk horizon that is pink (7.5YR7/3, d) and has a sandy loam texture. The pedogenic carbonate accumulation in this unit is equivalent to Stage I development (after Gile *et al.* 1966). Within the region, Stage I carbonate typically is considered to be middle Holocene in age. In Monger's (1993) chronology this results in correlation to the Organ I unit (2,100–7,000 B.P.), and in the chronology of Blair *et al.* (1990) this horizon is considered to be part of unit Q3 (100–7,000 B.P.). No cultural materials were observed in association with this unit during the present study, but it is possible that intrusive features could be excavated into the unit.

The basal unit at site LA 128701 is the La Mesa calcrete. The calcrete was observed at the bottom of several of the shovel test pits and is probably near the bottom of those in which it was not encountered. This unit is white to pinkish-white (7.5YR8/1–8/2, d) and has a clay loam texture. The calcrete provides a barrier that cannot easily be breached by the backhoe and is impenetrable for hand excavations. Previous work in the region (Gile *et al.* 1981; Blair *et al.* 1990; Monger 1993) has proposed that the calcrete is Mid-Pleistocene in age (ca. 250,000 B.P.) and, thus, predates accepted dates for the human occupation of North America. For this purpose, the calcrete is considered to be the sterile level for archaeological excavations.

Material Culture

Cultural materials recorded on the site include ceramics, lithic artifacts, ground stone artifacts, scattered thermal materials, burned bone, and historic cultural materials. A total of 18 items was collected from this site (Table 18.10). Three diagnostic El Paso series ceramics were collected off

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Table 18.10 Artifacts Collected from LA 128701

Bag No.	North	East	ST	Level	Depth	Contents
1	483.22	497.5	–	Surface	0	El Paso Brownware rim
2	476.72	489.78	–	Surface	0	El Paso Brownware rim
3	481.33	506.69	1	1	10 cm	4 lithic flakes, 1 El Paso Brownware, 1 burned caliche
4	487.46	505.35	2	1	10 cm	2 burned caliche, 4 fire-cracked rock, 2 lithic flakes
5	537.75	496	–	Surface	0	El Paso Bichrome rim
6	383.9	546.77	9	2	19 cm	1 limestone fire-cracked rock

of the site surface. The remaining 15 items were collected from three shovel tests. These included six lithic flakes, one El Paso Brownware body ceramic, three burned caliche fragments, and five fire-cracked rocks.

Ceramics

The 95 ceramics observed at the site include 92 El Paso Brownware body sherds, two El Paso Brownware rim fragments, and one El Paso Bichrome rim. Most of these are concentrated in the northern portion of the site. Four sherds were recovered and returned for laboratory analysis. These include three rim sherds from the surface and body sherd from Level 1 in ST 1. All four sherds are brown and tempered with coarse particles of quartz and feldspar. The three rims include two El Paso Brown and one El Paso Bichrome sherds. The two plain rims are from bowls, while the painted rim is from either a bowl or an outflaring jar; the painting is on the interior vessel wall, however, suggesting that this sherd is probably from a bowl.

The three rims vary notably in morphology (Figure 18.3). One of the plain specimens is pinched, with a rim sherd index (RSI) of 0.46. The other plain rim is rounded, with a much higher RSI of 0.88. The painted rim is thickened, with the highest RSI of 1.12. Based on RSI and rim morphology alone, one might make a case for occupations spanning the early to late Mesilla phase, and possibly beyond. Once again, however, it should be noted that all three rims are probably from bowls, and that this vessel form generally does not appear in the southern Jornada Mogollon region until Late Mesilla times (Lehmer 1948:79; Whalen 1978), and the one bichrome rim certainly suggests a Late Formative presence.

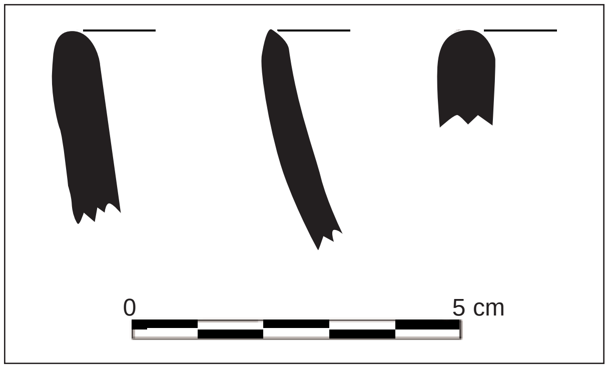

Figure 18.3 El Paso Brown (left and center) and El Paso Bichrome (right) rims from LA 128701.

Lithics

Sixty-five chipped stone artifacts were documented in the field. These materials are widely scattered over the site extent, but a higher density is present in the northern artifact concentrations. They include 51 flakes, 11 lithic cores, two marginally retouched tools, and one pink quartzite hammerstone (Table 18.11). Four of the flakes exhibit edge use damage. As stated in the original testing report, the lithic artifacts are mainly limestone (53 percent) and several varieties of chert (30 percent), with nominal amounts of rhyolite, basalt, siltstone, quartzite, and granite. Silicified shale, a major material component in the US 54 assemblages, was not identified as such during the testing phase.

Table 18.11 Chipped Stone Artifacts Documented in the Field at LA 128701

Material	Size (cm)	Flakes				Formal Tools
		Indeter.		Other		
		Cortical	Non-Cortical	Edge Modified	Core	
Chert	1–2		3			1 marginal tool (3 x 2 x 1 cm)
	2–4	4	6	1	1	
	>4	2			1	
Limestone	1–2		1		1	1 marginal tool (12 x 7 x 3 cm)
	2–4	11	5	1		
	>4	4	4	2	5	
Siltstone	1–2		1			
	2–4					
	>4	1			2	
Basalt	1–2					
	2–4		1			
	>4	1				
Rhyolite	1–2					
	2–4		1			
	>4	1				
Quartzite	1–2					1 hammerstone (8 x 6 x 5 cm)
	2–4					
	>4	1				
Granite	1–2					
	2–4				1	
	>4					
TOTAL	**65**	**25**	**22**	**4**	**11**	**3**

Six pieces of debitage were recovered from this site, all from subsurface levels in shovel tests. These six artifacts were analyzed during the data recovery phase and include three silicified shale flakes fragments (lacking platforms), one rhyolite whole flake, and two limestone whole flakes. The rhyolite flake has a unifacet, lipped platform. One limestone flake has a unifacet platform, while the other has a collapsed platform. All debitage at this site is small, ranging 10–25 mm in maximum dimension. See Chapter 21 for more information on the lithics from this site and how they compare to the other sites in the study area.

Ground stone artifacts recorded in the field include two granite and one sandstone metate fragments, one sandstone mano fragment, and one indeterminate fragment of granite.

Scattered thermally altered materials are present throughout the site and include more than 297 pieces of fire-cracked limestone, granite, and sandstone. Just less than 33 percent of these scattered pieces of thermally altered materials are within recorded artifact concentrations. These scattered materials indicate that thermal features once were present on this site but subsequently have been destroyed by erosion.

Historic Artifacts

Historic materials include scattered pieces of glass and metal fragments. Counts by type are presented in Table 18.12. Historic materials include glass and metal fragments. Notably absent is any evidence of building materials. No historic artifacts were collected from the site.

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Table 18.12 Historic Artifacts Documented at LA 128701

Type	Complete	Fragment	Total	Comment
Glass				
Bottle				
Aqua		2	2	
Brown		6	6	
Sun-altered purple		1	1	
Other	3	16	19	Insulator glass (Hemingray 42)
Metal				
Can				
Unknown	1		1	
Hole-in-top	3		3	
Sanitary	9		9	

Interpretation and Site Chronology

The results of the testing investigations suggest that LA 128701 hosted activities that left extensive but low-intensity archaeological remains, dating minimally from the Late Mesilla phase, and possibly including earlier Mesilla- and Doña Ana-phase components as well. This temporal assignment is based upon the presence of diagnostic ceramics found in the northern portion of the site and the morphology of the three recovered rim sherds. The site may reflect activities that were spatially marginal to the more intensive occupations at nearby sites LA 128699 and LA 128700. The four deflated fire-cracked rock features, along with a general scatter of fire-cracked rock indicate the former presence of thermal features and probably provide some indication that this site was reoccupied repeatedly. The general lack of ceramics in the southern portion of the site may indicate an Archaic-age occupation, or activities not involving ceramics but otherwise dating from the Formative-period occupation(s). There is also a sparse scatter of historic material probably related to the mining town of Orogrande.

Evaluation and Recommendation

LA 128701 is a large, prehistoric campsite with Formative- and historic-period components. The presence of El Paso Brownware ceramics and a single El Paso Bichrome sherd suggests the site contains a Mesilla-phase component, and possibly a very minor Doña Ana presence as well. These materials, however, are predominately restricted to the northern portion of the site. The four fire-cracked rock features were recorded on the surface, and all are thoroughly deflated. Other scattered, thermally altered materials are also on deflated surfaces. Geomorphic investigations detected a remnant Ab horizon that had been eroded away throughout most of the site. Testing recovered several artifacts in subsurface contexts, but all were restricted to the upper 10 cm of recent eolian deposits. Testing produced no evidence of intact or dateable subsurface deposits. The site was thoroughly documented during testing, and additional investigations are unlikely to produce important new information about the resource. LA 128701 is not eligible for inclusion in the National Register of Historic Places. No additional investigations are warranted.

LA 128707

LA 128707 is an historic trash scatter with several discrete historic dumps. The site lies on the eastern alluvial fans of the Jarilla Mountains in the south-central Tularosa Valley, New Mexico. The site is on the eastern side of US 54 (Figure 18.4). The site's terrain slopes slightly from the west-northwest to the east-southeast, with grades ranging from one to two degrees. Surface soils are mainly alluvial, with very gravelly sandy loam to loam deposits. The flora on the site consists of creosote, sparse mesquite, dropseed grass, prickly

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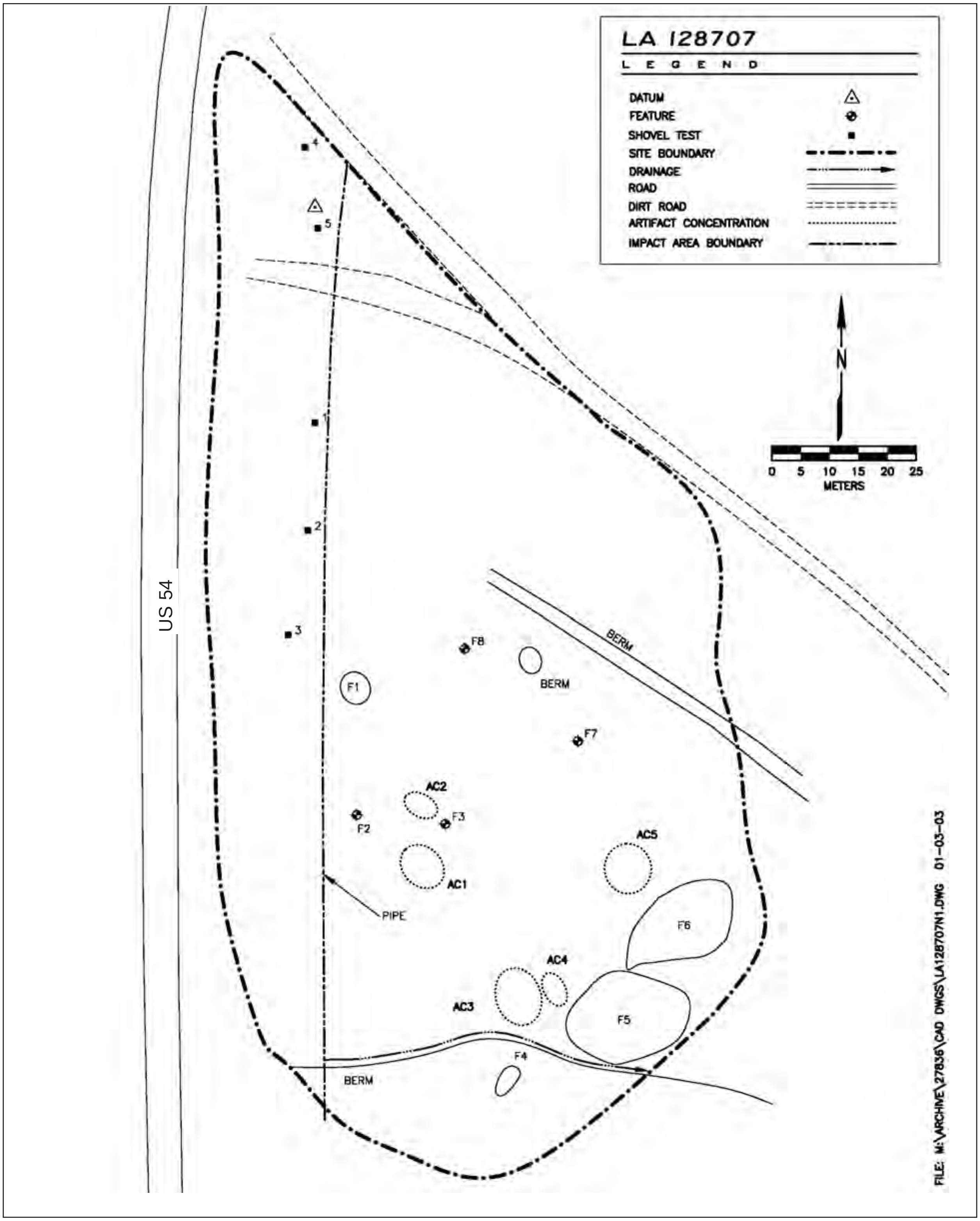

Figure 18.4 Site map of LA 128707, showing shovel tests, features, and artifact concentrations.

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pear, and various weeds. A few mesquite-stabilized coppice dunes are present in the southern portion of the site. Surface visibility is excellent and exceeds 90 percent. The site covers roughly 12,572 m^2, extending 196 m north-south x 91 m east-west (see Figure 18.4). The site extends farther east-southeast toward the old Jarilla Junction railroad station, though investigations were limited to approximately 90 m east of centerline. Only the western edge of the site lies within the construction right-of-way, and this includes roughly 3,983 m^2, or 32 percent of the total site area.

Michalik (2000) identified the site as an historic trash scatter covering roughly a 5,200 m^2 area (80 m north-south x 65 m east-west). The initial recording identified two main trash concentrations connected by a sparse scatter. Bottle glass fragments included amethyst, aqua, olive green, brown, cobalt, milk, and clear. Other items recorded included hundreds of hole-in-top cans, solder dot cans, sanitary cans, pre-1948 tobacco tins, flat top beverage cans, lard pails, sardine cans, a few household ceramics, a frying pan, a galvanized bucket, crown caps, baling wire, railroad spikes, and miscellaneous metal fragments. The assemblage observed suggests that the site was occupied between 1880 and 1940.

Testing Methodology

A permanent, aluminum-capped datum was established; and the site was mapped with a total station instrument. Features and artifacts also were plotted on an orthoquad aerial photograph of the site area. Features were trowel tested to identify depth and content. Five shovel tests, each measuring 50 x 50 cm, were excavated. These were placed in the western portion of the site, adjacent to US 54, to assess the presence of subsurface deposits in areas to be impacted by the construction.

Testing Results

Surface reconnaissance and site mapping expanded the boundaries of this site. The low- to moderate-density scatter of cultural materials is extensive. Eight discrete trash dumps were identified as features (Table 18.13). Trowel testing indicated that most of the dumps were surficial, although some historic materials were documented to a depth of 50 cm bgs. Larger dumps were noted to the southeast, outside of the area investigated leading toward the old railroad station. One dump, roughly 50 m east of Feature 6 outside of the mapped site boundaries, covered a 50-m-diameter area with a height of more than 2 m.

Five areas of relatively high artifact densities were identified as artifact concentrations. These were not as discrete or as densely concentrated as the dump features. Their contents are tabulated in Table 18.14.

Shovel tests exposed an area totaling 1.25 m^2. Table 18.15 provides a description of the shovel testing results. Subsurface cultural evidence was not recorded in any of the shovel tests.

Geomorphology and Stratigraphy

LA 128707 is located at the base of an alluvial fan that drains the Jarilla Mountains and is on the eastern side of US 54. Substantial deposition of alluvial sands has occurred here, although eolian reworking probably occurred between alluvial events, and alluvial erosion has also impacted the landscape here, with some alluvial erosion having occurred along small rills incised into the hillside. In addition, recent eolian activity has resulted in the development of mesquite coppice dunes that are generally less than 1 m in height. The construction of the highway also has served to cut off much of the alluvial deposition in this area and makes erosion more likely in the future. Archaeological visibility is highest in the interdunal regions where the historic sands are relatively thin.

The surficial deposit at the site (Unit 1) consists of a thin (0–10-cm thick) veneer of slightly gravelly historic sands in interdunal areas that thick-

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Table 18.13 Features on LA 128707

Feature No.	Location	Type	N/S (m)	E/W (m)	Depth (cm)	Cultural Materials
1	Center of site	Historic trash dump	7	8	10	Scattered coal, 44 hole-in-top cans, 8 tobacco tins, 8 purple bottle glass fragments, 2 windowpanes, 7 earthenware fragments, and 1 brick fragment
2	Center of site	Historic trash dump	1	4	10	4 earthenwares, 24 granite cobbles, 26 purple bottle glass fragments, 1 can lid, 2 hole-in-top cans, 10 modern amber bottle glass, and 1 purple glass bottle neck fragment
3	Center of site	Historic trash dump	4	4	10	1 amber glass, 31 hole-in-top cans, and 2 lard cans
4	Southeastern end of site	Historic trash dump	6	4	10	100+ hole-in-top cans, 1 pipe, 50+ sanitary cans, 10 potted meat tins, 5 clear bottle glass fragments, and 1 green bottle glass fragment
5	Southeastern end of site	Historic trash dump	15	30	50	10 refined whiteware ceramics, 10 stoneware, bottle glass fragments (20+ purple, 20+ aqua, 20+ clear), 1 clear “star” glass bowl fragments, 3 bricks, 30+ hole-in-top cans, 10+ tobacco tins, chicken and barbed wire, metal shoe heel, 1,000+ metal fragments, 100+ bottle fragments, 100+ nails, ceramic with flower blue design, ceramic with floral design, ½” pipe, mattress fragments, 10+ sheet metal fragments, and 15-gallon, rectangular metal container
6	Southeastern end of site	Historic trash dump	15	15	50	1 m deposit coal, 1,000+ metal fragments, 20+ tobacco tins, 50+ hole-in-top cans, 20 earthenwares, 50 whitewares, brick fragments, bottle glass (56 blue, 50+ amber—1 base “WF/5 13 mi.”), milk glass fragments, 3 ceramic cast “Batter LA Works, England 20 GRM”
7	Center of site	Historic trash dump	3	3	10	26 hole-in-top cans, 5 “Prince Albert” tobacco tins, 3 lard cans, and 5 refined whiteware ceramics
8	Center of site	Historic trash dump	3	4	10	15 hole-in-top cans, bottle glass fragments (20 clear, 12 purple—1 bottle neck), and 2 whiteware ceramics

Table 18.14 Artifact Concentrations on LA 128707

Artifact Con.	Location	Type	N/S (m)	E/W (m)	Cultural Materials
1	Center of site	Historic trash	8	10	24 hole-in-top cans, 3 lard cans, 1 gallon bucket, and 1 green bottle glass fragment
2	Center of site	Historic trash	3	6	1 tobacco tin, 6 amber glass fragments, and 5 hole-in-top cans
3	Southeastern end of site	Historic trash	12	5	7 windowpane glass, 2 tobacco tins, 1 bed spring, 6+ jar mason fragments, 4 hole-in-top cans, 1 purple bottle glass fragments, and 3 green bottle glass fragments
4	Southeastern end of site	Historic trash	9	4	6 refined whiteware ceramics, 10 hole-in-top cans, 6 purple bottle glass fragments, 20+ green/aqua bottle glass, 2 tobacco tins, and wire fragments
5	Southeastern end of site	Historic trash	4	5	15 hole-in-top cans, 5 “Prince Albert” tobacco tins, 20 whiteware ceramics, and decorated whiteware ceramics (1 green and 1 blue)

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Table 18.15 Shovel Test Results on LA 128707

Test No.	Location	Depth (m)	Stratum 1	Cultural Evidence 1	Stratum 2	Cultural Evidence 2
1	Center western edge	0.3	Mixed eolian soil with large gravels possibly from road (7.5YR6/6), depth surface to 0.05 m	2 hole-in-top cans within 1 m of ST	Compacted, silty loam (7.5YR7/7), depth 0.05–0.25 m	None
2	Center western edge	0.4	Mixed eolian soil with gravels from highway shoulder (7.5YR6/6), depth surface to 0.05 m	None	Semi-compacted to compacted, silty loam (7.5YR7/7), depth 0.05–0.40 m	None
3	Center western edge	0.4	Mixed eolian soil with gravels and trash from highway (7.5YR6/6), depth surface to 0.09 m	None	Compacted, silty loam (7.5YR7.7) with moderate caliche and gravels, depth 0.09–0.40 m	None
4	North-eastern edge	0.3	Mixed eolian soil with large gravels/rocks from highway (7.5YR6/6), depth surface to 0.06 m	None	Semi-compacted, silty loam (7.5YR7.7) with moderate large gravels and rocks, depth 0.09–0.30 m	None
5	North-eastern edge	0.4	Mixed eolian soil with gravels and trash from highway (7.5YR6/6), depth surface to 0.06 m	None	Semi-compacted, silty loam (7.5YR7.7) with moderate caliche, depth 0.09–0.40 m	None

ens to approximately 50 cm in some coppice dunes. These sediments are generally reddish-yellow (7.5YR6/6, d) and have a sandy loam texture. In general, the Unit 1 sediments are coarsely laminated and gravels comprise approximately 20 percent of these sediments. This surficial unit is likely to be historic in origin and probably dates to within the last 100 years. For this reason its archaeological potential is limited to historic materials.

Underlying the historic sands is a 20–40 cm-thick unit of reddish-yellow (7.5YR7/7, d), slightly gravelly, sandy loam (Unit 2). This unit lacks stratification or strong pedogenic accumulations, but the high chroma of these sediments suggests that they have been subject to minor pedogenic alteration. For this reason, Unit 2 is considered a cambic Bw horizon. In the region, a Bw horizon is typically associated with the Organ III (100–1,100 B.P.) eolian sediments described by Monger (1993). Thus, Unit 2 is tentatively correlated with Organ III sediments, but dateable materials would be needed to certify this correlation. The occurrence of the Bw horizon (Unit 2) immediately below the historic sands (Unit 1) over most of the site indicates an erosional event prior to historic deposition.

Underlying the Bw horizon (Unit 2) over most of the site is a slightly calcareous gravel deposit that is considered a weak Bk horizon (Unit 3). In one example, ST 4, Unit 2 had been completely removed by erosion and Unit 3 was immediately under Unit 1. Though the gravel clasts have their own unique colors, the sandy loam matrix that surrounds the gravel is reddish-yellow (7.5YR7/7, d). In all, gravel-sized clasts comprise approximately 60 percent of this unit. The pedogenic carbonate accumulations in this unit are equivalent to weak Stage I development (after Gile *et al.* 1966). Within the region, weak Stage I carbonates typically are considered to be representative of the late Holocene. In Monger's (1993) chronology this results in correlation to the Organ II unit (1,100–2,100 B.P.), and in the chronology of Blair *et al.* (1990) this horizon is considered to be part of unit Q3 (100–7,000 B.P.). No cultural materials were observed in association with this unit during the present study, but it

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is possible that intrusive features could be excavated into the unit. The gravel-rich nature of the sediments, however, may have inhibited cultural intrusion. Due to the difficulty of excavation, this deposit served as the basal unit for hand excavations.

Material Culture

Historic cultural materials identified on the site include glass, metal, ceramics, and building materials. The historic glass fragments include predominately bottle and jar glass, although some windowpane glass is present. Metal artifacts include cans, bedding items, construction materials, and clothing items. The cans include hole-in-top cans, solder dot cans, potted meat cans, tobacco tins, lard pails, sanitary cans, slip lid cans, gallon buckets, and a five-gallon rectangular container. Bedding items include coil spring mattresses. Construction metal materials include wire nails, cut nails, baling wire, other size wire fragments, chicken wire, sheet metal, and various sizes of piping. Metal shoe heels also are present on the site. Construction materials include various bricks, milled lumber, and some roofing materials. Ceramic artifacts consist mostly of refined whitewares with some ceramic cast, earthenwares, and stonewares. Other cultural materials present include charcoal and coal dumps and rubber sole shoes. Table 18.16 lists a rough count of the general scatter not previously documented in the feature or artifact concentrations. No artifacts were collected from this site for laboratory analysis.

Table 18.16 Historic Scattered Artifacts on LA 128707

Type	Complete	Fragment	Total
Glass			
Bottle			
Colorless/clear		27	27
Sun-altered amber		3	3
Aqua		28	28
Green		12	12
Brown		22	22
Sun-altered purple		49	49
Milk glass		13	13
Metal			
Can			
Unknown	16	38	54
Hole-in-top	57	23	80
Sanitary	47	27	74
Tobacco	23	13	36
Key strip	27	7	34
Wire		8	8
Ceramics			
Refined Whiteware		27	27
Stoneware		11	11
Crock/Jug		8	8

Interpretation

The results of the testing investigations revealed an extensive, early twentieth-century historic site associated with the occupation of Orogrande, New Mexico. The presence of purple-colored glass, an aqua blue insulator, and hole-in-top cans were especially indicative of occupation in the early twentieth century. Eight trash dumps and five artifact concentrations were identified in the midst of a sparse- to moderate-density artifact scatter. Portions of the site slated for development lacked cultural features and contained only a sparse historic artifact scatter. The trash dumps and intervening scatter contained building materials as well as a wide range of domestic debris. The presence of building materials suggests that shacks or other temporary structures were probably once present. No intact evidence of structural remains, however, was documented during site testing.

Evaluation and Recommendation

LA 128707 is a large historic trash scatter with several extensive trash dumps. The scatter continues to the southeast, but the site was documented only to 90 m east of centerline, which extends well outside of the project impact area. Thus this boundary of LA 128707 was drawn arbitrarily. Larger features and structural foundations probably are present in this portion of old Orogrande.

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Later artifacts may reflect other uses of the area, such as livestock grazing, in the third and fourth decades of the twentieth century.

LA 128707, a portion of the town site of Orogrande, was thoroughly recorded during site testing. No evidence of structural features, wells, or privies was documented. Documentation during the testing phase exhausted the site's data potential, and LA 128707 is not eligible for inclusion to the National Register of Historic Places. No additional investigations are warranted.

LA 128709

LA 128709 is a large Jornada Mogollon campsite, lithic procurement site, and late historic trash scatter and residential site. It lies on the eastern alluvial fans of the Jarilla Mountains in the south-central Tularosa Valley. The site is located entirely west of US 54, and the prehistoric component appears to be an extension of LA 128708, located to the east, and the historic component an extension of sites LA 115258 and LA 128710 to the south. The site's terrain slopes slightly from the west-northwest to the east-southeast, with grades ranging from one to five degrees. The site surface is an extremely gravelly, alluvial slope, except in the northeastern portion where the surface is covered by 0.5–2.0-m high, mesquite-stabilized coppice dunes with narrow east-southeast draining interdunal areas. Numerous shallow (up to 1.0-m deep), narrow to broad arroyos drain the surface of the site toward the south-southeast (Figure 18.5). Accumulated sheet sand deposits and mesquite stabilized coppice dunes, ranging 0.5–1.0 m in depth, occur only in the far northeastern portion of the site. Surface soils are mainly alluvial, very gravelly sandy loam to loam deposits, with eolian sands in the northeastern portion of the site associated with dunes. The flora on the site consists of creosote, tar bush, mesquite, fourwing saltbush, broom snakeweed, narrow leaf yucca, dropseed grass, prickly pear, rainbow cactus, and various weeds.

The site covers roughly 41,386 m^2, extending more than 282 m north-south by an average 238 m east-west. The entire site west of a parallel dirt road, roughly 80 m west of US 54 on BLM land, was recorded. The site does extend further east and likely to US 54, but this area was not investigated. Because the portion of the site to be impacted was so small, some portions outside the impact area were tested to assess the site's NRHP eligibility status. The northern two-thirds of the site was not tested given that this portion is well outside of the impact area. Portions of the site that could not be avoided include 1,706 m^2, or 4 percent of the entire site area.

Michalik (2000) first recorded the site as an historic trash scatter covering roughly a 4,400 m^2 area (110 m north-south x 40 m east-west). The initial recording identified three main trash clusters. The majority of items recorded were fragments of bottle glass that included amethyst, aqua, and clear. Other items recorded included approximately 100 hole-in-top cans, solder cans, lard pails, and baking powder cans. Finally, a few household ceramics, a metal funnel, and other miscellaneous metal fragments were recorded. The site was identified as dating between A.D. 1880 and 1920 based on the artifact assemblage.

Testing Methodology

A permanent, aluminum-capped datum was established, and the site was mapped with a total station instrument. Features and artifacts also were plotted on an orthoquad aerial photograph of the site area. Features were trowel tested to identify depth and content, and eight shovel tests, each measuring 50 x 50 cm, were excavated on this site. These were placed near feature areas, artifact concentrations, and prehistoric materials. ST 1 was excavated near Feature 20 and ST 2 near Feature 17 to access the depth of deposits in these areas. The remaining shovel tests were placed adjacent to surface cultural materials. STs 4, 7, and 8 all were excavated in areas where a few surface pieces of fire-cracked rock were identified in search of buried features.

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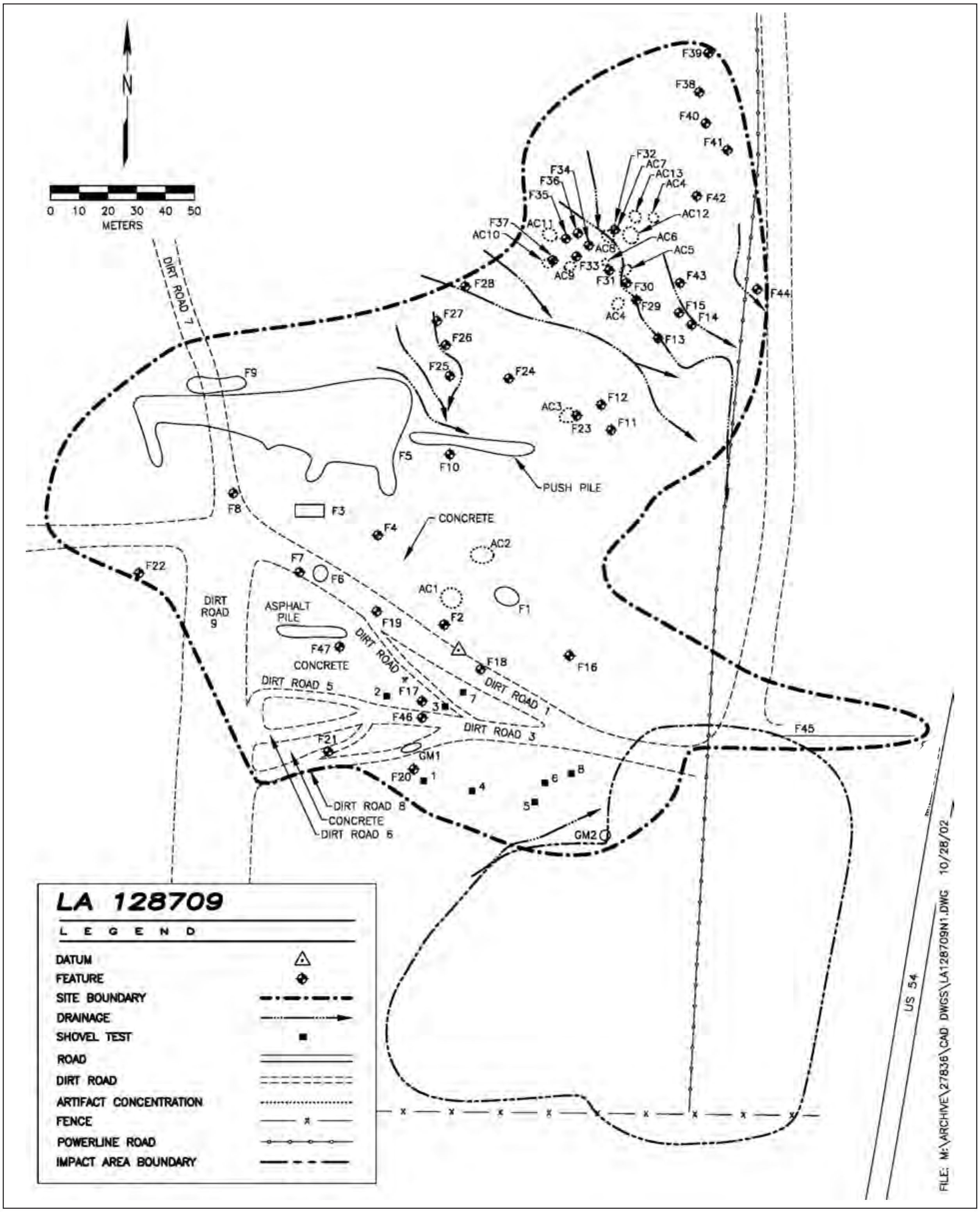

Figure 18.5 **Site map of LA 128709, showing shovel tests, features, artifact concentrations, and indeterminate occurrences.**

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Testing Results

Surface reconnaissance and site mapping expanded the boundaries of this site and identified its prehistoric component. The low- to moderate-density scatter of cultural materials and features is extensive. Moderate densities of cultural materials on the surface are present in the north-central portion of the site. This area contained prehistoric and late historic materials.

Forty-seven features were identified at LA 128709 (Table 18.17). These include 15 historic and 32 prehistoric features. The historic features include a large cement foundation, an associated privy pit, a large area of push dirt that covers an industrial feature complex, a stone-lined well, a wooden frame, a very small cement foundation with piping, a metal well head, a gravel/coal dump, a cement curb, and six historic dumps. A wooden frame, mainly buried within the push pile, may be associated with the probable stone-lined well. The cement curb lines the northern edge of the main dirt road that leads into the area from US 54.

The 32 prehistoric features include one lithic procurement area and 31 thermal features. The thermal features include 27 concentrations of fire-cracked rock and four small ash stains. At least 16 of the burned rock features contain ash stains, and six appear to be large roasting pits.

Fourteen semi-discrete artifact concentrations were identified on the site, but not designated as features (Table 18.18). Depth of cultural evidence was not systematically identified in these areas, although some arroyo cuts indicate subsurface cultural deposits in excess of 10 cm bgs.

Two gravel mounds also were recorded in the southern portion of the site (Table 18.19). One likely represents a mechanical equipment push pile while the other may have been dumped by a wheelbarrow or truck. The temporal association of these remains is unknown although purple glass sherds within one suggests a date contemporaneous with the occupation of old Orogrande.

Shovel tests exposed a total of 2.0 m^2 (Table 18.20). Subsurface cultural evidence was present only in two of the shovel tests (STs 7 and 8) and included pieces of fire-cracked limestone. These pieces were recovered from the upper 10 cm and indicate the presence of subsurface prehistoric materials in the south-central portion of the site in areas where surface-burned rock was identified.

Geomorphology and Stratigraphy

LA 128709 is located at the base of an alluvial fan that drains the Jarilla Mountains. This position has made it subject to the collection of alluvial sands, though eolian reworking probably occurred between alluvial events. In addition, recent eolian activity has resulted in the development of mesquite coppice dunes that are generally less than 1 m in height. Due to the position of this area immediately at the base of the hill slope deposition has predominated in this area, although some alluvial erosion has occurred along roadways and small rills incised into the hillside. Archaeological visibility is highest in the interdunal regions where the historic sands are relatively thin.

The surficial deposit at the site (Unit 1) consists of a thin (0–10-cm thick) veneer of slightly gravelly historic sands in interdunal areas that thickens to approximately 50 cm in some coppice dunes. These sediments are generally strong brown to reddish yellow (7.5YR5/6–6/6, d) and have a sandy loam texture. In general, the Unit 1 sediments are coarsely laminated; and gravels comprise approximately 20 percent of these sediments. This surficial unit is historic in origin and probably dates to within the last 100 years. For this reason its archaeological potential is limited to historic materials. On the surface, prehistoric cultural features were observed only in areas where Unit 1 was absent or very thin (e.g., in interdunal areas).

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Table 18.17 Features on LA 128709

Feat. No.	Location	Type	N/S (m)	E/W (m)	Depth	Cultural Materials
1	Central portion of site	Historic trash dump	5	10	Surface	8 clear bottle glass, 6 aqua bottle glass, 7 green bottle glass, 8 sun-altered purple bottle glass, 6 hole-in-top cans, 1 tobacco tin, 30+ refined whiteware (some rim with blue print design-plate fragments)
2	Central portion of site	Hearth	0.6	0.6	Surface	Articulated concentration of 25+ limestone fire-cracked rock
3	West-central	Cement foundation	5.3	11.8	Surface to 10 cm	Large concrete foundation predominately buried under 1–10 cm
4	West-central	Basin depression	5	5	> 50 cm	A circular pit southeast of the cement foundation that may represent a privy with one hole-in-top can and some barbed wire, one complete welded tuff mano (10 x 8 x 5 cm) that is totally covered with carbonates
5	Northwest	Large push pile from heavy machinery	52	125	1.0–1.5 m	The push area of soil from the area with the cement foundation, calcium rich soil deposits, a few historic can and glass fragments, 10 milled lumber fragments, 1 granite metate fragment (30 x 20 x 9 cm)—possible buried industrial complex
6	West-central	Roasting pit	4	6	> 15 cm	200+ semi-articulated to scattered pieces of granite and limestone fire-cracked rock, possibly represents multiple hearth features in main east/west dirt road
7	West-central	Hearth	1	1	> 15 cm	Articulated concentration of 50+ fire-cracked granite and limestone in southern edge of main east/west dirt road
8	West-central	Gravel/coal dump	2.5	1.5	> 25 cm	Small gravels and some coal
9	Northwest	Lithic procurement area	10	25	> 10 cm	1,000+ rhyolite lithic flakes/angular debitage, 50+ lithic cores
10	Northwest	Historic trash dump	5	5	Surface	30+ hole-in-top cans (various sizes), 1 tobacco tin, 1 wire fragment, 1 stovepipe fragment, 8 refined whiteware plate fragments (some with blue flower petal design) 5 aqua bottle glass fragments, 2 sun-altered purple bottle glass fragments
11	East-central	Hearth	4	3	> 15 cm	50+ scattered fire-cracked rhyolite/limestone with light ash staining and subsurface remains within 1.0 m diameter area
12	East-central	Roasting pit	5	5	> 15 cm	200+ scattered fire-cracked rhyolite/limestone with 2.0-m diameter ash stain remains with fire-cracked rock
13	East-central	Historic trash dump	7	7	< 10 cm	20+ hole-in-top cans (various sizes), 2 five-gallon buckets, bottle glass (2 clear, 1 sun-altered , 5 sun-altered purple fragments, 1 complete sun-altered purple bottle (“ER Berkey Co. NY April, 17, 1877”), 1 stoneware plate fragment with green line outline
14	East-central to northeast	Roasting pit	2	2	> 20 cm	Articulated concentration of 75+ fire-cracked rhyolite/limestone with subsurface fire-cracked rock and faint ash staining to 20+ cm, 1 siltstone flake
15	East-central to northeast	Hearth	3	3	Surface	Disarticulated scatter of 30+ pieces of fire-cracked rhyolite and limestone, 1 siltstone core
16	Southeast	Historic trash dump	4	7	Surface	Bottle glass fragments (7 clear/colorless, 5 sun-altered amber, 8 green), 1 stopper top (dark green), 1 tobacco tin, 1 slip lid can, 1 lard can, 1 barrel strap

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Table 18.17 Features on LA 128709 (continued)

Feat. No.	Location	Type	N/S (m)	E/W (m)	Depth	Cultural Materials
17	West-central	Potential stone lined well	1.0+	1.35	> 30 cm	4 large limestone slabs lining circular pit, possible well
18	South-central	Hearth	0.5	0.5	3 cm	Eroded remains of an ash stain exposed in northern portion of main east-west dirt road
19	West-central	Hearth	0.5	0.5	> 5 cm	Eroded remains of an ash stain with 3 fire-cracked limestone in northern portion of main east-west dirt road
20	West-central	Historic trash dump	4	4	> 10 cm	51 hole-in-top cans (various sizes), 10+ refined whiteware fragments, bottle glass fragments (10+ sun-altered purple, 1 aqua), 5 burned bone fragments
21	West-central	Hearth	1.5	1.5	> 15 cm	Articulated concentration of more than 50 fire-cracked limestone with subsurface fire-cracked rock to > 15 cm exposed in Dirt Road 6
22	Western edge	Well	1	0.75	Unknown	1½-inch pipe stem with disturbed gravels to east that may have been base of foundation to motor, 1 x 1 m
23	East-central	Hearth	2	2	> 15 cm	25+ scattered fire-cracked limestone within and just outside > 1.0 m diameter ash stain that extends to more than 15 cm bgs
24	East-central	Hearth	2	3	10 cm	50+ scattered fire-cracked limestone
25	Northwest	Hearth	2.5	2.5	>15 cm	20+ fire-cracked rock and ash stain eroding out of small arroyo with limestone core and ground stone fragment
26	Northwest	Hearth	3	2	Surface	100+ fire-cracked rock with refined whiteware ceramics, 3 amber bottle fragments reads ".erheimer company/full quart/ refilling of this bottle prohibited," 1 hole-in-top can
27	Northwest	Hearth	1.5	1.5	15 cm	75+ articulated fire-cracked rock with charcoal present on surface and lighter ash stain subsurface deposits
28	Northwest	Historic trash dump with fire-cracked rock	8.0	10.0	10 cm	Bottle glass fragments (3 amber, 5 aqua, 10 purple), 75 hole-in-top cans, 3 slip lid cans, 35 refined whiteware ceramics, and 5+ fire-cracked rock
29	Northwest	Ash stain	2	2	>20 cm	50+ fire-cracked rock, 1 limestone flake, and ash-stained fill against eastern edge
30	Northwest	Hearth	1	1	>15 cm	10 fire-cracked rock within an ash stain
31	Northwest	Hearth	0.05	1	>10 cm	15+ fire-cracked rock exposed in small arroyo
32	Northwest	Hearth	2	2	>20 cm	20+ fire-cracked rock within an ash stain
33	Northwest	Roasting pit	3	3	> 20 cm	500+ fire-cracked rock within an ash stain with 1 purple bottle glass top fragment
34	Northwest	Roasting pit	3	3	> 20 cm	500+ fire-cracked rock within an ash stain with 6 refined whiteware ceramics and 3 purple bottle glass fragments
35	Northwest	Roasting pit	3	3	> 20 cm	1,000+ fire-cracked rock within an ash stain with 5+ refined whiteware ceramics (1 with blue embossing), and 15+ (purple, amber, aqua) bottle glass (1 aqua reads "..INS DOIL")

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Table 18.17 Features on LA 128709 (continued)

Feat. No.	Location	Type	N/S (m)	E/W (m)	Depth	Cultural Materials
36	Northwest	Ash stain	3	3	> 20 cm	200+ fire-cracked rock within an ash stain
37	Northwest	Hearth	4	4	10 cm	200+ fire-cracked rock within an ash stain with 5+ refined whiteware ceramics, 5+ purple bottle glass fragments, 4 hole-in-top cans, 3 potted meat cans, 1 lard can, and 1 lid reads “KC Baking Power For 25¢”
38	Northwest	Hearth	3	3	>10 cm	50+ fire-cracked rock within an ash stain cut by and arroyo
39	Northwest	Hearth	1	1	>10 cm	11 pieces of fire-cracked rock semi-articulated within a 1.0 m diameter light ash stain
40	Northwest	Hearth	0.5	0.5	Surface	10 fire-cracked rock within an ash stain
41	Northwest	Hearth	1	2.5	>10 cm	50+ fire-cracked rock
42	Northwest	Hearth	1	1	>30 cm	1.0 m diameter ash stain with fire-cracked rock
43	Northwest	Hearth	1	2	>10 cm	Articulated 25+ fire-cracked rock
44	Northwest	Ash stain	1.5	1	30 cm	30+ fire-cracked rock and ash stain eroding out of road cut
45	Southeast	Cement curb	49.5	0.63	11 cm	Cement curb
46	West-central	Wooden frame	> 3'	1'	Unknown	Wooden frame (>3' x 1' x 1") south of possible well Feature 17, exposed in road bed
47	West-central	Concrete foundation	1'	6"	Unknown	Concrete foundation (1’ x 6” x 1”) with 2 1-inch diameter pipe fittings at the ends

In the majority of shovel test pits, Unit 1 is underlain by an approximately 10-cm-thick remnant of a soil Ab horizon (Unit 2). It is composed of a brown (7.5YR5/3, d), sandy loam. In more eroded locales (STs 1, 2 and 3) the A horizon was absent, probably a result of erosion. The humate-enriched appearance of Unit 2 makes it quite apparent when compared to the surrounding sediments. The sediments comprising the Ab horizon appear to be a mixture of alluvial slope wash and eolian deposition. Alluvial deposition resulted in the presence of sparsely distributed pebbles throughout this unit and all other deposits lower in the profile. These pebbles are often calcareous in nature but should not be confused with carbonates resulting from pedogenesis. Instead, they are the result of alluviation that has scoured calcareous sources farther upslope. Though the majority of the sediments in this locale are alluvial, eolian reworking probably occurred between periods of alluvial deposition. Based on its stratigraphic position and association with the underlying Bw horizon (see Unit 3 below), this unit correlates with the Organ III sediments (100–1,100 B.P.) described by Monger (1993) or the Q3 sediments (100–7,300 B.P.) described by Blair *et al.* (1990). The Ab horizon is important because it indicates a stable surface that supported vegetation and may have been favorable for prehistoric inhabitants.

Underlying the Ab horizon is a 10–18-cm-thick unit of strong brown (7.5YR5/6, d), slightly gravelly, sandy loam (Unit 3). This unit lacks stratification or strong pedogenic accumulations, but the high chroma of these sediments suggests that they have been subject to minor pedogenic alteration. For this reason, Unit 3 is considered a cambic Bw horizon. In the region, a Bw horizon is typically associated with the Organ III (100–1,100 B.P.) eolian sediments described by Monger (1993). Thus, Unit 3 is tentatively correlated with Organ III sediments; but dateable materials would be needed to confirm this correlation. The occurrence of the Bw horizon (Unit 3) immediately below the historic sands (Unit 1) over most of the site indicates an erosional event prior to historic deposition.

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Table 18.18 Artifact Concentrations on LA 128709

Artifact Con.	Location	Type	N/S (m)	E/W (m)	Cultural Materials
1	Central portion of site	Historic trash dump with fire-cracked rock	5	15	20+ scattered limestone fire-cracked rock, bottle glass fragments (20 clear, 10 brown, 10+ "Coca Cola"), and 3 metal cans (1 lard, 1 hole-in-top, 1 unidentifiable)
2	West-central	Historic trash dump with fire-cracked rock	6	15	3 purple glass bottle fragments, 5 hole-in-top can fragments, 1 sanitary can, 1 tobacco can, 2 refined whiteware ceramic cup fragments with flower design
3	East-central	Artifact concentration	1	6	15+ scattered limestone fire-cracked rock, and 2 limestone flakes
4	Northwest	Historic trash dump with fire-cracked rock	12	4	15+ fire-cracked rock with 5+ purple bottle glass fragments, 8+ refined whiteware (green petal design) ceramics
5	Northwest	Historic trash dump	1.6	4	20+ fire-cracked rocks with 20+ purple bottle glass fragments, 2 glass bottle stoppers, and 1 door latch
6	Northwest	Historic trash dump with fire-cracked rock	2	2	Bottle glass fragments (15 aqua, 2 purple), 1 base reads "C," and 4 fire-cracked rocks; to the northwest is 1 granite mano (12 cm diameter, 5 cm thick)
7	Northwest	Historic trash dump with fire-cracked rock	6	5	Bottle glass fragments (10+ dark amber, 20+ purple glass), and 20+ scattered fire-cracked rocks
8	Northwest	Historic trash dump with fire-cracked rock	6	5	Bottle glass fragments (40+ purple, 20+ green), and 20+ fire-cracked rocks
9	Northwest	Historic trash dump with fire-cracked rock	8	8	10+ purple bottle glass fragments, 3 hole-in-top cans, potted meat cans, and 50+ fire-cracked rocks
10	Northwest	Artifact Concentration with fire-cracked rock	8	10	15 limestone flakes, 1 limestone core, 10 purple glass fragments, and 20+ fire-cracked rocks
11	Northwest	Historic trash dump	10	15	Bottle glass fragments (1 purple neck, 10+ purple base), 1 aqua bottle scattered into 50+ pieces, 1 base reads "ST JOSEPHS BRO MO," 1 lard can, 5+ hole-in-top cans, and 30+ refined whiteware ceramics
12	Northwest	Historic trash dump with fire-cracked rock	8	6	1 refined whiteware ceramic, bottle glass fragments (2 purple, 1 aqua), 2 lard cans, 10+ fire-cracked rocks, and 1 corner-notched point fragment
13	Northwest	Historic trash dump with fire-cracked rock	5	7	Bottle glass fragments (15 purple, 10+ aqua, 1 aqua lip), 1 can lid, 3 refined whiteware ceramics, 1 porcelain insulator fragment, and 20+ fire-cracked rock fragments
14	Northwest	Historic trash dump	6	3	Bottle glass fragments (5+ amber and 3+ aqua)

Table 18.19 Gravel Mound Dump Characteristics on LA 128709

Gravel Mound	Location	N/S	E/W	Cultural Materials
1	West-central	7.0 m	5.0 m	Gravel mound (7 m N-S x 5 m E-W x 1.5-m high) created by a front end loader within a newer drainage identified on the site
2	Southeastern end of site	1.0 m	2.0 m	Gravel mound (1 m N-S x 2 m E-W x 0.25-m high) with 1 purple glass, rolled wire, 1 can lid and 1 mason jar lip

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Table 18.20 Shovel Test Results on LA 128709

Test No.	Location	Depth (m)	Stratum 1	Cultural Evidence 1	Stratum 2	Cultural Evidence 2	Stratum 3	Cultural Evidence 3	Stratum 4	Cultural Evidence 4
1	West-central	0.45	Historic, eolian, sandy loam (7.5YR6/6), surface to 0.05 m	None	Semi-compacted, alluvial silt (7.5YR5/6) with 2% gravels, Organ III? horizon, depth 0.05–0.40 m	None	Semi-compacted, alluvial silt (7.5YR6/3) with 60% gravels and caliche nodules, Organ II? horizon, depth 0.40–0.45 m	None		
2	West-central; Feature 17	0.2	Semi-compacted, alluvial silt (7.5YR6/6 or 5/6) with some gravels	None						
3	West-central	0.1	Disturbed, unconsolidated, eolian sands with high density of gravels and rocks, depth surface to 0.05 m	None	Compacted, alluvial silt (7.5YR7/7), depth 0.05–0.10 m	None				
4	West-central	0.13	Semi-compacted, eolian sands (7.5YR5/6) with high density of gravels, depth surface to 0.03 m	None	Semi-compacted, eolian, sandy loam, humus (7.5YR5/8), A horizon, depth 0.03–0.07 m	None	Very compacted, alluvial silt, carbonates (7.5YR7/7), depth 0.07–0.13 m	None		
5	Southeast	0.1	Encrusted, eolian, sandy loam (7.5YR6/6) with high density of gravels, depth surface to 0.01 m	None	Semi-compacted, eolian, sandy loam, humus (7.5YR5/3), A horizon, depth 0.01–0.04 m	None	Very compacted loam (7.5YR5/6), depth 0.04–0.10 m	None		
6	Southeast	0.4	Historic, encrusted, eolian, sandy loam (7.5YR6/6), surface to 1–2 cm	None	Semi-compacted, eolian, sandy loam, humus (7.5YR5/3), A horizon, Organ III? horizon, depth 0.01–0.04 m	None	Very compacted loam (7.5YR5/6), Organ III horizon, depth 0.04–0.25 m	None	Semi-compacted, loam (7.5YR6/3) with 70% gravels, Organ II? horizon, depth 0.25–0.40 m	None

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Table 18.20 Shovel Test Results on LA 128709 (continued)

Test No.	Location	Depth (m)	Stratum 1	Cultural Evidence 1	Stratum 2	Cultural Evidence 2	Stratum 3	Cultural Evidence 3	Stratum 4	Cultural Evidence 4
7	South-central	0.5	Encrusted, historic, eolian, sandy loam (7.5YR5/6) with moderate gravels, depth surface to 0.03 m	None	Semi-compacted, eolian, sandy loam, humus (7.5YR5/8), A horizon, depth 0.03–0.10 m	1 limestone fire-cracked rock (2–6cm)	Semi-compacted, sandy loam (7.5YR5/6), Organ III horizon, depth 0.10–0.45 m	None	Semi-compacted, sandy loam (7.5YR5/6) with moderate gravels, Organ II? horizon, depth 0.45–0.50 m	None
8	Southeast	0.45	Eolian sheet sands (7.5YR5/6) with moderate gravels, depth surface to 0.02 m	None	Compacted, sandy loam, (7.5YR5/8), A horizon, depth 0.02–0.10 m	5 limestone fire-cracked rock (2–6 cm)	Semi-compacted, sandy loam (7.5YR5/6) with few gravels, Organ III? horizon, depth 0.10–0.35 m	None	Semi-compacted, sandy loam (7.5YR5/6) with moderate to high gravels, Organ II? horizon, depth 0.35–0.45 m	None

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Underlying the Bw horizon (Unit 3) over most of the site is a slightly calcareous gravel deposit that is considered a weak Bk horizon (Unit 4). Though gravel clasts have their own unique colors, the sandy loam matrix that surrounds the gravel is strong brown (7.5YR5/6, d). In all, gravel-sized clasts comprise approximately 60 percent of this unit. The pedogenic carbonate accumulations in this unit are equivalent to weak Stage I development (after Gile *et al.* 1966). Within the region, weak Stage I carbonates typically are considered to be representative of the late Holocene. In Monger's (1993) chronology this results in correlation to the Organ II unit (1,100–2,100 B.P.), and in the chronology of Blair *et al.* (1990) this horizon is considered to be part of unit Q3 (100–7,000 B.P.). No cultural materials were observed in association with this unit during the present study, but it is possible that intrusive features could be excavated into the unit. The gravel-rich nature of the sediments, however, may have inhibited cultural intrusion. Due to the difficulty of excavation, this deposit served as the basal unit for hand excavations.

Material Culture

The cultural materials recorded on the site include ceramics, lithic artifacts, ground stone artifacts, scattered thermal materials, and abundant historic artifacts. Six items collected from this site are characterized by provenience in Table 18.21. All of the items were recovered off the surface and represent collected temporally diagnostic artifacts.

Prehistoric Ceramics

Prehistoric ceramics include three undifferentiated El Paso Brownware body ceramics, which indicate the presence of a Formative-period component. These pieces are scattered in the central to north-central portion of the site near Features 25 and 26 and southwest of Features 11 and 12. Two of these were collected and returned to the laboratory for analysis. Both have a brown paste tempered with small, angular pieces of quartz and plagioclase.

Lithic and Chipped Glass Artifacts

The lithic artifacts consist of 51 items, including 36 lithic flakes, nine lithic cores, one marginally retouched lithic tool, one unifacially shaped tool, two bifacially shaped tools, and two projectile point fragments (Table 18.22). One of the bifacially shaped tools is glass and suggests a Protohistoric period occupation. The lithic artifacts are mainly rhyolite and limestone (64 percent) and chert (20 percent), with nominal quantities of siltstone, sandstone, and quartzite.

Two bifaces and one projectile point fragment were recovered from this site, all from surface contexts. These include a Stage IV biface fragment (indicating a biface with coarse thinning and some platform preparation). It was fashioned from a dark brown, coarse chert, possibly Rancheria chert. The distal end has been finely retouched unifacially, suggesting use as a scraper. The second biface is crude (approximately Stage 2, indicating minimal thinning and coarse flaking), made on clear historic glass. This artifact is fragmentary but shows bifacial working on two parallel margins.

The projectile point is rhyolite and is morphologically consistent with Late Archaic dart points

Table 18.21 Collected Artifacts from LA 128709

Bag No.	North	East	Unit	Level	Depth	Contents
1	485.72	682.04	–	Surface	–	Chert biface tool
2	485.52	683.54	–	Surface	–	Undifferentiated brownware body ceramic
3	490.97	705.53	–	Surface	–	Undifferentiated brownware body ceramic
4	528.53	730.92	–	Surface	–	Complete bottle
5	534.09	718.2	–	Surface	–	Clear glass bifacially shaped tool
6	572.3	718.8	–	Surface	–	Chert projectile point fragment

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Table 18.22 Chipped Stone Artifacts LA 128709

Material	Size (cm)	Flakes				Formal Tools
		Indeter.		Other		
		Cortical	Noncortical	Edge Modified	Core	
Chert	1–2					
	2–4	1	2	1	2	1 bifacially shaped tool fragment (3 cm long), 1 bimarginally retouched tool, 1 chert projectile point fragment
	>4			1		
Siltstone	1–2		1			
	2–4	1	1			
	>4				2	
Rhyolite/Limestone	1–2		1			
	2–4	6	4			1 unifacially shaped tool (8-cm long), 1 utilized flake (20 x 12 cm)
	>4	3	11	1	5	
Sandstone	1–2					
	2–4	1				
	>4					
Glass	1–2					
	2–4					1 glass bifacially shaped tool, projectile point fragment
	>4					
Quartzite	1–2		1			
	2–4					
	>4					
TOTAL	**51**	**12**	**21**	**3**	**9**	**6**

throughout the American Southwest. The distal half of the point has broken off, possibly the result of an impact fracture, and shows minimal postbreakage reworking along this fracture surface. The point has deep, relatively wide corner notches similar to points identified as Cienega or San Pedro types (Sayles and Antevs 1941; Huckell 1988; Mabry 1998) and is similar to "Border Star Type V" points, also attributed to the Late Archaic (Seaman *et al.* 1988:322). The extant portions of the lateral blade margins show mild concavity. Points consistent with San Pedro have also been identified in the Tularosa Basin (Carmichael 1986; Seaman *et al.* 1988). These Cienega and San Pedro types are distinguished from one another primarily on the basis of notch morphology (depth, shape, and openness), with San Pedro notches being wider and more open than those on Cienega points. The LA 128709 point has notches of intermediate openness, placing them potentially into either type designation. In southern Arizona, date ranges for these point types overlap, with San Pedro beginning earlier than Cienega, but persisting into the Cienega phase. Mabry *et al.* (1997) place the San Pedro phase at 1200–800 B.C., with the Cienega phase spanning the 800 B.C.–A.D. 150 range. Points recovered from the Wood Canyon (LA 99631) and Forest Home (LA 78089) sites in the Big Burro Mountains of southwest New Mexico show strong morphological consistency with these types as well and provide tentative evidence for Cienega-type points dating slightly later than San Pedro points in southwest New Mexico as well (Van Hoose 2000).

Ground stones include two complete sandstone manos, two granite metate fragments, one limestone metate fragment marginally retouched on an edge, and three indeterminate ground stone fragments. One granite metate fragment was located in the northwestern portion of the site near the edge of Feature 5. One complete sandstone mano was located in disturbed terrain near Feature 4, and

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other ground stone pieces were located in the far northeastern portion of the site. The limestone marginally retouched metate fragment measured 20 cm in length x 12 cm in width and was utilized along the long axis.

Scattered, thermally altered materials are present throughout the site extent and include more than 833 pieces of fire-cracked limestone, granite, basalt, and sandstone. Only a minimal amount (less than 23 percent) of these scattered pieces of thermally altered materials are recorded within artifact concentrations. These scattered materials are not associated with an identifiable or articulated hearth feature and indicate that additional hearth type features were present or may still be present below the present surface.

Historic Artifacts

Historic artifacts include late historic glass, metal, ceramic, and building artifact fragments. The late historic glass includes bottles and mason jars. Metal artifacts include hole-in-top cans, lard cans, potted meat cans, sanitary cans, tobacco tins, bottle tops, wire and cut nails, a faucet, galvanized metal fragments, metal buckets, five 5-gallon lids, a cocoa lid, oil cans, and a spray paint can. Ceramic artifacts mainly are refined whitewares with some porcelain, earthen wares, and a spout from a crockery pitcher. Some of the refined whiteware include embossed blue laurel leaf designs and green petal design elements off plate and saucer fragments. Building fragments include cement and some plaster fragments. Table 18.23 includes rough counts of historic cultural materials documented within the general scatter.

One historic artifact was recovered and returned to the laboratory for analysis. It is a condiment bottle, and was collected from the site surface (Table 18.24). This clear bottle was embossed with “E.R. Durkee & Co. New York.” The base was embossed “Bottle Patented April 17, 1877.” This particular bottle and its contents were manufactured between 1914 and 1935. The former contents of the bottle are unknown.

Interpretation

The results of the testing investigations suggest that the occupational history of this site was considerably more complex than originally documented during survey recordation. In addition to the historic scatter recorded during survey, an extensive Archaic to Formative residential component is also present. Given the presence of the prehistoric component along the eastern alluvial fans of the Jarillas, large portions of the site may have been buried by alluvial deposition. Intact hearth features were observed as deep as 40 cm bgs in arroyo cuts, within the northeastern portion of the site.

Features relating to historic Orogrande include a cement foundation and privy in the west-central portion of the site and two wells, one in the western and the other in the southwestern portion of the site. Of particular interest is Feature 5, an area of pushed dirt that may have buried an industrial feature complex visible in a 1941 aerial photograph of Orogrande (see Chapter 32, Figure 32.21). With the exception of Feature 3, which may be related, most of this area is located to the north of the impact area. The pervasiveness of historic trash and dumps throughout the site area attest to a residential occupation. With the exception of the features previously mentioned and some mortar and cement fragments, building materials are notably absent. The site surface was closely examined for evidence of tent bases, but the alluvial and colluvial depositional characteristics could have obliterated such subtle features.

Evaluation and Recommendation

LA 128709 contains evidence of intense occupation during the prehistoric and historic intervals. The northern portion of the site contains evidence of a large prehistoric camp and lithic procurement site. El Paso Brownware ceramics betray a Formative-period component, with the Late Archaic occupation represented by a corner notched projectile point. A bifacially shaped tool fragment of glass could indicate an additional pro-

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Table 18.23 Historic Artifacts Documented in the Field at LA 128709

Type	Complete	Fragment	Total	Comments
Glass				
Bottle				
Colorless/clear		18	18	Base with "I" in center and 4 base with "D1 56-52," base with "m Mil"
Sun-altered amber		44	44	1 base fragment with "–ernheimer Full Quart refilling of this bottle is prohibited"
Aqua		77	77	1 base with C, 1 base with SD oil
Green		7	7	
Sun-altered purple		133	133	1 base with Duraglass (7 are bottle necks)
Other		2	2	1 Nehi grape bottle glass fragment, 1 insulator glass fragment with "Peticoat Co. 1893"
Jar		1	1	Mason jar
Milk glass		10	10	
Metal				
Can				
Unknown		7	7	
Hole-in-top	56		56	
Sanitary	60	3	63	
Tobacco	26		26	
Key strip	12		12	
Other	28	3	31	25 lard cans, 1 cocoa lid, 1 spray paint can, 2 oil can, 1 gallon lid, 1 5-gallon lid
Nails				
Wire		3	3	
Cut	31		31	
Bottle Caps	8		8	
Other Metal	2	3	5	Pipe fitting, faucet, galvanized metal, railroad spike, embossed door handle
Ceramics				
Porcelain		2	2	
Refined Whiteware		88	88	Some with green petal design
Earthenware		1	1	
Crock/Jug		1	1	Spout fragment
Plumbing		71	71	
Other				Plaster fragments
Building Material (brick, concrete, shingle, wood)	1	16	17	Door frame, cement base, 4 barrel straps

Table 18.24 Attributes from Complete Condiment Bottle Collected from LA 128709

Surface (FS 4)	Complete glass condiment bottle, clear	10.3 cm (length) x 4.3 cm (base diameter)	Automatic machine manufactured; continuous thread closure	Side panel embossed with "E.R. Durkee & Co. New York"; base embossed with "Bottle Patented April 17, 1877"	1914–1935 (Hanson 1971)

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tohistoric component, although this artifact is more likely of more recent historic origin. Many intact, prehistoric roasting pits and hearths in this portion of the site have the potential to produce dateable samples in conjunction with pollen, flotation, and artifact assemblage information. Additional features are likely present, preserved beneath alluvial deposits that cover the site. This site is considered important because of site chronology data potential and information relevant to subsistence and settlement patterns in this area of the Jarilla Mountains.

A large industrial complex, now mostly buried, was identified as Feature 5 in the present study. The complex is visible in an historic 1941 aerial photograph, included in this document as Figure 32.21. Feature 3 may be related to Feature 5. With the exception of one large cement foundation, one privy, and two possible wells, other historic features were mainly historic trash dumps or scatters. All but one of the features, a cement curb (Feature 41), fall to the north or west of projected impact areas.

Portions of LA 128709 extend into the proposed project limits. The resource is likely to yield important information; therefore, LA 128709 is eligible for inclusion to the National Register of Historic Places on the basis of criteria A and D (36 CFR § 60.4). The proposed construction, however, will avoid any features or other portions of the site with significant data potential, and these areas will be preserved in place. Input and coordination with consulting parties, Indian tribes, and the public has found that the undertaking will not alter the characteristics of the historic property that qualify it for inclusion in or eligibility for the National Register of Historic Places, and no further work is warranted within the impact area at the site. Should any future construction activities that fall under appropriate regulations be scheduled for portions of the site beyond the US 54 impact area, a testing program and, if necessary, a data recovery plan should be implemented.

LA 128710

LA 128710 is an historic trash scatter with several discrete dumps and a single prehistoric isolate. The site is on the eastern alluvial fans of the Jarilla Mountains in the south-central Tularosa Valley, at the northern end of Orogrande, New Mexico. LA 128710 is located entirely west of US 54. The historic component is related to adjacent sites LA 115258 and LA 128709 to the north. The site's terrain slopes slightly from the west-northwest to the east-southeast, with grades ranging from one to two degrees. The site lies on an extremely gravelly alluvial slope. Surface soils are very gravelly sand loam to loam. The flora on the site consists of creosote, mesquite, dropseed grass, prickly pear, and various weeds. The site covers roughly 7,852 m^2, extending 121 m north-south x 142 m east-west (Figure 18.6). The site may extend further south onto private property, but this area was not investigated.

Michalik (2000) first recorded the site as an historic trash scatter covering roughly 7,200 m^2 (60 m north-south x 120 m east-west). The initial recording identified four main trash concentrations, although most of the items were identified in two main clusters. The historic assemblage contained bottle glass, metal, and ceramics. Bottle glass fragments included amethyst, aqua, brown, and clear. Metal items included approximately 100 hole-in-top cans, solder dot cans, lard pails, and pre-1948 tobacco tins. Several household ceramics also were recorded. The artifact assemblage suggests an occupation between 1880 and 1920. The site's remains date from the heyday of mining activities in the area, and the site lies immediately south of, and adjacent to, LA 115258, which is a segment of the spur rail line that connected the Jarilla mines to Orogrande.

Testing Methodology

A permanent, aluminum-capped datum was established, and the site was mapped with a total station instrument. Features and artifacts also

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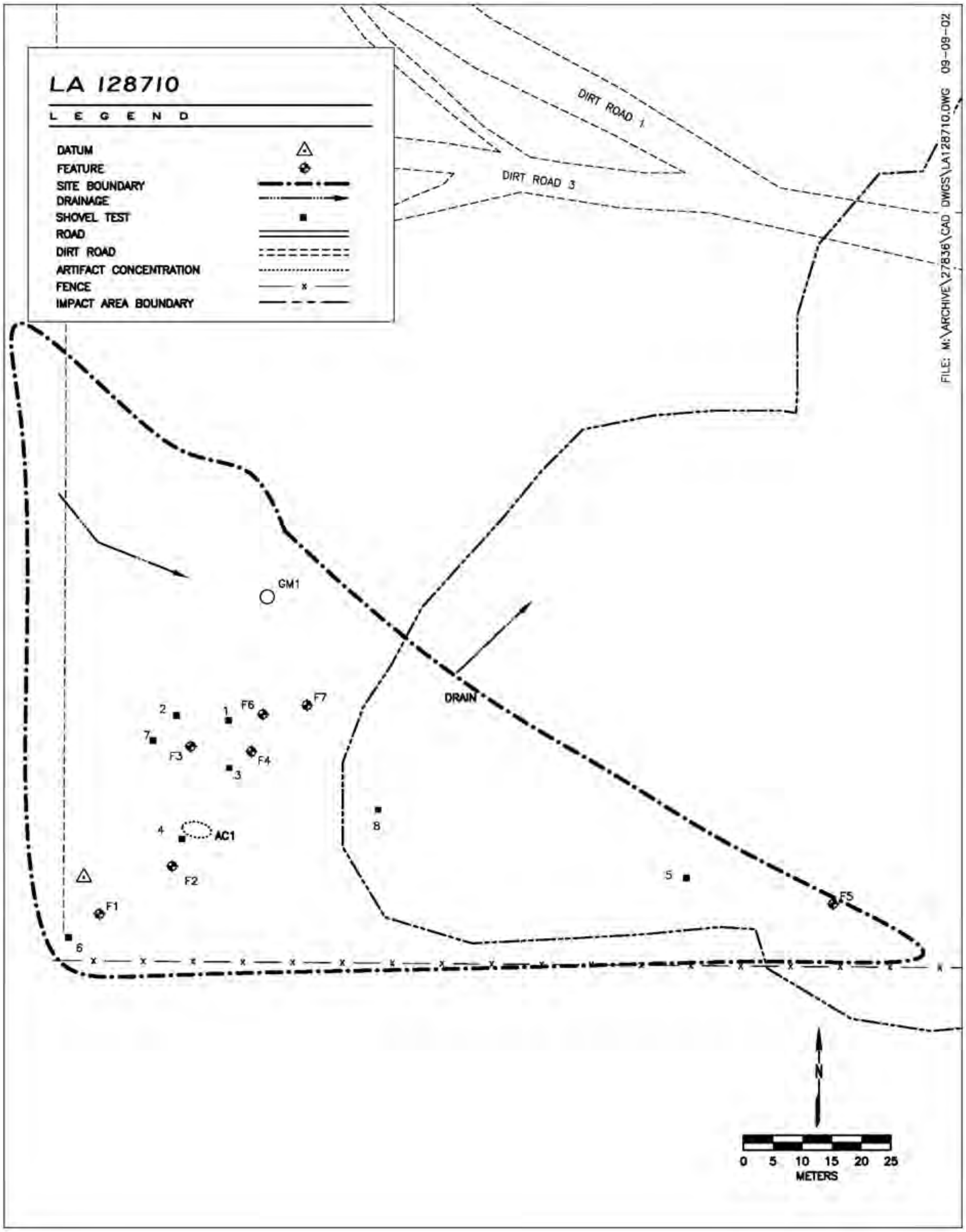

Figure 18.6 Site map of LA 128710, showing shovel tests, features, and artifact concentration.

were plotted on an orthoquad aerial photograph of the site area. Features were trowel tested to identify depth and content and eight shovel tests, each measuring 50 x 50 m, were excavated on this site. Seven of these were placed near feature areas and the one artifact concentration (ST 1–4 and 6–8). The remaining test (ST 5) was placed in the portion of the site to be impacted by the construction project. STs 2 and 7 were excavated adjacent to Feature 3, ST 4 next to Feature 2, ST 6 near Feature 1, ST 3 near Feature 4, and ST 1 near Feature 7. ST 8 was excavated within an area containing a few pieces of historic glass and cans in the central to west-central portion of the site.

Testing Results

Surface reconnaissance and site mapping during the present project documented a moderate-density, albeit extensive, scatter of historic artifacts and features. The boundaries of this site expanded as a result. Seven historic trash dump features were identified (Table 18.25). Trowel testing indicated that most of these were surficial; some materials were observed in the subsurface, although none exceeded 10 cm bgs.

Also documented on the surface of the site was a single gravel mound containing more than 50 large cobbles and measuring 2 x 1.5 m. This mound is a single dump of cobbles, possibly deposited by a pick-up truck.

Only one artifact concentration was identified on the site, consisting of five purple bottle sherds (including lip fragments), five aqua bottle glass sherds, and two sanitary cans. Cultural remains here were all restricted to the surface.

Eight shovel tests exposed a total of 2.0 m^2 (Table 18.26). Subsurface archaeological remains were present in five of the shovel tests (STs 3–7) and included wire fragments, refined whiteware, and bottle glass. The majority of these materials were

Table 18.25 Features on LA 128710

Feat. No.	Location	Type	N/S (m)	E/W (m)	Depth (cm)	Cultural Materials
1	Southwest	Historic trash dump	1	1	10	Coal, barbed wire, potted meat tin, 2 55-gallon metal strips, 4 purple bottle glass fragments, and 1 refined whiteware ceramic
2	Southwest	Historic trash dump	4	4	10	1 historic green and brownware, 5 refined whiteware ceramics, 1 porcelain insulator, bottle glass (20+ aqua, 10+ purple), 1 metal hoop, 1 lard bucket, 1 tobacco tin, 1 metal fragment with bolt brace, and 10+ wire nails
3	Southwest	Historic trash dump	4	5	10	Bottle glass fragments (30+ purple [includes 2 bases], 10+ aqua glass, 5 amber), 3 hole-in-top cans, and 1 lard bucket
4	Southwest	Historic coal dump	2	3	10	Coal dump with some can fragments and 1 purple glass fragment
5	Southeastern end of site	Historic trash dump	5	5	10	1 galvanized jug, 1 hole-in-top can, and 1 purple glass fragment; level terrain within creosote area—possible old road bed
6	Southwest	Historic trash dump	5	7	Surface	bottle glass fragments (16 purple [1 neck], 5 green base), and 1 tobacco tin
7	Southwest	Historic trash dump	6	6	>10	Bottle glass fragments (10+ purple—1 base reads “MCNTEL,” 10 green—1 reads “USA / ..DON, E..”), 4 plate glass fragments, 25 hole-in-top cans, 2 lard cans, 3 sanitary cans, 2 potted meat, 2 refined white-ware ceramics, and 1 orange pot fragment

Table 18.26 Shovel Test Results on LA 128710

Test No.	Location	Depth (m)	Stratum 1	Cultural Evidence 1	Stratum 2	Cultural Evidence 2	Stratum 3	Cultural Evidence 3	Stratum 4	Cultural Evidence 4
1	Southwest	0.4	Historic, eolian, sandy loam (7.5YR6/6) with moderate to high gravels on the surface, depth surface to 0.04 m	None	Semi-compacted, sandy loam (7.5YR5/6) with moderate gravels, Organ III horizon, depth 0.04–0.20 m	None	Semi-compacted, sandy loam (7.5YR5/6) with high gravels, Organ II horizon, depth 0.20–0.40 m	None		
2	Southwest	0.5	Historic, eolian, sandy loam (7.5YR6/6) with few gravels, depth surface to 0.04 m	None	Semi-compacted, sandy loam (7.5YR5/6) with few gravels, Organ III horizon, depth 0.04–0.30 m	None	Semi-compacted, sandy loam (7.5YR5/6) with high density of gravels, depth 0.30–0.50 m	None		
3	Southwest	0.4	Historic, eolian, sandy loam (7.5YR5/6) with moderate surface gravels, depth surface to 0.08 m	3 ironstone plate or soup bowl sherds; coal present but not collected	Sandy loam (7.5YR5/3), A horizon, Organ III horizon, depth 0.08–0.12 m	None	Semi-compacted, sandy loam (7.5YR5/6) with moderate gravels, depth 0.12–0.28 m	None	Compact, sandy loam (7.5YR5/6) with 60% gravels, Organ II? horizon, depth 0.28–0.40 m	None
4	Southwest	0.4	Historic, eolian, sandy loam (7.5YR5/6) with few gravels, depth surface to 0.08	1 amber bottle glass fragment collected, charcoal present but not collected	Semi-compacted, alluvial sandy loam (7.5YR5/6) with few gravels, depth 0.08–0.35 m	1 wire nail, 1 metal eyelet collected	Semi-compacted, sandy loam (7.5YR5/6) with high gravels, Organ II horizon, depth 0.35–0.40 m	Some charcoal		

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Table 18.26 Shovel Test Results on LA 128710 (continued)

Test No.	Location	Depth (m)	Stratum 1	Cultural Evidence 1	Stratum 2	Cultural Evidence 2	Stratum 3	Cultural Evidence 3	Stratum 4	Cultural Evidence 4
5	Southeast edge of site	0.6	Unconsolidated, historic sandy loam (7.5YR5/6) with high gravels, depth surface to 0.20 m	1 fragment of wire and some charcoal (not collected)	Semi-compacted, historic sandy loam (7.5YR6/6) with gravels, depth 0.20–0.28 m	None	Semi-compacted, alluvial sandy loam (7.5YR5/6) with 5% gravels, Organ III horizon, depth 0.28–0.45 m	None	Compacted, silty loam (7.5YR5/6) with 60% gravels, Organ II?, depth 0.45–0.60 m	None
6	Southwest	0.2	Historic, eolian, sandy loam (7.5YR6/6) with moderate gravels, depth surface to 0.05 m	6 windowpane fragments collected	Very compacted loam (7.5YR5/6) with moderate gravels, Organ III horizon, depth 0.05–0.20 m	None				
7	Southwest	0.3	Historic, eolian, sandy loam (7.5YR6/6) with surface gravels, depth surface to 0.05 m	5 bottle glass and 1 refined whiteware ceramic collected	Semi-compacted, sandy loam (7.5YR5/6) with moderate gravels, Organ III horizon, depth 0.05–0.20 m	None	Semi-compacted, sandy loam (7.5YR5/6) with high gravels, depth 0.20–0.30 m	None		
8	Southwest	0.5	Eolian deposition (7.5YR6/6) with moderate surface gravels, depth surface to 0.02 m	None	Semi-compacted, eolian, sandy loam, humus (7.5YR5/3), A Horizon, depth 0.02–0.05 m	None	Semi-compacted, sandy loam (7.5YR5/6) with few gravels, depth 0.05–0.15 m	None	Semi-compacted, sandy loam (7.5YR5/6) with moderate to high gravels, depth 0.15–0.50 m	None

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recovered within the upper 5–10 cm, with the exception of ST 4 where a nail and a metal eyelet were recovered between 10–20 cm bgs.

Geomorphology and Stratigraphy

LA 128710 is located at the base of an alluvial fan that drains the Jarilla Mountains. This position has made it subject to the collection of alluvial sands, although eolian reworking probably occurred between alluvial events. In addition, recent eolian activity has resulted in the development of mesquite coppice dunes that are generally less than 1 m in height. Due to the position of this area immediately at the base of the hillslope, deposition has predominated in this area, although some alluvial erosion has occurred along roadways and small rills incised into the hillside. Archaeological visibility is highest in the interdunal areas where the historic sands are relatively thin.

The surficial deposit at the site (Unit 1) consists of a thin (0–10-cm thick) veneer of slightly gravelly historic sands in interdunal areas that thickens to approximately 50 cm in some coppice dunes. These sediments are generally strong brown to reddish yellow (7.5YR5/6–6/6, d) and have a sandy loam texture. In general, the Unit 1 sediments are coarsely laminated and gravels comprise approximately 20 percent of these sediments. This surficial unit is historic in origin and probably dates to within the last 100 years. For this reason its archaeological potential is limited to historic materials.

In STs 3 and 8, Unit 1 is underlain by an approximately 10-cm thick remnant of a soil Ab horizon (Unit 2). It is composed of a brown (7.5YR5/3, d) sandy loam. Elsewhere, the A horizon was absent or, at best, a very weak, thin (less than 4-cm thick), incipient A horizon developed on the underlying Bk horizon. The humate-enriched appearance of Unit 2 makes it quite apparent when compared to the surrounding sediments. The sediments comprising the Ab horizon appear to be a mixture of alluvial slope wash and eolian deposition. Alluvial deposition resulted in the presence of sparsely distributed pebbles throughout this unit and all other deposits lower in the profile. These pebbles often are calcareous in nature but should not be confused with carbonates resulting from pedogenesis. Instead, they are the result of alluviation that has scoured calcareous sources farther upslope. Though the majority of the sediments in this locale are alluvial, eolian reworking probably occurred between periods of alluvial deposition. Based on its stratigraphic position and association with the underlying Bw horizon (see Unit 3 below), this unit correlates with the Organ III sediments (100–1,100 B.P.) described by Monger (1993) or the Q3 sediments (100–7,300 B.P.) described by Blair *et al.* (1990). The Ab horizon is important because it indicates a stable surface that supported vegetation and may have been favorable for prehistoric inhabitants.

Underlying the Ab horizon in STs 3 and 8 and below the historic sands elsewhere is a 10–18-cm-thick unit of strong brown (7.5YR5/6, d), slightly gravelly, sandy loam (Unit 3). This unit lacks stratification or strong pedogenic accumulations, but the high chroma of these sediments suggests that they have been subject to minor pedogenic alteration. For this reason, Unit 3 is considered a cambic Bw horizon. In the region, a Bw horizon is typically associated with the Organ III (100–1,100 B.P.) eolian sediments described by Monger (1993). Thus, Unit 3 is tentatively correlated with Organ III sediments, but dateable materials would be needed to confirm this correlation. The occurrence of the Bw horizon (Unit 3) immediately below the historic sands (Unit 1) over most of the site indicates an erosional event prior to historic deposition.

Underlying the Bw horizon (Unit 3) over most of the site is a slightly calcareous gravel deposit that is considered a weak Bk horizon (Unit 4). Though gravel clasts have their own unique colors, the sandy loam matrix that surrounds the gravel is strong brown (7.5YR5/6, d). In all, gravel-sized clasts comprise approximately 60 percent of this unit. The pedogenic carbonate accumulations in this unit are equivalent to weak Stage I develop-

ment (after Gile *et al.* 1966). Within the region, weak Stage I carbonates typically are considered to be representative of the Late Holocene. In Monger's (1993) chronology this results in correlation to the Organ II unit (1,100–2,100 B.P.), and in the chronology of Blair *et al.* (1990) this horizon is considered to be part of unit Q3 (100–7,000 B.P.). No cultural materials were observed in association with this unit during the present study, but it is possible that intrusive features could be excavated into the unit. The gravel-rich nature of the sediments, however, may have inhibited cultural intrusion. Due to the difficulty of excavation, this deposit served as the basal unit for hand excavations.

Material Culture

Artifacts at LA 128710 are all late historic with the exception of a single, marginally retouched limestone tool. This lithic tool measured 12 x 8 x 5 cm in size and is a fragment of a metate. The piece was recorded along the southwestern edge of the site.

The late historic cultural materials included glass, metal, and ceramics. Glass fragments consist mostly of bottle glass, although some windowpane glass was present. Metal artifacts included hole-in-top cans, solder dot cans, lard cans, tobacco tins, potted meat cans, sanitary cans, wire fragments, nails, and numerous can lids. Other metal artifacts included a rectangular 5-gallon can, one KC 10 oz, "10 cents Absolute Pure" baking powder lid, two unknown lids, one metal coil spring, one galvanized metal bucket, and one historic metal cooking tray (18 x 14 x 2 in). Ceramic artifacts were mostly refined whitewares with some orange potting plant ceramics. A single red brick was the only piece of building material documented at the site. Table 18.27 lists a rough count of historic cultural materials, though it does not count materials within identified features or shovel tests (see Table 18.25).

No historic artifacts were recovered from the surface at LA 128710, but seven artifacts were recovered from three shovel tests at this site (Table 18.28). One ironstone plate or soup bowl fragment was recovered in ST 3. All three of these fragments were mended and revealed a raised, molded pattern on a scalloped rim. Other artifacts include one amber glass bottle fragment that probably contained beer, one wire nail, and six aqua glass fragments that are most likely window glass. None of these artifacts are indicative of a particular time period, but are contemporaneous with the town of Orogrande at its heyday in the early twentieth century.

Interpretation

The results of the testing revealed an extensive, late historic trash scatter with a few dumps located immediately south of, and perhaps associated with, the railroad spur that hauled ore from the mines located west of historic Orogrande. These trash scatters are largely surficial, and intact cultural features below the surface were not documented and are unlikely to be present on the site. The site surface was carefully scrutinized for traces of tent bases or any other evidence of ephemeral structures, but none were noted. The presence of historic dumps, however, implies some sort of residential occupation. Orogrande was known to be densely occupied at its zenith. The cultural materials are consistent with an occupation in the early years of the 1900s when historic Orogrande was a bustling center of mining activities (see Chapter 32). The historic dumps and concentrations are all likely associated with the mining activities in the area and the nearby associated road that runs parallel with the railroad spur, which connected the mines in the Jarilla Mountains with the town of Orogrande.

Evaluation and Recommendation

LA 128710 is a large historic trash scatter with a few identifiable trash dumps. The presence of purple-colored glass, an aqua blue insulator, hole-in-top cans, and other miscellaneous cultural materials such as ceramics and various metal fragments indicates an occupation in the early twenti-

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Table 18.27 Historic Artifacts on LA 128710, Outside of Features and Shovel Tests

Type	Complete	Fragment	Total	Comments
Glass				
Bottle				
Sun-altered amber		27	27	1 base fragment that is very thick
Aqua		9	9	1 base with "C Co. 2"
Sun-altered purple		26	26	1 base with 40, 1 stopper top
Other glass		1	1	1 Aqua colored insulator—"Petticoat No. 1893" in two fragments
Metal				
Hole-in-top	48		48	
Sanitary	11	2	13	
Tobacco	2		2	
Key strip	4		4	1 Spam, 1 sardine
Other	20	2	22	15 lard cans, 2 lard pail fragments, 1 rectangular 5-gallon can, 1 KC 10 oz, 10 cents Absolute Pure Baking Powder lid, 1 Cottolene Contains No Fat lid fragment, 2 unknown lids, 1 metal coil spring, 1 galvanized metal bucket, 1 historic metal cooking tray (18 x 14 x 2 in)
Bottle Caps	1		1	
Other Metal	1	1	2	1 stovepipe section, 1 very large can 30 in x 15 in with 10 in diameter opening
Ceramics				
Porcelain				
Refined Whiteware		3	3	Red flower with green petal design
Building Material (brick, concrete, shingle, wood)	1		1	1 red brick

Table 18.28 Historic Artifacts Recovered from Shovel Tests at LA 128710

Provenience	Artifact	Comments
ST 3, 0–10 cm (FS 1)	Ironstone plate or soup bowl fragment (in 3 pieces)	Raised, molded pattern on scalloped rim
ST 4, 0–10 cm (FS 2)	Glass bottle fragment, amber	
ST 4, 10–20 cm (FS 3)	Wire nail	4.2 cm long, with copper/brass rivet
ST 6, 0–5 cm (FS 4)	6 light aqua, flat glass fragments (cf. window glass)	3-mm thick; slight patina

eth century, when Orogrande was a center of mining activity. The resource has been recorded and is not likely to yield information beyond what already has been documented. LA 128710 is not eligible for inclusion in the National Register of Historic Places. No additional investigations are warranted.

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Chapter 19

Tested Historic Sites South of Orogrande

Timothy B. Graves, John C. Acklen, Gwyneth Duncan, and Jim A. Railey

Three sites tested south of Orogrande (LA 110358, LA 115261, and LA 115264) date from the Historic period. Testing phase data includes site type, cultural affiliation, site size, and the numbers and kinds of features, both within and outside of the right-of-way. Most of the information in this chapter appeared previously in Acklen *et al.* (1999). Eligibility recommendations were presented in that report, and agency archaeologists (BLM and Fort Bliss) and the New Mexico Historic Preservation Division completed review and consultation prior to the data recovery phase. Artifact analyses were carried out as part of the present project, however, and the information generated from these analyses is presented here for the first time. As a result, some of the artifacts information presented may differ slightly from the original testing report.

LA 110358

The site is an early modern camp with a single thermal feature and a few scattered modern and late historic cultural materials (Figure 19.1). The site is contained completely within the highway right-of-way on the western side of US 54, on lands administered by the BLM. Situated on the desert floor near the southern end of the Tularosa Valley, the site lies on nearly level terrain. The site surface features 1–2-m high, mesquite-stabilized coppice dunes with broad, uneven interdunal surfaces. This early modern camp and late historic scatter extend over a 32 m north-south x 34 m east-west area.

First recorded by Wiseman (1995), the site was subsequently documented by Marshall and Marshall (1998) and Michalik (2000:37) as part of their surveys for the US 54 project. Michalik described the site as a historic trash scatter and a hearth. The hearth was described as a burnt caliche scatter and an associated stain, with an estimated depth of 25 cm. The investigators estimated the site dates from the early twentieth century.

Testing Methodology and Results

A permanent datum was first established on the site, and the site surface was thoroughly inspected for archaeological remains. Feature 1 was relocated, and the limits of a relatively dense concentration of surface artifacts were documented and defined the site boundaries. Artifacts and features were visible only on the interdune surfaces. An additional feature was also discovered and recorded. Features and artifacts were mapped in using a total station instrument. Extending beyond the site boundary, along the near edge of old US 54, was a scatter of cans and other debris. These materials were mapped in as well.

Five shovel tests and five auger tests were excavated during site testing, all within the site boundaries. The results of the shovel tests are presented below in Table 19.1.

Two features were identified during testing. The previously recorded Feature 1 consists of approximately 230+ cobble-size pieces of burned caliche scattered over a 3-m-diameter area, although most of this debris (approximately 200 pieces) is tightly concentrated within a 2-m area. The feature contained two triangular punch beer cans, two evaporated milk cans, and a body sherd of an historic Mexican polychrome ceramic vessel. All of the other Mexican polychrome ceramics are with-

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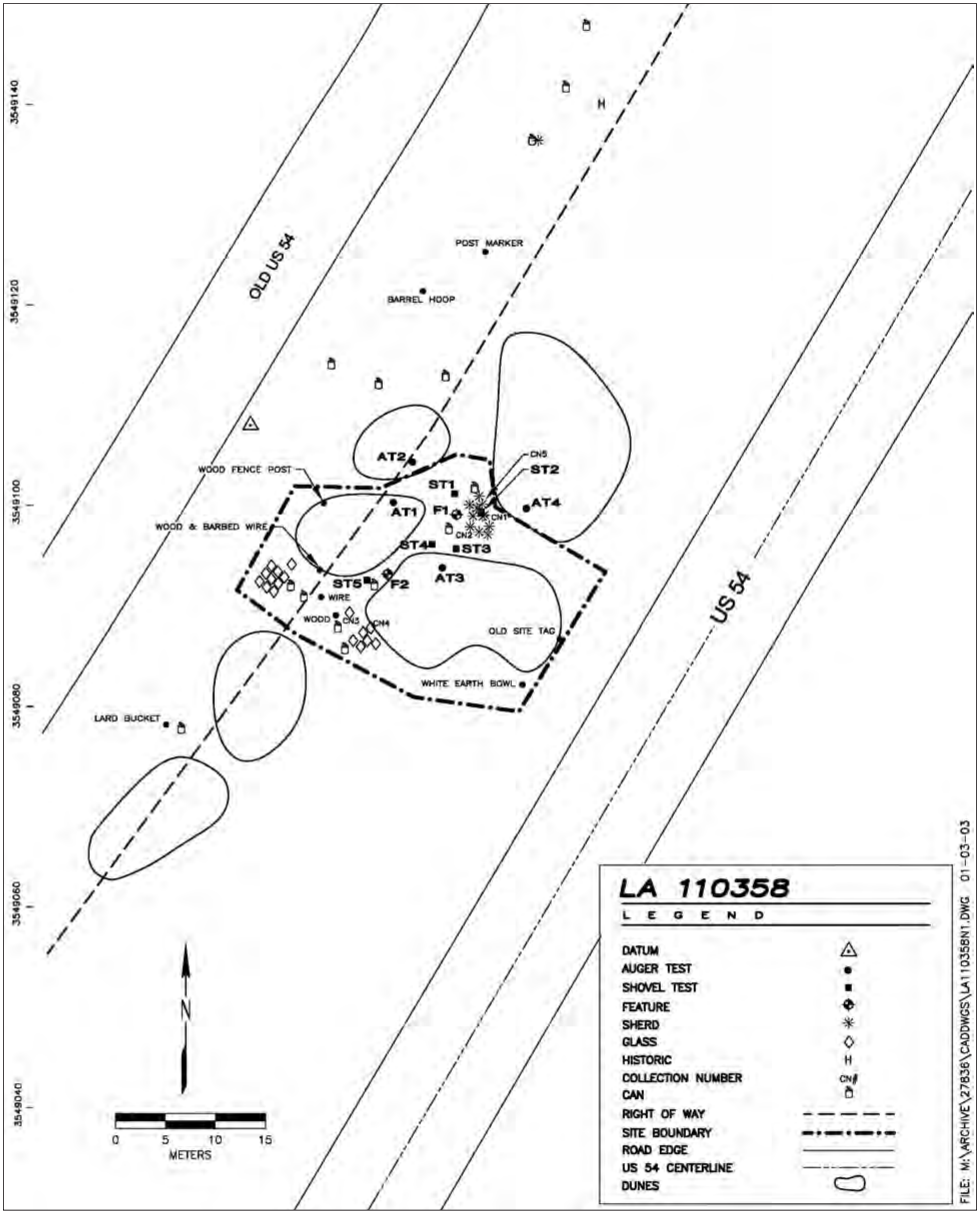

Figure 19.1 **Site map of LA 110358, showing shovel and auger tests, collected artifacts, and features.**

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Table 19.1 Shovel and Auger Test Results for LA 110358

Shovel Test	Location	Depth	Soil	Munsell Soil Color	Cultural Materials
1	North of Feature 1	40 cm	Strong brown, sand/sandy loam, with moderate caliche nodules at 0.35 m bgs	7.5YR5/6	1 triangular punch can, flecks of coal, 0–1 cm
2	Northeast of Feature 1	40 cm	Strong brown, sand/sandy loam, with moderate caliche nodules at 0.35 m bgs	7.5YR5/6	Flecks of coal in upper 0.1 m
3	South of Feature 1	27 cm	Light brown, sand/sandy loam contacting caliche at 0.27 m bgs	7.5YR6/4	None
4	Southeast of Feature 1	30 cm	Light brown to strong brown, sand/sandy loam contacting caliche dominated level at 0.3 m bgs	7.5YR6/4	Coors triangular punch can and sheet metal fragments 0–0.1 m
5	South of Feature 2	27 cm	Strong brown to light brown, sand/sandy loam to caliche at 0.27 m bgs	7.5YR5/4 over 7.5YR6/4	Coal fragments 0–1 cm
Auger Test No.					
1	West of Feature 1	70 cm	Strong brown, sand/sandy loam contacting caliche at 0.5 m bgs	7.5YR5/6	None
2	South of Feature 1	52 cm	Strong brown, sand/sandy loam contacting moderate caliche at 0.24 m and solid caliche at 0.52 m bgs	7.5YR5/6	None
3	Southeast of Feature 1	80 cm	Strong brown, sand/sandy loam contacting moderate caliche at 0.50 and solid caliche at 0.8 m bgs	7.5YR5/6	None
4	Northeast of Feature 1	57 cm	Strong brown, sand/sandy loam contacting solid caliche at 0.57 m bgs	7.5YR5/6	None

in a 5-m-diameter area of the feature and are most likely associated with it.

Feature 2 was identified 10 m south-southwest of Feature 1. It is made up of a concentration of 100+ pebble-sized pieces of coal, and measures 2 m east-west x 1 m north-south.

The shovel and auger tests revealed a lack of subsurface cultural materials. Some 1950s trash is present within the upper 0.1 m of fill on the site, although this is within a cap layer of displaced sand.

Stratigraphy and Geomorphology

Surface examinations of site geomorphology and shovel tests on this site suggest that this area has a low to moderate potential to yield buried cultural materials. The mesquite coppice dunes are composed almost entirely of laminated historic sands. Interdunal areas tend to have a thin blanket of historic sands overlying a slightly more compact loamy sand unit. No pedogenic carbonate filaments were noted in this more compact unit, which suggests that it may correlate to the Organ III eolian unit (100–1,100 B.P.) described by Monger (1993). The historic cans, burnt caliche, and ceramics rest on the upper contact of this unit. It is likely that the Organ III sediments were partially eroded since no soil A horizon was observed in this paleosol. This may have resulted in the concentration of multiple cultural components on the surface of the Organ III sediments. It also is possible that the erosion occurred prior to the deposition of the cultural component. In that case, all of the occupations occurred on the same surface. Either case is possible, resulting in multiple components expressed on the modern

ground surface. Shovel tests indicate that the Middle Pleistocene La Mesa calcrete is typically encountered at a depth of approximately 30–50 cm bgs.

Archival Research

Archival research could not locate information relevant to the occupation at LA 110358. This site is on BLM land in the southern half of Township 26 South, Range 6 East, Section 1. Archival research indicated that, by 1916, Section 1 was divided into northern and southern halves, the southern half of which was never patented. The northern half was privately owned, but the southern half was in federal hands until March 29, 1917, when it was conveyed to the State of New Mexico by the federal government. On December 5, 1957, the state reconveyed the land to the federal government (Quit Claim Deed No. 2510, State Lands Office, Santa Fe) after which the portion including the site came under the jurisdiction of the BLM.

The Santa Fe Pacific Railroad obtained rights-of-way across the section on June 20, 1921. The land on which LA 110358 is situated was leased for grazing in 1918, by the State of New Mexico, to C.V. Nafe in El Paso, Texas, and John B. Pittman and Ranch Realty Company, both of St. Louis, Missouri. This lease was for 160 acres in Section 1, and the Ranch Realty Company continued to lease this tract until 1945 (transfer tract sheet, State Lands Office, Santa Fe).

C.V. Nafe was a land speculator in the southern Tularosa Basin (Faunce 1997), and he operated in the area from 1918–1927. He owned several hundred parcels of land that included not only stock tanks, but also a mine and an oil well. John Pittman was a major land speculator from 1919–1929 and purchased several parcels of land around Newman, New Mexico, in 1920. Pittman sold all his holdings, which included a large portion of what is now Fort Bliss, to the Ranch Realty Company. Faunce (1997:100) states that the Ranch Realty Company was a local real estate development company, but a transfer tract sheet at the State Lands Office lists St. Louis, Missouri, as the address for both Pittman and Ranch Realty. Faunce (1997:100) goes on to say that these developers and speculators never developed the property they purchased and likely never visited the majority of their holdings.

Material Culture

Six historic artifacts were recovered from the surface, and seven artifacts were recovered from shovel tests at LA 110358 (Table 19.2). Only surface artifacts could be dated based on manufacturing technique or maker's marks. The aqua bottle fragment is the earliest datable artifact with an embossed base indicating a manufacturing date between 1886 and 1928. The aqua bottle base has a large "L2" in the center with labeling along the base edges that reads "A.B.C.M. Co." Fragments of the bottle and the insulator glass were scattered over the southern portion of the site, along with triangular punch cans. These materials are not associated with the modern thermal feature (Feature 1). The late historic cultural materials are probably all associated with the old US 54 roadbed that borders the southern portion of this site. In addition to the above-mentioned materials, approximately six pieces of milled wood and more than 20 triangular punch cans are present in the southern portion of the site. Additional items collected from subsurface contexts consist primarily of coal fragments.

Interpretation

Although the aqua glass bottle base indicates discard activity at this site possibly dating as early as the late-nineteenth century, the majority of the remains appear to date well into the twentieth century. This site was likely the location of a roadside party held around a campfire in the 1950s.

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Table 19.2 Artifacts Collected from LA 110358

Provenience	Artifact(s)	Attributes	Comments	Date
Surface (FS 1)	Mexican Polychrome Ceramic rim in 4 fragments	Coarse earthenware, lead glazed; wheel thrown	Mexican import	
Surface (FS 2)	Metal can	Sanitary can, overlap side seam	Church key opened	1900+
Surface (FS 3)	Glass bottle base, light aqua	Base embossed with "A.B.G.M. CO. L2"	Adolphus Busch Glass Manufacturer	1886–1928
Surface (FS 4)	Glass bottle fragment, green			
Surface (FS 5)	Ceramic rim	Coarse earthenware, lead glazed; wheel thrown	Mexican import	
Surface (FS 8)	Metal can	Straight, side seam	Illegible lettering, but Coors logo; church key opened	1935–1958
ST 1, 0-10 (FS 6)	Metal fragments	6 mostly flat, unidentifiable fragments		
ST 4, 0-10 (FS 7)	Cf. .270 hollow point spent lead	Metal shrapnel attached		
ST 5, 0-10 (FS 9)	Coal fragments	Approx. 12		

Evaluation and Recommendations

LA 110358 was an isolated campsite or party location occupied during the 1950s. Testing revealed no evidence of earlier deposits, and geomorphological assessment indicates that the presence of earlier deposits is unlikely. Archival research failed to uncover any information relevant to the occupation of this site. The resource has been recorded and is not likely to yield important information beyond what has already been documented. LA 110358 is not eligible for inclusion to the National Register of Historic Places. No additional investigations are warranted.

LA 115261

LA 115261 is a historic habitation located on the nearly level desert floor at the southern end of the Tularosa Valley, about 1.86 miles (3 km) north of the Hueco Bolson and the Texas state line. The site lies on private land and right-of-way obtained from private sources. Situated on the west side of US 54, the site includes remains both inside and outside the right-of-way (Figures 19.2 and 19.3). Studding the site surface are 2–3-m high, mesquite-stabilized coppice dunes and broad, uneven interdunal areas. Local vegetation includes mesquite, fourwing saltbush, broom snakeweed, dropseed grass, narrowleaf yucca, and prickly pear.

Marshall and Marshall (1998) first documented LA 115261 during their survey for the US 54 project. They recorded the site as a late historic ranching complex with an associated midden and artifact scatter. The complex included a concrete pad and midden on private land west of (outside) the highway right-of-way, and a house foundation, midden, and cobble mound within the right-of-way. Since the initial recording, much of the site outside of the right-of-way has been removed by heavy equipment. A concrete house foundation in the southwestern portion of the site has survived, but was not mapped during testing as it is on private land. LA 115261 has two main loci. Locus 1 occurs partly within the right-of-way, but Locus 2 is located entirely outside the right-of-way. The portion of Locus 1 within the right-of-way measures 50 m north-south x 20 m east-west (Figure 19.3). Locus 2 covers a 30 m north-south x 20 m east-west area outside the right-of-way and includes several features, but these were not documented during the testing phase.

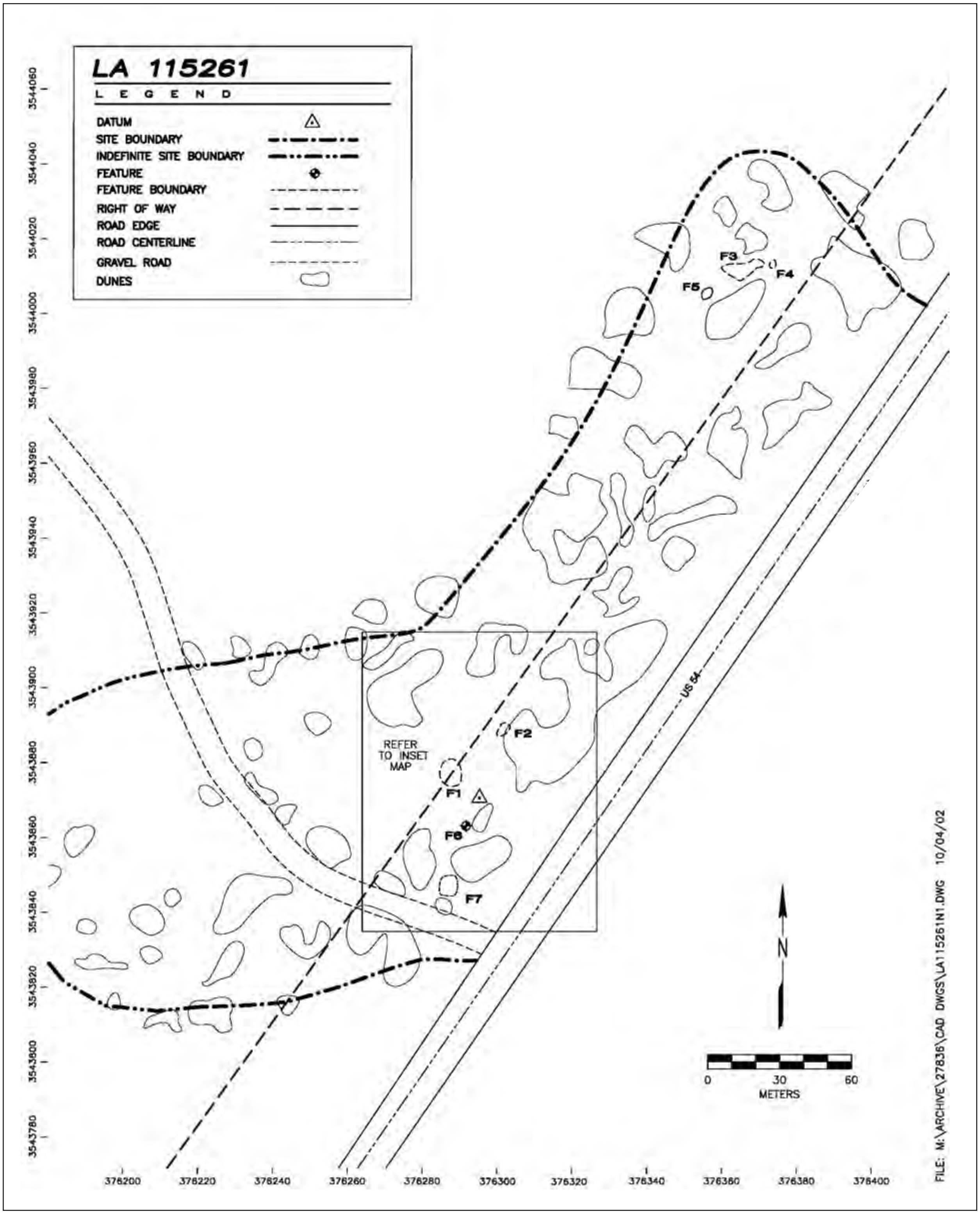

Figure 19.2 Site map of LA 115261.

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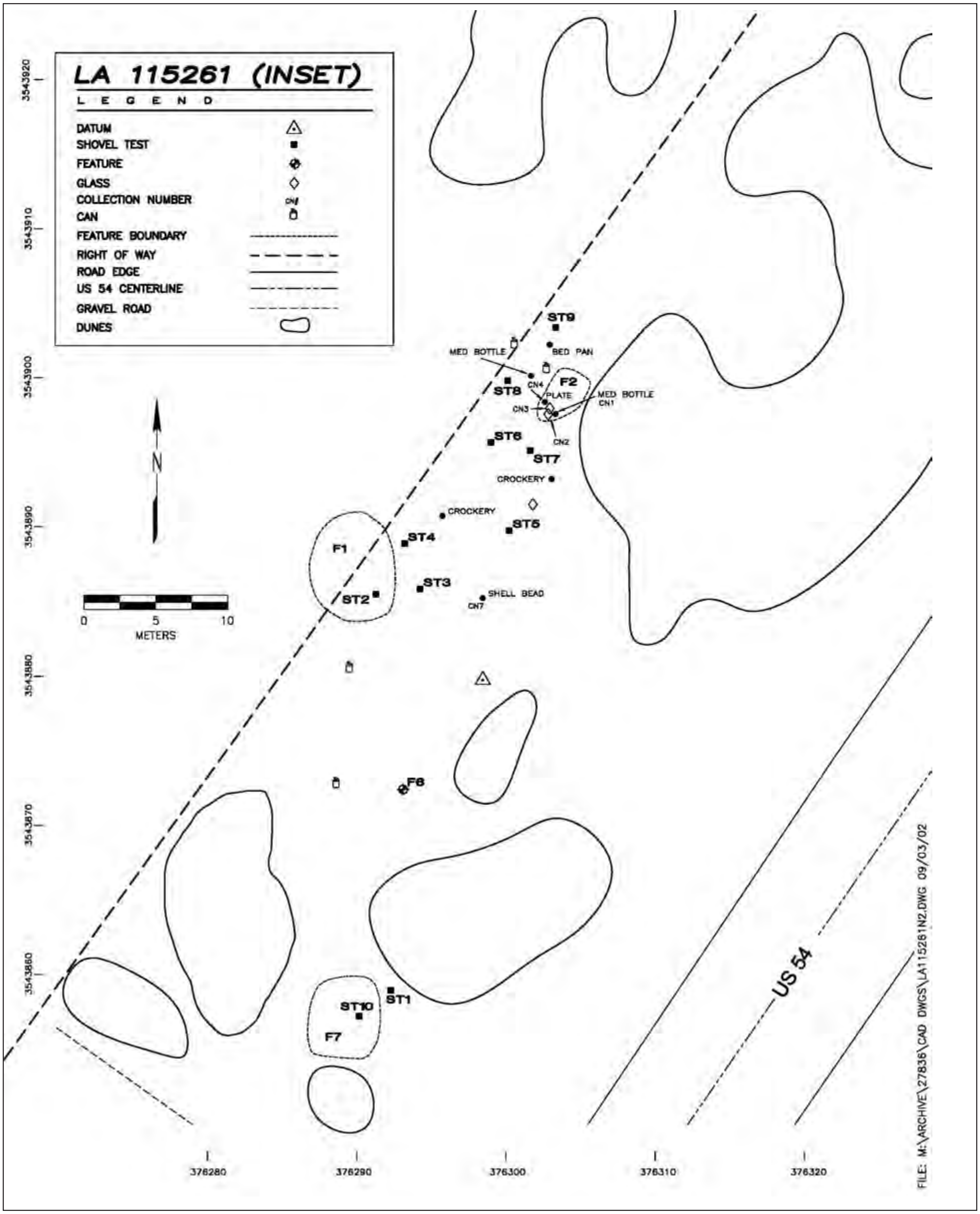

Figure 19.3 Detail of south-central portion of LA 115261.

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Testing Methodology

A permanent datum was first established on the site, and the site surface was thoroughly inspected for archaeological remains. Artifacts and features were visible only on the interdune surfaces, and were mapped in using a total station instrument. Ten shovel tests, each measuring 0.5 x 0.5 m, were excavated during the testing of this site. Nine of the ten were excavated either within features (ST 2 and 10), or adjacent to them (ST 1, 3, 4, 6–9). ST 5 was excavated in a sandy area between two features.

Testing Results

Seven features were identified at the site. Feature 1 (which straddles the right-of-way boundary) is a cobble mound that measures 9 m north-south x 6 m east-west, and rises 38 cm above the adjacent ground surface. ST 2 was excavated near the center of the cobble mound and uncovered cobbles to a depth of 60 cm bgs. No cultural materials were associated. The mound contained no traces of mortar or cement. Based upon the shovel test, Feature 1 is nonstructural and most likely consists of cobbles dumped by a truck or other piece of heavy equipment.

Feature 2 (within the right-of-way) is a midden or trash dump. The previous survey report described the dump as extending over a 20 x 14 m area, and containing sun-colored amethyst bottle glass, aqua glass, transferware, crockery, green and clear bottle glass, and Fiestaware (Marshall and Marshall 1998). As recorded during testing, Feature 2 measures 5 m north-south x 3 m east-west. Trowel tests revealed that Feature 2 is largely surficial, with a maximum depth of 5 cm.

Artifacts noted on the surface during survey and testing near Feature 2 include:

- sherds of aqua and sun-colored amethyst glass (the latter including both container glass and five sherds of a glass lamp)
- more than 20 sherds of clear Mason jars, one 1-quart milk bottle, four medicine bottles, fragments of a returnable amber beer bottle base marked “8”/“32” (dating to 1940)
- more than 10 pieces of brown-glazed crockery, one plate fragment with “Homer Laughlin”/“Made in USA HN” on the base
- four transferware fragments with flower prints
- two fragments from a porcelain tea set
- four other porcelain fragments, over 20 clay potsherds
- two fragments of a bed urinal
- seven rusted, triangular-punch cans
- one lid from a Hershey’s Cocoa can
- eight crown bottle tops.

Although the aqua and sun-colored amethyst glass dates between 1880 and 1920, the other items indicate that the trash dump is a mix of materials and most likely was created between 1940 and 1960.

Feature 3 measures 11 m north-south x 4 m east-west and consists of numerous large cobbles and occasional bricks and pieces of cement, piled up to 20 cm above the adjacent ground surface. The feature was originally identified as the remains of a one-room structure, scattered over a 20 x 10 m area (Marshall and Marshall 1998). The testing effort confirmed this general description of the feature, although it proved smaller than first described. Associated artifacts include a brick marked “Corde—”. A brick marked “nassau,” found during the original survey, was not relocated. Because it was located outside the right-of-way, Feature 3 was not investigated during the testing phase.

Feature 4 is located just east of the northeastern corner of Feature 3, and consists of a 1 m north-south x 0.75 m east-west area containing six brick fragments, one oval sardine can, and ash-stained

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soil. Trowel tests indicate that at least 10 cm of ash-stained fill is present below the surface at Feature 4. Feature 4 is also outside the right-of-way, and was not investigated during the testing phase.

Feature 5 lies just south of Feature 3 and consists of a pile of at least 10 bricks and at least 10 cobbles in an area measuring 3 m north-south x 1 m east-west. These items were most likely redeposited from Feature 3. No artifacts are associated with Feature 5. Feature 5 is also outside the right-of-way, and was not investigated during the testing phase.

Feature 6 is a semicircular alignment of eight heat-altered rhyolite and limestone cobbles that extend 1 m east-west x 0.5 m north-south. A single sanitary can is present at the feature.
Feature 7 (within the right-of-way) is located at the southern edge of the site, just north of a dirt road leading west onto private land from the highway. The feature covers a 5 x 5 m area; its southwestern, southeastern, and eastern edges are marked by alignments of concrete. Associated artifacts include one brick and one fragment of earthenware. The feature fill is ash-stained; ST 10 within this feature revealed that the ash stain is 10-cm deep and includes pieces of mortar. Table 19.3 summarizes the findings of the shovel tests, including excavated depths, soil colors, and cultural materials recovered. Five shovel tests produced subsurface cultural materials. STs 1 and 10 produced small pieces of mortar associated with Feature 7, which was likely a former structure location.

ST 2 produced several large cobbles associated with Feature 1, a probable cobble dump. ST 3 produced four pieces of glass, and a shell casing was recovered from ST 9.

Stratigraphy and Geomorphology

Surface examinations and shovel tests on this site suggest that the majority of cultural materials probably are visible on the current land surface. A thin, discontinuous veneer of historic eolian sand is present in the interdunes, but the more compact unit below it also is often exposed. The historic cultural materials are concentrated within the historic eolian sand, and on the surface of the more compact, underlying unit. The more compact unit is a noncalcareous sand loam that matches the characteristics of the Organ III (100–1,100 B.P.) eolian unit described by Monger (1993). This unit is partially eroded and lacks a discernable soil A horizon. The Organ III sediments typically extend from 20–30 cm bgs where the archeologists encountered another sandy loam unit with calcium carbonate filaments. These filaments suggest that this lower unit may be Organ I (2,200–7,000 B.P.) eolian sediments. The shovel tests typically contacted the La Mesa calcrete at a depth of approximately 50 cm bgs.

Though the Organ I and III sediments at this site are of a suitable age to contain Formative and Archaic components, no evidence of such cultural materials has been observed on the site. Instead, the Historic component dominates the surface of the site. Though the site is largely limited to a surface assemblage, it was possible that Historic intrusive features were excavated into the Organ I and III sediments. In general, however, the cultural materials on the site are limited to the modern ground surface, or within the sediments immediately below the surface. Foot and/or vehicular traffic may have resulted in the vertical displacement of some of the historic materials. Vertical displacement of up to 10 cm has been observed within sandy sediments exposed to foot traffic (Schiffer 1987).

Material Culture

Six artifacts were recovered from the surface and four from subsurface contexts at LA 115261 (Table 19.4). Five of the six surface artifacts came from Feature 2. These include the three diagnostic artifacts, all of which date to the mid-twentieth century.

Table 19.3 Shovel and Auger Test Results for LA 115261

Test No.	Location	Depth	Surface Soil	Cultural Evidence	Stratum 1	Cultural Evidence	Stratum 2	Cultural Evidence
ST 1	South, adjacent to Feature 7	0.2 m	Friable, yellowish-red sand, with some caliche (5YR5/6), surface to 0.08 m	10 small pieces of mortar, not collected	Semi-compact, reddish-yellow, sandy loam (5YR6/6), 0.08–0.16 m with light gray to gray ashy lens associated with Feature 7, (10YR6/1–7/1) down to caliche	Ashy, stained soil associated with Feature 7	Caliche 0.16–0.2+ m	None
ST 2	Central, southwest portion inside Feature1	0.6 m	Friable, yellowish-red sands, with large cobbles (5YR5/6), surface to 0.3 m	Natural cobble dump	Friable, yellowish-red sands (7.5YR5/6), 0.3–0.6 m	None	N/A	N/A
ST 3	Central, 1.5 m east of Feature 1	0.5 m	Friable, yellowish-red sands (5YR5/6), surface to 0.15 m	4 pieces of glass	Semi-compact, reddish-yellow, sandy loam, with small caliche inclusions (5YR6/6), 0.15–0.5 m	None	N/A	N/A
ST 4	Central, just northeast of Feature 1	0.5 m	Friable, yellowish-red sands (5YR5/6), surface to 0.1 m	None	Semi-compact, yellowish-red, sandy loam (5YR5/8), 0.1–0.15-0.2 m	None	Compact, yellowish-red, sandy loam, with caliche inclusions (5YR5/6), 0.15–0.2—0.5 m	None
ST 5	North-central, 9 m southeast of Feature 2	0.46 m	Friable, yellowish-red sands (5YR5/6), surface to 0.12 m	None	Semi-compact, yellowish-red, sandy loam (5YR5/8), 0.12–0.2 m northwest corner only	None	Compact, yellowish-red, sandy loam, with caliche inclusions (5YR5/6), .15–0.2—0.5 m on top of caliche (5YR6/6)	None
ST 6	North-central, southwest of Feature 2	0.4 m	Friable, yellowish-red sands (5YR5/6), surface to 0.08 m	None	Semi-compact, yellowish-red, sandy loam (5YR5/8), 0.08–0.4 m, northern portion only 0.2 m wide	None	Compact, yellowish-red, sandy loam, with caliche inclusions (5YR5/6), 0.08–0.4 m	None
ST 7	North-central, southern edge of Feature 2	0.5 m	Friable, yellowish-red sands (5YR5/6), surface to 0.1 m	None	Semi-compact, yellowish-red, sandy loam (5YR5/8), 0.1–0.4 m, northeastern corner basin pocket only 0.3 m wide at top	None	Compact, yellowish-red, sandy loam, with caliche inclusions (5YR5/6), 0.1–0.5 m	None
ST 8	Northwest	0.3 m	Friable, yellowish-red sands (5YR5/6), surface to 0.04 m	None	Semi-compact, yellowish-red, sandy loam (5YR5/8), 0.04–0.14 m	None	Compact, yellowish-red, sandy loam, with caliche inclusions (5YR5/6), 0.14–0.3 m	None
ST 9	North	0.4 m	Friable, yellowish-red sands (5YR5/6), surface to 0.1 m	1 shell casing	Compact, yellowish-red, sandy loam, with caliche inclusions (5YR5/6), 0.1–0.4 m	None	N/A	N/A
ST 10	South, inside Feature 7	0.43 m	Friable, gray, ash-stained sands, with charcoal and bits of mortar (10YR4/2), surface to 0.1 m	Mortar chunks not collected	Compact, yellowish-red, sandy loam, with caliche inclusions (5YR5/6), 0.1–0.4 m	None	N/A	N/A

Table 19.4 Artifacts Recovered from LA 115261

Provenience	Artifact	Attributes	Comments/Marks	Date/Manufacturer
Surface (Fea. 2)	Glass panel bottle fragment, clear	Base is 6.5 cm x 3.5 cm; embossed with "Illinois", "4", "0"	Side panel has graduated ounces "1", "2"	1929–1966 Owens-Illinois Toledo Plant
Surface (Fea. 2)	Lamp chimney fragment, purple (not solarized amethyst)	Edge has molded bead design		
Surface (Fea. 2)	Glass bottle base fragment, amber	5.7 cm diameter	Base embossed with "14", "0", "8D"	Owens-Illinois 1929–1966
Surface (FS 3)	Shell button, 2-hole	9 mm diameter		
Surface (Fea. 2)	Ironstone plate fragment	Gold gilded rim	Base reads "Homer Laughlin Made in U.S.A. H &N"	Ca. 1955
Surface (Fea. 2)	.22 caliber brass shell casing	Rim fired	No maker's mark	
ST 3, 10–20 cm	Glass bottle fragments, 3 aqua	One base embossed with illegible letters	All fragments are melted	
ST 3, 10–20 cm (FS 5)	Glass bottle fragment, clear	With patina		

Archival Research

Archival research was conducted at the tax assessor's office of the Otero County courthouse in Alamogordo. This site is in Township 26 South, Range 6 East, Section 22. The Santa Fe Pacific Railroad either leased, or otherwise obtained, the parcel in the southeastern corner of the section on June 20, 1921. William M. Eller received a patent from the federal government on March 10, 1937, for the 160-acre parcel of land containing the site (Patent 4-1003 on file, Otero County courthouse). The chain-of-title is not clear from 1937–1954, during which time Willie Velma Weaver filed a quitclaim deed. On August 13, 1954, she transferred her claim to G.W. O'Neal for the sum of $1.00 (Otero County Quit Claim Deed Book 165:392).

The site is believed to be a ranching complex and is located 1.5 miles northeast of Newman, New Mexico. The Newman brothers were involved in various activities in the area including the railroad, land speculation, banking, and ranching (Faunce 1997:86). Although this parcel has not been specifically tied to Newman enterprises, the Newman family owned or controlled a large amount of land along the New Mexico–Texas state line. For example, in 1907, the Newman ranch purchased 14,720 acres from the Texas and Pacific Railroad (Faunce 1997:87). Since the ranching complex (LA 115261) is only 1.5 miles from the border, this site might be associated with the Newman ranching activities, or perhaps to Eller's patent on the land in 1937.

Interpretation

LA 115261 is a ranching-related site that includes structural remains and trash. If Feature 2 was created in a single dumping episode, it represents redeposited materials originally produced over several decades (beginning before 1920 and ending no earlier than 1940). Archival research indicates that the site area was once controlled by the Newman family and subsequently patented by William Eller. Because diagnostic artifacts present at the site suggest a post-1940 occupation, it seems likely that the residential occupation of the site may relate to the Eller family.

Evaluation and Recommendations

Testing investigations at this site indicate that further archaeological study within the right-of-way would yield little additional information. There is no depth potential at the site, with artifacts and

features contained within historic sands or lying on a deflated surface. Artifact analysis (both in-field and in the lab) and archival research have exhausted the data potential for the portion of the site within the right-of-way. The site most likely represents the remains of a ranching operation during the early to middle 1900s. Within the right-of-way, the structural remains are limited; artifacts clearly predating 1920 are mixed with artifacts postdating 1930, indicating that at least some remains are redeposited. Archival research indicates that the family of William M. Eller may have occupied the site. LA 115261 is not eligible for inclusion in the National Register of Historic Places. No additional investigations are warranted.

LA 115264

LA 115264 is a historic artifact scatter with structural remains, situated on an alluvial flat, in the vicinity of a coppice dune field on the Tularosa Basin floor (Figure 19.4). The site is located between the old roadbed and the railroad tracks, on lands administered by the U.S. Army at Fort Bliss. It is restricted to the eastern side of US 54 right-of-way. Flora in the area includes dropseed, grama grass, narrowleaf yucca, fourwing saltbush, and mesquite. Surface cultural materials extend for 76 m along the right-of-way, which here is approximately 10 m in width. The surface scatter extends for an additional 80 m to the east of the right-of-way onto railroad right-of-way and lands administered by Fort Bliss.

In the initial survey, Marshall and Marshall (1998) described the site as a scatter of historic artifacts and milled lumber board fragments covering a 25 x 50-m area. A total of 29 artifacts was documented including bottle glass, hole-in-top cans, a suspender clip, Willow ware, window glass, milled lumber, oyster shell, a shovel handle, a glass bead, and burned coal. One sun-colored amethyst bottleneck and top exhibited a mold seam that did not extend to the rim edge; these attributes indicate a pre-1903 date of manufacture. The presence of milled lumber also was noted in the railroad right-of-way by the initial recorders. Marshall and Marshall (1998) suggested that the site represents a small structure associated with the railroad, occupied in the interval between ca. 1880 and 1920. In his recent historic overview of the Southern Tularosa Basin, Faunce (1997) states that railroad construction through this area was not completed until 1899, which could provide an early cutoff date for the site's occupation.

Testing Methodology

A permanent datum was first established on the site, and the site surface was thoroughly inspected for archaeological remains. Artifacts and features were mapped in using a total station instrument. During the testing phase, five 0.5 x 1-m shovel tests and four backhoe trenches were excavated on this site within the highway right-of-way. The results of these excavations are presented in Table 19.5. The backhoe trenches were excavated from south to north along the highway right-of-way, between the old US 54 highway bed and the railroad right-of-way fence line to the east. The backhoe trenches opened a total of 28.3 linear meters within the site, including an additional 7.5 m south and 9.9 m north of the site.

Testing Results

During the testing phase, only modern beer cans with aluminum tops were observed within the highway right-of-way. As these are associated with the old US 54 highway bed, they were not collected. No cultural materials dating to the early-twentieth century were encountered within the highway right-of-way. Surface materials associated with the early twentieth-century occupation of the site were noted within the railroad right-of-way and to the east, extending approximately 30 m into Fort Bliss Military Reservation property. The materials included hole-in-top cans and some milled wood. However, not enough milled wood was present to suggest the former presence of a structure, nor was there any other evidence that a structure formerly stood at this locality.

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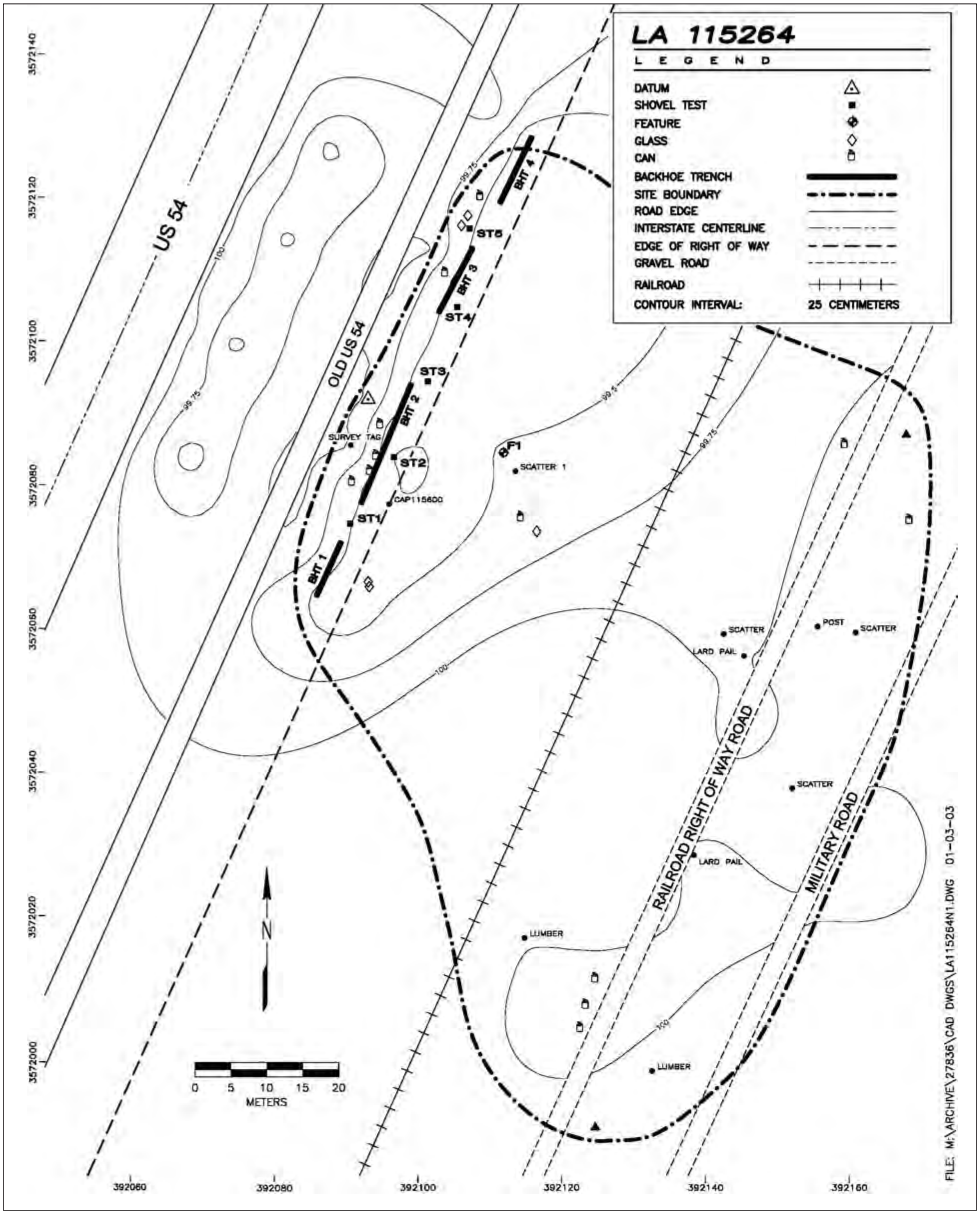

Figure 19.4 Site map of LA 115264, showing shovel tests, backhoe trenches, features, and surface artifacts.

Table 19.5 Shovel Test Results for LA 115264

Test No.	Location	Depth	Surface Soil	Cultural Evidence	Stratum 1	Cultural Evidence	Stratum 2	Cultural Evidence
ST 1	South	0.18 m	Friable, strong sand (7.5YR4/6) with road gravels, surface to 0.08 m	None	Compact, sandy loam (7.5YR5/4) with road gravels to hard pan, 0.08–0.18 m	None	N/A	N/A
ST 2	South-central	0.2 m	Friable, strong sand (7.5YR4/6) with road gravels, surface to 0.05–0.13 m	24 triangular punch cans, 7 clear or amber modern bottle glass fragments	Compact, sandy loam (7.5YR5/4) to hard pan, 0.05–0.13—0.2 m	None	N/A	N/A
ST 3	Central	0.13 m	Friable, strong sand (7.5YR4/6) with road gravels, surface to 0.05–0.1 m	98 bottle amber or clear modern glass fragments, 1 metal screw nut	Compact, sandy loam (7.5YR5/4), 0.05–0.1—0.13 m to hard pan	None	N/A	N/A
ST 4	North-central	0.2 m	Friable, strong sand (7.5YR4/6) with road gravels, surface to 0.07–0.13 m	4 triangular punch cans, 8 amber or clear bottle glass fragments	Compact, sandy loam (7.5YR5/4), 0.07–0.13 m—0.2 m to hard pan	7 amber to clear modern bottle glass fragments	N/A	N/A
ST 5	North	0.19 m	Friable, strong sand (7.5YR4/6) with road gravels, surface to 0.07 m	None	Compact, sandy loam (7.5YR5/4), 0.07 m–0.2 m to hard pan	None	N/A	N/A

Historic metal items within the railroad right-of-way include one hole-in-top can, other unidentified cans, one lard can, barbed wire fragments, one shovel handle, and six rusted metal fragments. Other materials recorded within the railroad right-of-way include nine sun-colored, amethyst bottle glass fragments (including one top and neck previously described by Marshall and Marshall [1998]), three coke bottles, 10 earthenware fragments, one oyster shell, and five other bottle glass fragments (green and amber). The area where Marshall and Marshall (1998) recorded the majority of late historic cultural materials within the railroad right-of-way had been recently trenched for a fiber optics line. Many of the previously noted items were either no longer visible, scattered north of the area, or buried beneath the fiber optics trench spoils.

Two cultural material scatters were mapped on Fort Bliss property to the east of the railroad right-of-way. The first scatter covers a 20 m north-south x 10 m east-west area, and includes 10 hole-in-top cans, four pieces of sun-colored amethyst bottle glass, one porcelain plate fragment, and two patented “Bright-of-Way” beer bottle glass shards. Other materials within this scatter include six pieces of milled lumber. Nearby, adjacent to the railroad and within the railroad right-of-way to the east, are 15 other pieces of milled lumber, though these pieces may not be associated with the late historic component comprising this site.

The second identified scatter of cultural materials is concentrated within a 2 x 2-m area. This area contains a small dump of late historic materials including one hole-in-top can; 10 pieces of sun-colored, amethyst bottle glass; four earthenware shards; and five green bottle glass fragments. A single 4-inch x 4-inch x 6-foot fence post also was noted to the east of the railroad right-of-way and may represent the remains of a fence once present in the area.

Feature 1 was identified within the railroad right-of-way and includes a concentration of late historic cultural materials within a 0.2-m diameter

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area. The materials include seven pieces of sun-colored, amethyst bottle glass; three coke bottles; one indeterminate can; pieces of barbed wire; four earthenware shards; and six pieces of rusted metal. These items were piled in a single locale sometime after the initial survey, probably during the placement of the fiber optics line on railroad right-of-way property.

Within three of five shovel tests, late to modern cultural materials were recovered from the subsurface, within the friable sands. These artifacts are likely road trash from the 1950s.

Stratigraphy and Geomorphology

Four backhoe trenches excavated within the site boundaries reveal a partially eroded stratigraphic profile capped by displaced sediments. The displaced eroded sediments are the result of previous construction along the US 54 right-of-way. Portions of the site that are further from the old highway bed (eastern part of site) show less evidence of disturbance and may have a higher potential to yield in situ cultural materials. This discussion, however, focuses on the areas observed in the backhoe trench profiles.

The surficial deposit at the site (Unit 1) consists of 20–30 cm of historic sands and/or displaced fill. Based on stratigraphic position and sediment properties, Unit 1 correlates with the "surface soil" designation defined by the archeological field technicians. These sediments are generally brown (7.5YR5/3, d) and have a sandy loam texture. The Unit 1 sediments typically consist of 3–5 percent pebbles. These pebbles are similar to those found in the roadbed and are not of local origin. In addition, dark pieces of decomposing cinders or possibly asphalt also are incorporated into the displaced sediments. These dark materials resemble charcoal flecking, but closer inspection suggests that this flecking is not natural. Evidence of soil formation is not present in this unit, but some areas do exhibit a weak, coarse, platy structure; a property that is probably the result of machine compaction during previous construction. Thus, these surficial sediments are historic in origin and probably date within the past 100 years. For this reason they are considered to have low archaeological potential. It is possible, however, that cultural materials were incorporated into this unit during construction. Materials found in this context, however, would lack stratigraphic integrity.

Underlying Unit 1 is Unit 2, which is an intact eolian deposit. The Unit 2 sediments are light brown (7.5YR6/4, d), have a sandy clay loam texture, and exhibit common (5 percent), fine, irregular, carbonate filaments. The carbonate filaments result in the classification of this unit as a soil Bk horizon (Stage I accumulation). Based on the Stage I carbonates, this unit correlates with the Organ I eolian sediments (ca. 2,100–7,000 B.P.) described by Monger (1993) and/or the Q3 unit (100–7,300 B.P.) defined by Blair *et al.* (1990). The lack of an accompanying A horizon indicates that this soil is partially eroded. Considering the position of the site to the old roadbed and the nature of the overlying sediment units, erosion of the A horizon and portions of the B horizon are probably due to mechanical scraping of this area during previous construction. Based on color, stratigraphic position, and the presence of carbonate filaments ("caliche" in the archaeological field notes), Unit 2 correlates with Stratum 1 as defined by the archaeological field technicians.

Unit 2 is an eolian sand deposit that experienced pedogenesis after its deposition. Though the chance is slight, it is possible that some cultural materials were deposited into this unit while the sands were accumulating. An area of mobile sand would seem unfavorable for occupation, however, and it would seem more likely that cultural occupation of the site occurred after sand stabilization. During pedogenesis, the Bk horizon was subsurface and not exposed to cultural contact. It is possible, however, that intrusive features from such an occupation were excavated into the Bk horizon. Another consideration is that cultural

materials buried in sand sediments are often subject to displacement by foot traffic. Trampling of cultural materials in sandy sediments can result in vertical displacement of up to 10 cm (Shiffer 1987). Unit 2 is not the most favorable stratum for the recovery of cultural materials, but it cannot be discounted. Unfortunately, the most likely surface for occupation would be the A horizon, which has been removed from this site. Though the A horizon is often absent from the surface of Organ I/Q3 paleosols within the area, natural erosion often concentrated Archaic and Formative cultural components on the surface of the Bk horizon. Scraping of the site during previous construction, however, would have removed this surface and may have resulted in the scattering of any cultural materials in such a context.

The basal unit at site LA 115264 is the La Mesa calcrete. This unit is white to pinkish-white (7.5YR8/1–8/2, d) and has a clay loam texture. In excavations this unit is quite evident by its white color and hardness. The calcrete provides a barrier that cannot easily be breached by the backhoe and is impenetrable by hand excavations. Previous work in the region (Gile *et al.* 1981; Blair *et al.* 1990; Monger 1993) has proposed that the calcrete is Mid-Pleistocene in age (ca. 250,000 B.P.) and, thus, predates accepted dates for the human occupation of North America. For this reason, the calcrete is considered to be the sterile level for archeological excavations.

Material Culture

Because the surface scatter associated with this site is located outside of the highway right-of-way, surface collections were not undertaken at this site. A total of 130+ artifacts, however, was collected out of the shovel test units (Table 19.6). None of these artifacts could be dated with any degree of certainty. We can deduce that the soft drink bottles, based on their stylist lettering and embossing, date no earlier than the mid-twentieth century.

Archival Research

Archival research conducted at the tax assessor's office of the Otero County courthouse in Alamogordo failed to produce any information relevant to the occupation of this site. Given its proximity to the railroad, the site was thought to be associated with railroad activities between 1899 and 1920 (Faunce 1997; Marshall and Marshall 1998). Historic documents indicate that railroad stops between Newman and Alamogordo, New Mexico, were spaced, on an average, 6 miles apart (Faunce 1997:47). LA 115264, although in close proximity to the railroad, is approximately 1.2 miles south of the stop at Elwood, and approximately 4.8 miles north of the stop at Desert. These data suggest the site did not serve as a regular stop, but it could have been used as a construction camp during the initial railroad construction, or for ranching activities.

Evaluation and Recommendations

Testing investigations revealed a lack of intact subsurface cultural evidence within the highway right-of-way. Within three of the five shovel tests, late historic to modern cultural materials were recovered from the subsurface, but still within the uppermost, friable sands. Most of the items represent 1950 roadside trash associated with the old US 54 highway roadbed to the immediate west. The majority, if not all, of the site is located to the west of the highway right-of-way, within the railroad right-of-way, and to the east on lands administered by the Fort Bliss Military Reservation. The materials on Fort Bliss indicate a wooden structure may have once stood there, although not enough board fragments were observed to definitely suggest the former presence of a structure (although it is quite possible that many fragments were salvaged for burning or for re-use in shed construction elsewhere). A wooden fence post in this same locale suggests a fence was once present here. Testing investigations exhausted the data potential of this site. The data potential of the site area within the highway right-of-way is especially negligible, given the

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Table 19.6 Artifacts Collected from LA 115264

Provenience	Artifact	Attributes	Comments
ST 2, 0-10 (FS 4)	Glass bottle fragments: 6 amber; 1 light aqua; 1 green	Green fragment has painted label "Drink . . . Sugar . . . ite"	Cf. Sprite
ST 2, 0-10 (FS 4)	Metal can in multiple fragments	Church key opened	
ST 3, 0-10 (FS 3)	Glass bottle fragments: 1 "apple" green; 4 light yellow; 2 clear	1 clear fragment has blue and white painted label	
ST 4 0-10 (FS 1)	Metal cans, 2 cf. beer cans	Church key opened	
ST 4 0-10 (FS 1)	Metal can	Crimped side seam	Opening unknown
ST 4 0-10 (FS 1)	Metal can, crushed		
ST 4 0-10 (FS 1)	Glass bottle fragments: 7 clear, 1 green	1 clear fragment painted "1?6? OUNCE" in cream lettering	
ST 4 10-20 (FS 2)	Glass bottle fragments, 25 amber	1 finish is cf. beer bottle	2 have molded and raised scaly pattern
ST 4 10-20 (FS 2)	Glass bottle fragments, 70 green	4 are painted, cf. 7 UP; 1 fragment has an embossed "C"	
ST 4 10-20 (FS 2)	Glass bottle fragments, 6 clear	3 have patina	
ST 4 10-20 (FS 2)	Hexagonal nut	Threaded interior	3/8 inch

observed absence of historic materials associated with the site's early-twentieth-century component and the lack of intact, subsurface deposits or features. Portions of the site within the right-of-way have been recorded and are not likely to yield important information beyond what has already been documented. LA 115264 is not eligible for inclusion to the National Register of Historic Places. No additional investigations are warranted.

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